Changing DoD's IT Capabilities

Defense AT&L interviews
Lt. Gen. Charles E. Croom, USAF
*Director, Defense Information Systems Agency
and Commander, Joint Task Force for
Global Network Operations*

ALSO

Looking at the Root Causes of Problems

The Team Development Life Cycle

Bridging the DoD-Industry
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Report Documentation Page

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ALSO

DEPARTMENTS

Changing DoD's IT Capabilities

Delivering and Defending the Network

Lt. Gen. Charles E. Croom, USAF
Director, Defense Information Systems Agency and
Commander, Joint Task Force for Global Network Operations

Hackers attempt to break into a Department of Defense network and are blocked. A military doctor pulls up an online medical record for an injured servicemember. A remotely deployed servicemember uses a satellite system to relay information. The Defense Information Systems Agency and the Joint Task Force for Global Network Operations are involved in all those scenarios. Air Force Lt. Gen. Charles E. Croom, DISA director and JTF-GNO commander, talked to *Defense AT&L* in January 2008 about what's next for those organizations, especially as technology continues to change.

Q.

You've served as the director of the Defense Information Systems Agency and the commander of the Joint Task Force for Global Network Operations since July 2005. Can you give us an overview of your roles and responsibilities?

A.

As you mentioned, I wear two hats as both the director of DISA and commander of the JTF-GNO. DISA is the materiel provider of joint IT solutions for the Department of Defense. The JTF-GNO team, under U.S. Strategic Command, is responsible for operating and defending the network. Although DISA and the JTF-GNO have different responsibilities, they are engaged in complementary efforts driving improvements to how our current network is designed, implemented, operated, and defended during this time of dynamic information technology changes. At the same time, both organizations are trailblazing solutions that

Delivering IT is a team sport.

Photos by Donna Burton, DISA

allow U.S. military members to more freely exchange information wherever they are in the world while, at the same time, protecting that information.

Q.

You have said previously that to capture today's technology for DoD, DISA has recognized a need to change the way it does business, particularly in regards to improving the time needed to get services and technology into the hands of the warfighter. Can you describe the ways that DISA is working to speed up the processes of acquisition and testing?

A.

Successful delivery of IT capabilities to the warfighter, our primary customer, requires a team effort. DISA has been working closely with our growing number of government and industry partners to more rapidly acquire and test IT services. We're working together using both legacy and new processes that allow us to make capabilities available faster. Central to this has been the "Adopt, Buy, Create" approach we've used across the agency. With the ABC approach, we first seek to leverage the forward-leaning work of other government organizations. We adopt promising solutions and make them available across the network. One example is adopting the 2-million-user Army Knowledge Online as DoD's portal, Defense Knowledge Online. Also, we've been successful in buying powerful industry solutions for the department, such as the enterprise collaboration services, which we call "Button 1" and "Button 2." Both of these collaboration tools are now available via the DKO portal.

Effective testing is essential to successful implementation of enterprise solutions. Approaches such as early user testing are allowing us to make services available faster and gain the information we need to support risk-based decisions about the next implementation steps to take and to scale the service appropriately. Testing processes are becoming increasingly collaborative. For example, the Federated Development and Certification Environment will leverage technology to bring the developers, warfighters, testers, and certifiers together as early in the process as practical to do more simultaneously, instead of sequentially, to reduce the time it takes to get needed capabilities to the field.

Q.

What about the challenge of changing people's mindsets towards how they do business? Many Service applications have been purchased with a specific need in mind, and many people are accustomed to working with applications and information-sharing devices in ways that they've done in the past. What is DISA doing to change that mindset?

A.

I used to think along the lines of the old saying, "If it ain't broke, don't fix it." Looking at our world today, the reality is that if you're not changing, not looking for ways to provide improved services and/or capabilities, you're falling behind. At the same time, we have many legacy systems in the DoD that are currently filling a need for a limited community but aren't yet broadly available to support the joint warfighter.

We're making exciting headway toward establishing the service-oriented architecture foundation and gaining consensus on shared standards and specifications, which will allow Web services to be available across the enterprise. Some teams have already moved out with pilot efforts that exercise these new capabilities, like Maritime Domain Awareness. The MDA effort has been successful in allowing the community to share knowledge of the global maritime environment through exploitation and visualization of legacy and emerging data sources from the Navy, Coast Guard, and Department of Transportation. Programs like the Net-Enabled Command Capabilities and the Global Electromagnetic Spectrum Information System will also take advantage of these core services and standards to allow services and data to be more readily shared between those who have the information and those who need it.

Q.

DISA's statistics have stated that DoD is roughly doubling its data traffic every two years. How is your agency responding to this need for increased bandwidth, and what is your agency's long-term plan for providing bandwidth to the warfighter in the future?

A.

Over the years, DISA has been actively alert to network traffic growth and uses a variety of tools to measure and track bandwidth utilization on the NIPRNet [*Unclassified but Sensitive Internet Protocol Router Network*] and SIPRNet [*Secret Internet Protocol Router Network*]. Increases in use of the Defense Information System Network core and Internet access have been significant factors related to bandwidth growth. Our NIPRNet and SIPRNet traffic stats indicate that data traffic is approximately doubling every two years. The good news is that, so far, we've been able to stay ahead of the need.

Besides making information available more rapidly across the DoD, net-centric enterprise applications are also impacting network usage. Network managers are providing close monitoring to allow them to continuously rightsize the networks, thus ensuring high performance. As more warfighter requirements move to Internet protocol, DISA will continue to ensure that the NIPRNet and SIPRNet are sufficiently sized to meet those needs.

Realistically, not every location will be connected by cable or be rich in bandwidth. For these situations, we'll need to look to other options. Enterprise collaboration service

Lt. Gen. Charles E. Croom, USAF

Director, Defense Information Systems Agency and Commander, Joint Task Force for Global Network Operations

Lt. Gen. Charles E. Croom is the director of the Defense Information Systems Agency and the commander of the Joint Task Force for Global Network Operations. As DISA director, he leads a worldwide organization of more than 6,600 military and civilian personnel. This organization plans, develops, and provides interoperable command, control, communications, computers, and information systems to serve the needs of the president, secretary of defense, Joint Chiefs of Staff, combatant commanders, and other Department of Defense components under all conditions during peace and war. As the JTF-GNO commander, Croom is responsible for directing the operation and defense of the Global Information Grid to assure timely and secure net-centric capabilities across strategic, operational and tactical boundaries in support of DoD's full spectrum of warfighting, intelligence, and business missions.

Croom entered the Air Force in 1973 as a distinguished graduate of the Rutgers University ROTC program, where he was the commandant of cadets. His past assignments include serving as the director of communications, Headquarters, Air Mobility Command; director of mission systems, deputy chief of staff for communications and information, Headquarters, U.S. Air Force; director of command, control, and communications systems, Headquarters, U.S. European Command; vice director for command, control, communications, and computer systems, the Joint Staff; and director of command, control, communications, computers, intelligence, surveillance, and reconnaissance infostructure, deputy chief of staff for warfighting integration. Prior to his current assignment, Croom was the director of information, services, and integration, Secretary of the Air Force Office of Warfighting Integration.

Croom has received the Defense Superior Service Medal with oak leaf cluster, the Legion of Merit, the Defense Meritorious Service Medal with oak leaf cluster, the Meritorious Service Medal with three oak leaf clusters, the Joint Service Commendation Medal, and the Air Force Commendation Medal. He will retire in July 2008.

Button 2, currently in early user testing, supports XMPP [*Extensible Messaging and Presence Protocol*]-enabled low bandwidth chat, a capability well-suited for environments where bandwidth is limited. Also in the pipe are pilot efforts such as Tactical Service Provider. TSP is a joint capability technology demonstration working with the Army, U.S. Central Command, U.S. Transportation Command, and U.S. Joint Forces Command that is exploring a hybrid next-generation satellite and wireless communications architecture that will more effectively extend the DISN core network services out to the remote and mobile warfighter.

The electromagnetic spectrum is currently a hot topic. In Iraq, we've learned that improvised explosive devices can be detonated remotely using wireless technologies. It's also a hot topic in industry, which needs spectrum for consumer products such as cell phones and Blackberry® devices.

Q.

Speaking of spectrum, the Defense Spectrum Organization falls within DISA's responsibilities. Can you describe how the DSO has been working to support the warfighter, and how the DSO is working to protect spectrum that the military needs?

A.

The DSO was established in the summer of 2006, combining the Defense Spectrum Office and the Joint Spectrum Center into one organization that would better address the many challenges of our spectrum environment. For example, when the Joint Staff released a Joint Urgent Operational Needs Statement citing the need for better spectrum support in theater, the JSC stood up a 24/7 Spectrum Analysis Cell and also sent personnel forward to train, assist, and troubleshoot electromagnetic interference in Iraq and Afghanistan. The positive news is that after 16 months, the forward team has been very effective in its troubleshooting and training efforts and is being released to return home. The JSC, of course, will continue to support any spectrum challenges that arise in theater.

As a leader in the department's efforts to transform spectrum operations, DSO is also central to developments that will allow DoD to effectively and efficiently use spectrum, especially as competition for spectrum increases around the world. Several efforts are under way to leverage technologies to ease the impact of the competition. One of these efforts, dynamic spectrum access, affords the opportunity to better utilize the spectrum, allowing more users on a given frequency at a given location than the current reservation process allows. Dynamic spectrum access can also reduce interference because spectrum-dependent systems may sense the environment and transmit for very brief periods of time. As dynamic-spectrum-access technology, policies, and procedures mature, they may

provide the opportunity to realize bandwidth on demand worldwide.

Since transforming spectrum management is as much about business process improvements as it is about technology insertion, it makes sense that spectrum capabilities be made available as Web-based services. Toward that end, we are also moving forward with the Global Electromagnetic Spectrum Information System as a new joint program of record. GEMSIS will be a family of services that support the DoD's joint spectrum management transformation by leveraging the DoD's service-oriented architecture core enterprise services.

Many computer applications were previously designed to run on closed networks, but an increasing number are now being run using the World Wide Web. While this allows for greater information sharing, doesn't it also mean greater opportunities for hackers to break into DoD systems?

A.

You've touched on a significant set of challenges we can't afford to take lightly. While the Internet allows us to productively share information in powerful and unprecedented ways, working in that environment also increases our exposure to those with ill intent who operate there. With its responsibility to operate and defend the Global Information Grid, currently made up of about 7 million computers and 15 thousand networks worldwide, the Joint Task Force for Global Network Operations utilizes a "defense in depth" approach. The approach includes a combination of strong perimeter defense; client-based security; user identity management; and partnering with other stakeholders, which include law enforcement organizations such as the National Security Agency and the Department of Homeland Security. Of course, an essential ingredient to success

> **With the ABC approach, we first seek to leverage the forward-leaning work of other government organizations. We adopt promising solutions and make them available across the network.**

is active participation from those who use the network, including all of the DoD military services and agencies.

We're seeing positive trends with the efforts to date, such as a decrease in root-level intrusions. However, those who want access to the networks and the department's information are persistently trying new ways to achieve their aims. To counter the threat, efforts are under way toward more machine-to-machine automated and aggregated reporting to achieve the situational awareness our various network health and security sources can provide. Already piloted at 23 sites, the host-based security system is in the process of being implemented across the Global Information Grid. HBSS, the largest fielding of an information assurance tool in DoD history, allows awareness and security to the desktop. We're also moving forward with the sec-

ond phase of common access card/public key infrastructure implementation. So far, about 93 percent of DoD is using CAC/PKI to access the network. We've learned that business processes and application requirements are currently the primary reasons for users not employing CAC for network log-in. Our next actions will involve improving access to the NIPRNet with CAC/PKI or secure alternate token and providing additional metrics and granularity to facilitate development of technical solutions that will allow CAC usage to reach 100 percent.

Q.

Developing interoperable communications solutions for U.S. allies is a challenge because of different equipment, software programs, and even different outlets. Yet the United States has had up to 26 allies helping to support its operations in Iraq—there needs to be communication between all. What is DISA doing to address the need for communications between its coalition partners?

A.

This is another area where we are placing increased emphasis. Information sharing with our mission partners beyond the U.S. joint arena is currently accomplished through numerous stove-piped network domains, including different versions of the Combined Enterprise Regional Information Exchange System. As a result, today's operators must often "swivel chair" between coalition and national systems to have full battlespace awareness, and data must be entered multiple times between the separate systems.

> **We're shifting our mindset from work being "a place to go" toward work being "something you do."**

In March 2007, the Net-Centric Functional Capabilities Board endorsed a set of requirements for the CENTRIXS Cross-Enclave Requirement to converge multiple CENTRIXS enclaves to a single infrastructure. This fiscal year will see the establishment of a test and integration lab and actions that will promote a more seamless interchange of multinational data, including a more effective disclosure policy. Advancements toward this end will be tested dur-

ing the Coalition Warrior Interoperability Demonstration 2008. The team making this all happen, which includes several combatant commands, will take the lessons we gain from CWID and other demonstrations forward to meet the Net-Centric Functional Capabilities Board's requirements supporting multinational missions.

Q.

Open-source software has the potential to save DoD a considerable sum. DISA's leadership has spoken about considering such software. Can you describe the challenges of allowing open-source software into DoD, and what is being done to address those challenges?

A.

The Department of Defense is already using open source software in countless critical applications like the Berkeley Internet Name Domain software that provides name resolution on DoD networks and the global Internet. Red Hat Linux® operating systems are used to host the DoD's PKI servers, and Apache® Web software is used to serve countless DoD Web pages.

We are now seeking to expand the role of open-source software in the department to be able to maximize the value of open-source software and development methodologies while minimizing its risks to the department. First, we have established an Open Source Steering Group, which brings together open source developers from DISA, across DoD, academia, and industry to develop and evaluate open source development methodologies, identify and review existing open-source efforts that can benefit DoD, provide consulting to developers and acquisition professionals on the use of open source, and bring together a community of open source developers to solve DISA and DoD problems. Some of the early successes of the OSSG are DoDBastille, which automates the lockdown of Linux operating systems to DoD security standards; DoDSST, which provides similar functionality for Solaris; and LinuxCAC, which supports the DoD's CAC for open source operating systems. These early success projects are in use in either the lab environment or in operational systems.

Second, DISA is looking to enable collaborative, open source software development as a component of our Federated Development and Certification Environment. We believe this will reduce the costs of open- and shared-source software development, encourage software re-use, and reduce time to market by adopting approaches and tools already in use by the open-source community.

Q.

In August 2003, DISA created the full-time position of the component acquisition executive and, shortly after, DISA developed a program executive officer-like capability under the CAE. How has this structure benefited DISA?

A.

As you mentioned, the CAE is now appropriately a full-time position, not a collateral duty. Diann McCoy performed superbly in this role until her recent retirement in January 2008. She charted a solid course on the unpaved trail toward net-centricity, leveraging her extensive experience and lessons learned from the acquisition rulebook. Although we will miss Diann's leadership, I'm pleased that another outstanding acquisition leader will be filling her shoes: Tony Montemarano. Tony's prior results, like his successful delivery of the GIG-Bandwidth Expansion Program, bode well for the agency as he assumes the role of CAE.

DISA's move to a PEO structure was not taken lightly. Before standing up the current PEO structure, we conducted a comprehensive review of 89 programs and projects, looking at appropriate authorities and alignment to better deliver joint IT capabilities. The resulting current structure encompasses PEOs for command and control capabilities; global information grid enterprise services; information assurance/NetOps; and satellite communications, teleport, and services. All are led by some of our most effective senior executive service leaders in the agency, who report to the CAE. I believe the structure provides an appropriate level of insight to our PEO directors to ensure the appropriate level of interaction between the programs and projects within their portfolio. This, along with quarterly program reviews, has given the DISA team an unprecedented level of awareness to leverage the dependencies between the programs.

Another important element of this model is the CAE's responsibility for maintaining a professional acquisition workforce in spite of the widely reported shortfall in the career field. As a leader in DoD joint acquisition, DISA must maintain a skilled, professional acquisition workforce. Internal and external training, career broadening and advancement opportunities, quality of life benefits, and the fact that each program's DAWIA [*Defense Acquisition Workforce Improvement Act*] certifications status is reviewed at quarterly IPRs [*in process review*], all contribute to DISA maintaining a strong acquisition team.

Q.

Your agency's telework program is one of the strongest in the federal government. Can you talk more about the benefits and challenges of DISA's teleworking initiatives?

A.

We believe that, when done correctly, employees who telework are just as, or even more, happy and productive than when they are in the traditional office. We're shifting our mindset from work being "a place to go" toward work being "something you do." For those interested in teleworking, DISA provides a laptop computer loaded with virtual private network software and pays for 50 percent

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> **Much as a homeowner pays for utilities, these capacity service contracts allow us to pay for only the CPU-hours or gigabytes of storage we use in our computing centers.**

of the monthly broadband expense into the employee's home. Employees just need a high-speed Internet connection, either at their residence or a telework center, and their supervisor's approval.

We are also always looking for ways to improve the telework program. We hold training classes for managers and brown bag sessions at several locations, and the feedback received during these gatherings is already being used to make changes.

I've also just approved a change to our policy which allows employees to telework three days per week with their supervisor's approval. We are also continuing to emphasize the requirement for a work plan for each teleworking employee and a continued focus on measuring productivity. If you can demonstrate there is an increase in productivity, who can argue with that? Also of note is that DISA's telework policy is not limited to DISA's headquarters or to the National Capital Region, and we're pleased to see that more and more folks across the agency are taking advantage of this opportunity. I expect that telework will continue to be an important component of DISA's recruitment and retention strategy.

Q.

You've mentioned previously that DISA's annual budget comes mostly from your customers, and that one of DISA's strategic goals is providing "best value" for your customers. How is DISA progressing toward that goal?

A.

About 75 percent of DISA's annual budget comes from our customers, and we are making significant progress toward providing them best value and improved financial transparency. About a year ago, we awarded capacity-on-demand computing contracts for both processing and storage services. These contracts have given us some attractive opportunities for flexibility and cost savings. Much as a homeowner pays for utilities, these capacity service contracts allow us to pay for only the CPU-hours or gigabytes of storage we use in our computing centers. Our vendors are responsible for maintaining service

availability of at least 99.95 percent, and they must sustain the technological currency of their hardware and software infrastructure. This partnership with the vendor community allows us to build the most efficient possible environment while reducing a myriad of operational and acquisition overhead costs that were inherent in the former process. We're also seeing a significant reduction in time to service, now averaging days instead of months to get capacity to the data center floor once a requirement has been established. Bottom line is we intend for these savings to be passed on to our customers while still maintaining high service quality.

Also, to enhance transparency, DISA is now in the process of seeking a balance sheet clean audit opinion. By the summer of 2008, our auditor—the Office of the DoD Inspector General—will judge whether DISA's financial documentation and practices are sufficient to deserve a clean audit opinion. When successful, DISA will be one of only five government organizations to have accomplished this feat. The reasons for pursuing this are compelling. We believe the practices involved with the clean audit opinion will help us to accelerate vendor payments, improve program execution, and enable DISA to build better budgets and defend them. Ultimately, it's about increasing the confidence of our customers and vendors so we can be better partners in delivering capabilities to the warfighter.

Q.

Are there any other items you'd like to share with Defense AT&L readers?

A.

We are embracing change. I sincerely believe we have some great opportunities, and responsibilities, now and in the near future, both leveraging the tremendous technology changes and learning to work even more effectively through aligned efforts within the Department. We will continue to engage with government and industry team members to do the things that raise the bar in both information sharing and network protection. The goal has been, and will continue to be, achieving the results that will best allow our warfighters and mission partners to leverage information whenever and wherever they need it to accomplish the mission. Delivering IT is a team sport.

Q.

Thank you for your time, Lt. Gen. Croom.

Looking at the Root Causes of Problems

Preventing Repeat Mistakes

Col. Brian Shimel, USAF

We, the acquisition community, have traditionally supplied American fighting forces with a distinct advantage on the battlefield, and ours is the best equipped fighting force in the world. But we are also not as efficient as we would like to be in supplying the warfighter. Too often, our systems are delivered behind schedule or over cost. We need to continue searching for improvements in delivery time and cost of systems.

One of our key constituents, Congress, cares so much about helping us improve our performance at delivering systems at cost and on schedule that it has established mandatory reporting requirements whenever a program exceeds its unit cost baseline by 15 percent—a Nunn-McCurdy breach—and certification from the Office of the Secretary of Defense when any program exceeds its unit cost baseline by 25 percent or more—a critical Nunn-McCurdy breach.

The Goldwater-Nichols Act streamlined and reorganized the acquisition chain of command. Through the program executive officer structure, the Service acquisition executives struggle to deliver systems that work to warfighters actively engaged around the world, all while facing challenges such as creeping requirements, cost and schedule overruns, and uncertain technical challenges. At the same time, the career fields carrying out this important mission bear the brunt of workforce downsizing initiatives aimed at improving the so-called "tooth-to-tail ratio." (Just as an aside, how far can you cut before a tail becomes the backbone that delivers the tooth's power?)

I propose we continue to look to the operational side of our Services to improve acquisition performance. The difficult part is finding elements from the operational world that inspire the acquisition workforce, fit the environment, and

In the acquisition world, we appear to act as if each time a program overruns, it is a singular event.

Shimel is director of financial management, Electronic Systems Center, and oversees execution of more than $4 billion of Air Force funds.

produce better performance—it needs to be more than just an organizational change. It is not enough for a new commander to appreciate his new organization's perspective; the organization also has to reach out to the commander and respect *his* perspective. Mutual respect and understanding are the key to true organizational success.

Taking the Root Cause Approach

There are operational ideas and practices that can improve acquisition performance. After all, there is a common trait found in both the operational side and the acquisition side: a bedrock of respect for analysis and real proof that something will work before we trust our nation's defense to a new method or technology. Innovation and performance based on logical analysis and proven results are the key to operators and acquirers speaking a common language. For example, in World War II, the Army Air Corps studied the success rates of aircraft returning to English bases after raids over the European continent. Aircraft were often seriously mangled, limping back over the English Channel—or worse. Through detailed observation and analysis, it became clear that aircraft missing certain parts never returned. Those parts were reinforced, and more planes returned. This close analysis of problems and solutions evolved into the creation of new processes, including the development of the Safety Investigation Board and the Accident Investigation Board.

The intrusive, rigorous, and respected process conducted by the SIB is performed because the operational world is truly committed to finding the root cause of the problem and doing its best to keep it from happening again. The SIB has two components. The first part is a rapid reconstruction of the facts that led to the accident. Once accomplished, those facts are also used for the subsequent AIB, which definitively determines the cause(s) of the accident. The second part of the SIB is a non-attribution, internal assessment of the weapon systems' ability to perform their mission for national defense. This part reflects the best professional judgment of the board without bearing a substantial burden of proof (which is used by the AIB). The board's experience, objectivity, and independence allow them to quickly get the most probable answer to key decision makers. The purpose of the second part of the SIB is to prevent future accidents. For example, on April 3, 2006, a C-5 crashed at Dover Air Force Base, Del. Thanks to the efforts of the SIB and the AIB, by June 21, everyone (not just other pilots) could read a minute-by-minute account of the flight and the mistakes that led to the crash.

Applying Analysis to Improve Acquisition

I contend the next step in improving acquisition is to continue with ideas that will make us, the acquisition community, accomplish the goal of acting more like warfighters.

We should hold the equivalent of an SIB whenever a program suffers a critical Nunn-McCurdy breach. We should use the results of this objective process to identify how we operate an acquisition program and to understand what "broke" the program and how we should behave in the future to improve performance, delivery speed, and economy. Finally, we should incorporate the lessons learned across the acquisition community and make the practice of them a command responsibility—the same way we investigate and correct problems that caused operational accidents—thus avoiding similar problems in

> If we started a new acquisition program without full funding, half its design drawings, or no master schedule, we would say, "Good luck."

future operations.

Currently, after a critical Nunn-McCurdy breach, the Department of Defense must certify to Congress that four key factors are still true before a program can continue to go forward, and four integrated process teams are created to review those key factors. They evaluate that a program is still essential to national security; that there is no alternative that can provide an equal capability; that new cost estimates are reasonable; and that the existing or redesigned management structure is adequate to control average unit costs in the future. The teams then make a final report and certification to Congress.

This current process fulfills the first part of the SIB, but it does not address the second part: making sure that all systems are still operating safely for the benefit of national defense. The operational side's safety review team judges whether the incident applies across the entire fleet. It decides if the responsible condition or behavior can or should be corrected or mitigated, and these recommendations are put into action. In the acquisition world, we appear to act as if each time a program overruns, it is a singular event. We continue to do our best, but only as it

Defense AT&L Says Goodbye to Smith and Lowery

With this issue, *Defense AT&L* says goodbye to Tech. Sgt. James D. Smith, USAF, and Spc. Kelly Lowery, USA. Smith and Lowery, both visual information specialists, have supported the magazine in many ways, most notably with the onsite coordination of the lead interviews, where they directed the photography and managed the production of high-quality audio recordings.

Smith, noncommissioned officer in charge of the Defense Acquisition University Visual Arts and Press department, is a gifted graphic designer who provided original illustration for the magazine and for DAU's other periodical, *Defense ARJ*, and provided design and art direction for many other DAU publications. During his 12 years of Air Force service, he has worked in other career fields, including intelligence and aircraft maintenance. With the deletion of his current career field, Smith is retraining as a chaplain's assistant.

Lowery excelled in putting interview subjects at the most senior levels at ease, ensuring appealing and natural photographs. A talented graphic designer, she was responsible for the redesign and art direction of DAU's electronic employee newsletter. She holds a bachelor's degree in graphic design from Louisiana Tech University. Lowery was named DAU's junior enlisted person of the year for 2007. She has begun a tour of duty as a graphics specialist in Korea.

James and Kelly, thank you for everything you've done for *Defense AT&L* and for DAU. Good luck in your future endeavors. We'll miss you!

Judith Greig
Executive Editor

meets budget constraints, optimistic estimates of technology maturity, and political compromises.

To take one program as an example: In 2001, the Space-Based Infrared System Program suffered a Nunn-McCurdy breach. It was restructured in 2002, and the Government Accountability Office analyzed the changes in 2003. The GAO found that SBIRS had passed its critical design review, even though just 50 percent of its design drawings were completed, compared to 90 percent completed, as recommended by best practices. In 2005, the SBIRS Program suffered another breach. In 2006, Air Force Deputy Under Secretary for Space Programs Gary E. Payton mentioned SBIRS in a presentation entitled "Nunn-McCurdys Aren't Fun," citing that after two breaches, there was no systems engineering master plan and no integrated master schedule, among other issues. Granted, this is a cursory overview of a complex program, but some of these problems sound predictable to me.

If we launched an aircraft with a damaged engine, we would be allowing unsafe practices. If we started a new acquisition program without full funding, half its design drawings, or no master schedule, we would say, "Good luck." The current process is not serving us well. We are sending our acquisition fleet back out again, day after day, hoping for the best, taking the same risks over and over again. We must stop expecting different results from the same inputs.

Obtaining Different Results

In each Service, I suggest the major command responsible for training, organizing, and equipping the acquisition workforce convenes and operates a review board after each critical breach. The major command should ensure the results are made available through the broadest possible distribution. One example of potential candidates for this board is the acquisition wing commanders in the Air Force. They are not in the acquisition chain of command, and therefore, they have a measure of independence that would be highly desirable in this role. The Service acquisition executive would be responsible for putting the appropriate conclusions into practice before every new-start program. The existing integrated process teams would be a good structure to build on. We could perhaps add to their role or have them feed information to a follow-on board that would be responsible for gathering evidence and, over a period of time, creating a better set of principles under which to operate major defense acquisition programs.

Is This New?

I have obtained great insight from knowledgeable people who are experienced in the acquisition business. I have read many high-level, top-quality initiatives, studies, commissions, and reports. Many still influence our structure, processes, and decisions with good intentions and results.

Many people speak a common language of speedy, stable acquisition. The solutions that may result from what I propose will not be different from what has been said in the past. So, what is keeping us from making these changes ourselves? Have we already met the enemy and, to paraphrase the great words of cartoonist Al Capp, is he us? The people at all levels of acquisition feel a huge burden to get working systems to the warfighter, and they make compromises—out of necessity—in technology maturity, schedule, requirements, and funding that, frankly, result in the unintended consequence of making us too expensive and too slow—the verdict from the 2005 Kadish Report (also called the Defense Acquisition Performance Assessment). We do a pretty darn good job in acquisition; but we are not as efficient as we want to be or as we should be. We get away with it because there is no competition.

I think what is new here is using the Nunn-McCurdy breach as an automatic trigger to start a review process and to apply the lessons learned across the acquisition community using the Service's or defense agency's method of mass communication. Payton's briefing title gives a clue to the current culture: "Nunn-McCurdys Aren't Fun." He is right, of course. But maybe because we try so hard to prevent the breaches that when they do occur, we don't fully embrace the breach as a chance to close the loop of a continuous improvement opportunity to understand what went wrong, and apply the relevant lessons across all acquisition programs.

The Defense Department should establish a culture that dictates this: Some things can't be compromised or deferred without acknowledging and accounting for the measurable impact they will make to a program's delivery speed, cost, and performance. To achieve this, we will have to be willing to admit our own mistakes! We will have to critically look at every system overrun, take ownership of the risks we imposed on ourselves, and put the appropriate resources into place to handle the risk. And we will need to stop taking the risks that continually show up as causes of failures.

If we accept that the reason we need to take a risk is worthwhile, then we align sufficient resources to cover the risk. The Department of Defense should be able to stop having to act surprised when the overrun occurs. It is the continual ratcheting down of preventable errors and the inevitable power of rising expectations and performance that will transform us—not the "eureka moments."

Putting the Results into Practice

In the acquisition world, cost, schedule, and performance are the core of our culture. The first and foremost of these is delivering the right capability to the warfighter. The second is delivering it on time. The third is delivering it at the cost we expect. While we treat all three seriously, the truth is, we are most successful at the first one and less

so at the second two. We must stop expecting different results from the same inputs. We deliver the right system to the warfighter, but too often we deliver that system over cost and behind schedule.

We have to hold tough, thorough reviews of cause/effect for troubled programs and their environments in the acquisition world; unflinchingly address our successes and our failures; and consolidate our results into actionable analysis, backed by the rare commodity of real insight. Then we can use that insight to start and operate acquisition programs under realistic conditions of success. Only when we back changes with evidence and analysis will we drive significant improvement in the overall programmatic success of weapons development. If we want to seriously respond to Congress and add operator-inspired performance, we should treat every critical Nunn-McCurdy breach as a Class A mishap—an unacceptable event—and hold the equivalent of a SIB to determine the root causes and address them; publish the results; make substantive changes to our strategies, tactics, funding, staffing, and/or training to make fact-based corrections and improve how we operate our mission. I recommend we invest in this effort.

We might not be able to draw a conclusion from reviewing a single program or a few programs, but over time and with a larger sample, we will discover revealing trends. And like the World War II airmen who met their challenges bravely, we may find that programs with certain issues rarely succeed. We will learn how trades in delivery speed, cost, and performance affect the risk we will knowingly accept or reject. Efficient, timely delivery of effective performance is our goal.

The author welcomes comments and questions and can be contacted at brian.shimel@hanscom.af.mil.

The Team Development Life Cycle

A New Look

Tom Edison

Understanding how teams function and what makes teams more effective can be meaningful in the classroom and in the workplace. Much has been studied and written about the traditional model of team development since Dr. Bruce Tuckman's 1965 study of small groups, which identified the traditional five phases experienced by project work teams: forming, storming, norming, performing, and adjourning. These phases help us to understand and interpret the changes and developmental stages that occur within teams, and they facilitate analyses of team behavior and aid in developing what are the necessary traits or behavior patterns for a team to become high-performing. The phases I introduce in this article go beyond Tuckman's traditional phases and will, I hope, help in understanding a team's "complete" developmental life cycle.

The Traditional Tuckman Model

Tuckman's traditional model is very useful for understanding a team's basic functional stages, but his model needs to be expanded for greater understanding of team development, especially during a team's dysfunctional phases. Many people think this model is very useful, but other research has shown it is not applicable to all teams or situations. This article will identify some new characteristics or phases of team development that complement the classic five phases developed by Tuckman.

To save or transform a project team, it is necessary to understand and

review the dysfunctional phases or negative forces that a team encounters so that appropriate corrective actions can be taken to aid a team in becoming high-performing. It is also meaningful to understand other characteristics that can enhance teamwork and team performance. Dr. Pamela Knight, a Defense Acquisition University professor, has conducted a similar study based on Tuckman's model. This research can be found at < www.dau/pubs/misc/Duration_Technical_Team_Dynamics.asp > . Significant data were gathered from over

> To save or transform a project team, it is necessary to understand and review the dysfunctional phases or negative forces that a team encounters so that appropriate corrective actions can be taken.

Edison *is currently academic chair for life cycle logistics at DAU, San Diego, Calif. He has a doctoral degree from Alliant International University.*

300 teams. Knight's results highlighted that Tuckman's model is useful for general understanding of the team development, but teams do not all follow Tuckman's development or growth throughout their life.

To begin understanding how teams become dysfunctional, it is relevant to create an extension to Tuckman's model. The figure below highlights the classical functional stages as introduced and explained by Tuckman and further discussed in "Leading Project Teams" by Dr. Owen Gadeken in *Defense AT&L*'s predecessor publication *Program Manager* (July-August 2002). The additional team development phases described in this paper and shown in the figure are informing, conforming, transforming, and deforming. It should be stressed that these team *orm* phases are based on work I conducted during dissertation research at Alliant International University and personal experiences working with teams as a Defense Acquisition University professor, especially in DAU's six-week Program Management Office Course (PMT 352B), which uses a team environment throughout the curriculum to solve problems and facilitate key learning and retention of acquisition and program management concepts. No empirical data currently exist to support these theories, all of which are conceptual.

Functional versus Dysfunctional

The development of this new model with its additional stages beyond the traditional Tuckman model should provide insights into those stages that are positive (functional) and those that are negative (dysfunctional). The following phases of a project team (illustrated in the figure) occur in the dysfunctional stage of a team: conforming and deforming. It's difficult to predict when those stages will occur, but they need to be acknowledged by those who work with or are on teams so they can keep the team focused on the functional track of team development and on becoming high-performing. Additionally, this under-

standing is critical so that a dysfunctional team can be placed or "transformed" back into the functional stages of its developmental life, which are norming, performing, informing, and perhaps back again to transforming, if needed.

An effective team must be able to transform from dysfunctional to functional stages by accomplishing self-assessment or transformational activities that help identify the reasons and potential causes for the team's dysfunction.

Informing: The Tipping Point

The stage of informing at the top of the life cycle curve (or the tipping point of team development) highlights that one of the positive roles of the high-performing team is to inform others about positive team results and conclusions. As Gadeken explained in his article, many teams get hung up in the storming and norming stages and never make it to the high-performing stage. He also highlighted that John R. Katzenback and Douglas K. Smith, in their 1993 book *The Wisdom of Teams: Creating the High-Performance Organization*, explained that many teams deteriorate during storming and norming and do not progress to performing and especially not to the high-performing stage. Gadeken stressed that it is the exception rather than the rule for most teams to make it to high-performing. But if they do, then it becomes paramount that they "inform" or communicate their accomplishments to others so that both the challenges and successes resulting from their efforts can be used by the organization they were chartered by to determine the capability of other similar teams to accomplish similar successes or identify the need to adjust the team.

More resources may be needed to ensure continued "survival" or functioning of the team. Informing is still part of the functional phases and should continue throughout a
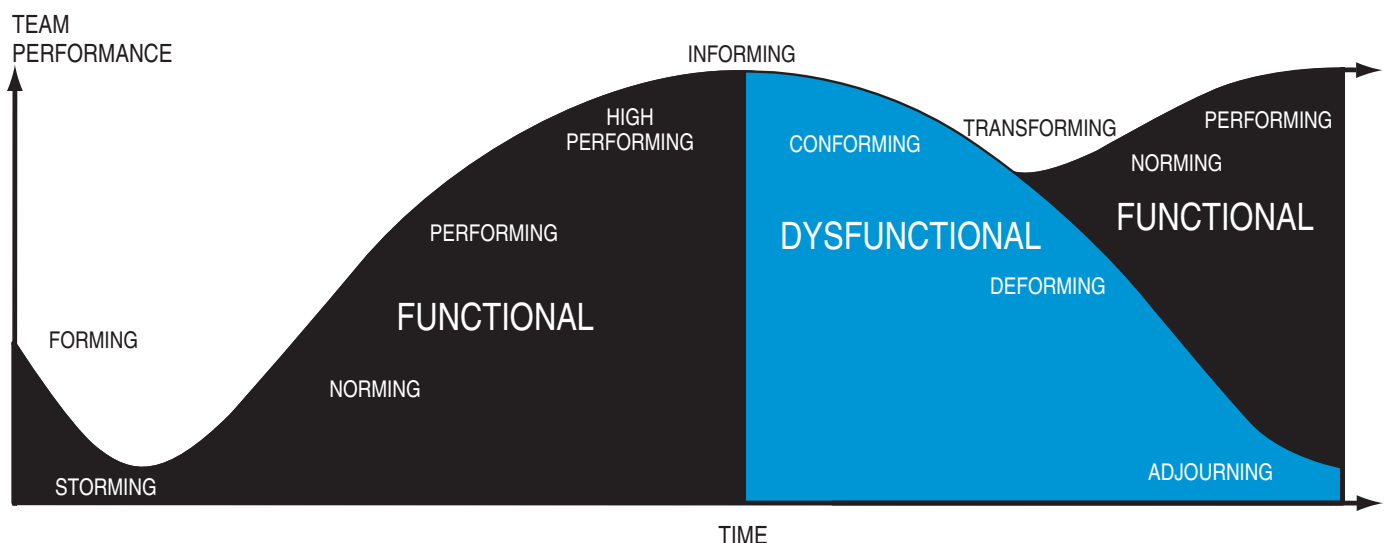
Project Team Performance Curve

Transformation of a Team in a Classroom Environment

An example of a team that transformed occurred during week three of a six-week program management course (PTM 352B). The team had performed adequately together for the first two weeks of the course, developing innovative solutions to complex acquisition challenges presented by the instructors. During week three, the team members began to conform; they started to think alike and, in particular, to agree consistently with the ideas and solutions of the senior member of the team, who dominated team conversations. The other members had lost their originality and innovation. They needed to be transformed into a more creative, innovative team, generating new or different ideas independent of their "leader."

Transforming meant the team needed to change its ways of thinking. The event that triggered that change was the illness and absence of the dominant member for two days of class. The team had to transform its normal process of decision making. It could not disband—the course had three more weeks to run and the team would stay together for the remaining time. So the team members challenged each other to fill the void of their absent leader. They had to think and create on their own. They began to discuss ideas and debate solutions and to realize the value of thinking and challenging each other. This modus operandi continued when the leader returned. The team had transformed itself.

team's life. It is relevant that this additional *orm* development function be considered a critical or positive phase of the developmental life of a functioning, high-performing project work team.

Conforming: The Danger of Groupthink

One dysfunctional characteristic a team may develop is becoming too conforming in how members think or behave. Conforming is a phase in which the thinking or decision making of the team is lacking original, creative, and/or innovative ideas. The members have begun to think alike, and any of the unique yet appropriate ideas and solutions that originated from the team are lost or decreased because the team members are beginning to develop the characteristics of groupthink (a term coined by psychologist Irving Janis in 1973). Groupthink, or conforming, is a phase that reduces the creativity and innovation of the team because the individual members have become uninspired to think independently or to consider ideas or solutions that run counter to those supported by the majority of the team. While there is

it has become dysfunctional. The objective of any team is to identify not only the positive functional phases as they progress so as to achieve high-performing stature, but also to identify the negative or dysfunctional phases early in the life cycle so they can be detected, studied, and corrected and reversed before they become too serious. Transforming is necessary if a team is to avoid disbanding or deforming

The transformation stage involves adding more activation energy by overcoming the conformity of the team members or their ideas. Transforming a team is a challenge and calls for unique skills. The team leader needs to bring in new members; energize the current members with new, innovative, or creative techniques; or even bring in an outside facilitator. Transformation of a team is necessary if the team has not accomplished its overall goals and/or objectives and still has a useful life.

Transformation enables a team to get back on track and again begin following the traditional Tuckman stages of norming and performing (and even storming if needed). It can even eventually become a high-performing team if properly resourced and motivated.

Transforming a team from dysfunctional to functional can occur at any time during the downward slope of the curve highlighted in the figure. The concern, however, is that the team not spend too much time in a deforming or disbanding phase to the point of no return or recovery.

a sense of cohesiveness that can be reassuring to the individual team members (especially if they are looking for uniformity and stability of thinking), the creative juices have stopped flowing and the team is stagnant. Conforming will have a negative impact if it continues, and it can contribute to team's deforming (disbanding) and eventually adjourning.

Deforming: The Team in Danger

Once the team has become entrenched in the conforming stage, it has become dysfunctional. It will start to disband or deform. Deforming manifests itself in members starting to miss team meetings, not contributing to the required activation energy needed to sustain the team's effective performance, and not focusing on vital team goals or objectives. A deforming team begins to lose its members, and those who stay are no longer effective. No new ideas are being created, and the team has outlived its useful life. The team needs to be transformed or realigned to become a normal functioning—or better yet, a high-performing—team.

Transforming: Turning the Team Around

Transforming is considered a transitional stage between a functional and dysfunctional team. It is critical that a team understand the need to transform once it recognizes

On Track to High Performance

Teams need to realize that they should be able to inform (a positive function), especially if they are high-performing. Informing is a natural transition phase for teams. They can also find themselves transitioning to the conforming phase (a negative function). They begin to experience groupthink, and their effectiveness is reduced.

The insights in transforming project work teams allows team members, team leaders, and management/leadership in general to understand the need to overcome conforming and—even more serious—negative thinking so that teams can more effectively evolve or transform themselves and better transition into Tuckman's norming stage, after which—ideally—they will evolve into high-performing teams, back on track to being functioning, positive, and productive influences on the organizations they support. No empirical data have been collected on these theories, and I encourage others to investigate further and try to empirically prove them.

Bridging the DoD-Industry Communications Gap

Improving Strategic Knowledge Sharing

Scott Littlefield

Successful businesses are constantly concerned with understanding their customers' needs. That applies equally to the defense industry. Industry's strategic investments in plant, people, equipment, and technology are driven by both actual and anticipated demand for their products. In the case of major Department of Defense contractors, billions of dollars and thousands of jobs can ride on a decision about where to expand or reduce capacity and what technologies and new programs to pursue. The quality of those decisions is directly related to having accurate knowledge and realistic expectations about what DoD will eventually want to buy and when DoD wants to buy it.

Industry members devote substantial resources to understanding and predicting DoD plans and requirements, but they frequently claim to be in the dark about DoD's actual capability needs. Large defense contractors are exceptionally good at making strategic predictions in the absence of detailed knowledge about DoD's plans, but they still make decisions based on poor assumptions and frequently delay making investment decisions due to insufficient information. Industry's hesitancy about making investments in new capabilities without clear demand signals from DoD is understandable, but it creates conflict with DoD's increasing expectations for high levels of technology maturity prior to initiation of a new acquisition program. If DoD expects industry to meet its needs, it must find better ways to provide reliable information that will allow industry to anticipate and respond to those needs.

There's No Crystal Ball

Accurate knowledge of DoD's plans is by no means easy for industry to obtain. DoD personnel often do not know all the department's plans themselves, since plans are constantly influenced by the pressures of shifting budgets and priorities and are subject to change with each new administration and each new Congress, not to mention the ever-changing and unannounced plans of U.S. adversaries. In the development of new technologies, DoD's plans are additionally influenced by the laws of physics, which may not cooperate with its schedule for developing a new capability. Finally, DoD is not a monolith, and

Accurate knowledge of DoD's plans is by no means easy for industry to obtain.

the cherished plans of a particular command or agency may not find favor with higher levels of review in the Pentagon.

Even when department personnel know with clarity where DoD is headed and what it wants, they often have good reasons for not revealing those plans. In the case

Littlefield works in the Joint Advanced Concepts group in the Office of the Deputy Under Secretary of Defense for Acquisition and Technology. He is on loan from the Office of Naval Research, where he managed Navy science and technology programs.

of sensitive or classified capabilities, technologies, and operational plans, DoD must deny knowledge to U.S. adversaries that would help the development of countermeasures, or that would reveal U.S. intelligence capabilities to potential adversaries. When working with industrial base partners, DoD, out of necessity, must occasionally provide highly sensitive information. The sharing of this data is governed by strict security procedures and is disclosed on a need-to-know basis. These security practices are well-founded but can also create barriers to potential industry participants who do not have appropriately cleared people or facilities.

Beyond security classification, DoD has other reasons for withholding information. Once the department begins a formal procurement, it must be cautious not to provide one competitor with procurement-sensitive information unless, or until, the department is ready to provide it to all potential competitors. Draft requests for proposals (RFPs), for example, must be tightly held until the department is ready to release them for all to see. The proprietary information of company A must be kept away from company B. DoD cannot engage in "technical leveling"—in other words, the department cannot coach company C to bring the company up to the standards of its competitors. The purpose of these rules is sound. Fairness, objectivity, and maintenance of a level playing field are core principles of acquisition policy and contracting law, but the realities of the contracting process can often be an impediment to effective communication.

Some reasons for not sharing information are less justifiable than those outlined above. Knowledge can be applied or withheld selectively to influence the outcome of a bureaucratic process in ways that favor a particular organization's position. Knowledge can be traded for other things of value, so why give it away freely? Even without ascribing ulterior motives to the participants, DoD personnel know that the procedural and cultural barriers to sharing information are considerable, and the risks associated with unapproved release of information often cause them to err on the side of caution.

Should DoD and Industry Share Strategic Information?

It is clear that industry benefits from knowing DoD's plans, but is there a commensurate advantage to DoD in revealing our plans to industry? The answer is yes. When contractors make decisions to invest in technologies or capabilities that do not meet DoD's needs, that expense represents an inefficiency that is either paid for by the taxpayers or by the stockholders of the corporation.

The defense industry invests billions in independent research and development (IR&D) and bid and proposal efforts every year, largely recovered from DoD through general and administrative charges on other contracts.

In many cases, defense industry members have a good understanding of upcoming opportunities and target their independent investments in ways that are highly beneficial to DoD. However, for a variety of reasons, these investments are not always synchronized with departmental requirements, which leads to the potential for wasted effort. To help rectify this inefficiency, DoD must ensure the following:

- Alignment of DoD needs with industry IR&D so both groups can achieve alignment of investments and transition of capabilities. Objective: To communicate needs, plans, and intended outputs.
- Establishment of a coordinated approach between military services, agencies, and the Office of the Secretary of Defense to identify technology focus areas for long-range investment. Objective: To ensure a balanced research and development portfolio that meets the full spectrum of department capability needs.
- Implementation of effective mechanisms for information interchange, such as technical interchange meetings with the program executive offices and military services. Objective: To enable, improve, and ensure effective engagement with the acquisition community.
- Promotion of department-wide use of the Defense Technical Information Center's IR&D database to improve collaboration on independent research and development initiatives and investments that will benefit both the department and its suppliers.

What about sharing knowledge and plans in the other direction? Will both DoD and industry mutually benefit from increasing DoD's awareness and understanding of the strategic plans of particular industrial contractors? Again, the answer is yes. It is generally acknowledged that DoD personnel do not understand their industry partners particularly well. According to Navy Secretary Donald Winter:

> There is a limited understanding within the Department of Defense of how business operates, how it responds to competition, and how it is affected by Wall Street's expectations. The reasons for this limited understanding are not difficult to discover.
>
> … The department's acquisition program managers do not have an in-depth understanding of how industry operates, and the department as a whole does not act strategically in dealing with industry. It is very difficult for government to hire from industry, particularly at the more senior levels. Furthermore, we do not provide the experiences or training to our uniformed acquisition professionals that would enable them to fully understand or anticipate industry. Neither gov-

ernment nor business can effectively operate with this gap in the government's ability to understand business.

The imperative for DoD to better share information with industry has been identified in the reports of numerous study teams and blue ribbon panels, most recently in the 2006 report of the Defense Acquisition Performance Assessment. One of the DAPA recommendations is to "share Department of Defense long-range plans with industry with the goal of motivating industry investments in future technology."

What Information Should Be Shared?

Within DoD, much of its planning for future capabilities is grounded in analysis that starts with the defense planning scenarios and related information, collectively known as the "analytic agenda." The analytic agenda connects the dots between national strategy and overall force structure and provides a way, through modeling, simulation, and war gaming, of assessing the capability and capacity of DoD's forces to prevail in a variety of plausible future scenarios.

At the level of specific systems and capabilities, our acquisition programs have their genesis in the Joint Capabilities Integration and Development System, a process managed by the Joint Staff. Through JCIDS, the military services and combatant commanders define required capabilities that are ultimately translated into technical specifications through the systems engineering process in the acquisition community.

Much of this preparatory work within the department ultimately finds its way to industry through RFPs. However, experience tells us that much of the contextual reasoning—the underlying meaning and the importance of particular specification values—is stripped away in the process of writing the RFP. DoD personnel are frequently surprised that competing industry teams can have very divergent interpretations of the meaning of requirements and specifications. Everyone needs to remember that DoD and industry are operating from a different contextual framework. Furthermore, industry has very limited time to respond to RFPs. If DoD had not laid the groundwork to develop industry teams with relevant expertise and technical domain understanding prior to the issuance of an RFP, then there is little reason to expect the department will receive technically sound and responsive proposals.

If DoD wants such proposals incorporating mature technologies at program initiation, it needs to find ways to convey its needs to industry long before the initiation of a program, and ideally before the department has a particular material solution in mind. DoD personnel need to communicate with industry both to build industry's understanding of DoD needs, and to build an understanding

of what is technically feasible and what can be produced affordably. DoD should consider developing more robust mechanisms to share much of this pre-acquisition contextual information with industry.

Potential Solutions

OK, we understand the problems associated with strategic collaboration and knowledge sharing. But in the context of DoD's relationship with the defense industry, how should the department go about it, and what should the department do better? There are a variety of practical mechanisms that could help. Some are proven, and some are still experimental. A variety of pilot programs are under way to test some of these concepts, involving the Office of the Secretary of Defense, the military services, Joint Staff, combatant commanders, other parts of DoD, and the defense industry. Joint analysis teams including key stakeholders will be formed as needed to coordinate and execute these pilot programs. Ideas under consideration are:

- Actively engage with industry in the development of independent research and development projects. Give industry incentives to share independent research and development results with government. Provide constructive feedback to industry on the value of particular independent research and development products in the context of DoD needs and plans.

- Collaborate with industry in development of topical technology roadmaps such as the Joint Integrated Air and Missile Defense roadmap. Identify technology grand challenges to motivate and focus government and industry's science and technology efforts.

- Publish long-range projections of future acquisition opportunities, extending well beyond the Future Years Defense Program. The Navy's 30-year shipbuilding plan is a model to emulate but could be enhanced with more granular information about projected milestones and technology-need dates. This could focus both industry investments and DoD's science and technology investments to deliver the needed capabilities at the right level of technical maturity at the right time.

- Increase use of pre-acquisition prototyping as a vehicle to explore the interplay between technology and requirements. Competitive prototyping has always been a good practice, and it is now mandated by AT&L policy for all acquisition programs through Milestone B. Experience shows that requirements documents and procurement specifications should be based on real data about what is possible to achieve. Prototyping can be done under independent research and development or funded research, but increasing funded opportunities gives industry and government

more chances to work together and develop a shared understanding of the rationale, context, and technical basis for performance parameters that will eventually become acquisition requirements and procurement specifications.

- Use cooperative research and development agreements as a method for industry/government collaboration on development and modeling of new capabilities, and as a method to better inform both parties about the potential value of new technologies and new operational concepts.

- With appropriate safeguards, provide industry with approved defense planning scenarios and other analytic agenda products that form the baseline for DoD's internal planning process. Starting from the same baseline will allow apples-to-apples comparisons of industry and government analyses and will increase the credibility of both. Collaborate with industry on modeling, simulation, and war gaming to test the value of new technologies and system concepts in realistic scenarios.

- Share JCIDS requirements documents and draft RFPs with industry at the earliest possible point in time.

The Way Forward

There is no silver bullet for collaborative strategic planning, and there are many potential pitfalls along the way. There will be times when industry and DoD objectives do not align and when win-win solutions are not possible. However, DoD can do better. AT&L can lead the way on some of the proposed solutions, but others will require active support and collaboration across the department, including participation from the Joint Staff, all parts of the Office of the Secretary of Defense, the military services, defense agencies, and combatant commanders. The defense industry must also play a key role. DoD personnel need feedback from industry suggesting how DoD can best work with them and where DoD's efforts would provide the most leverage. Personnel also need industry to advocate for change and help them test the feasibility of a variety of innovative business practices. The destination is not entirely clear, but we know the general direction in which to set our course. Let the journey begin!

The author welcomes comments and questions and can be contacted at scott.littlefield@osd.mil.

A Great System Right Out of the Chocks

How the JSF Delivers Mission Capabilities

Will Broadus ▪ Duane Mallicoat ▪ Capt. Tom Payne, USN
with Maj. Gen. Charles R. Davis, USAF

The F-35 Lightning II Program is currently in the test phase, during which, several engines and airframes will be assembled and tested. Shown here are some of the tests being performed on the B-Variant (STOVL).
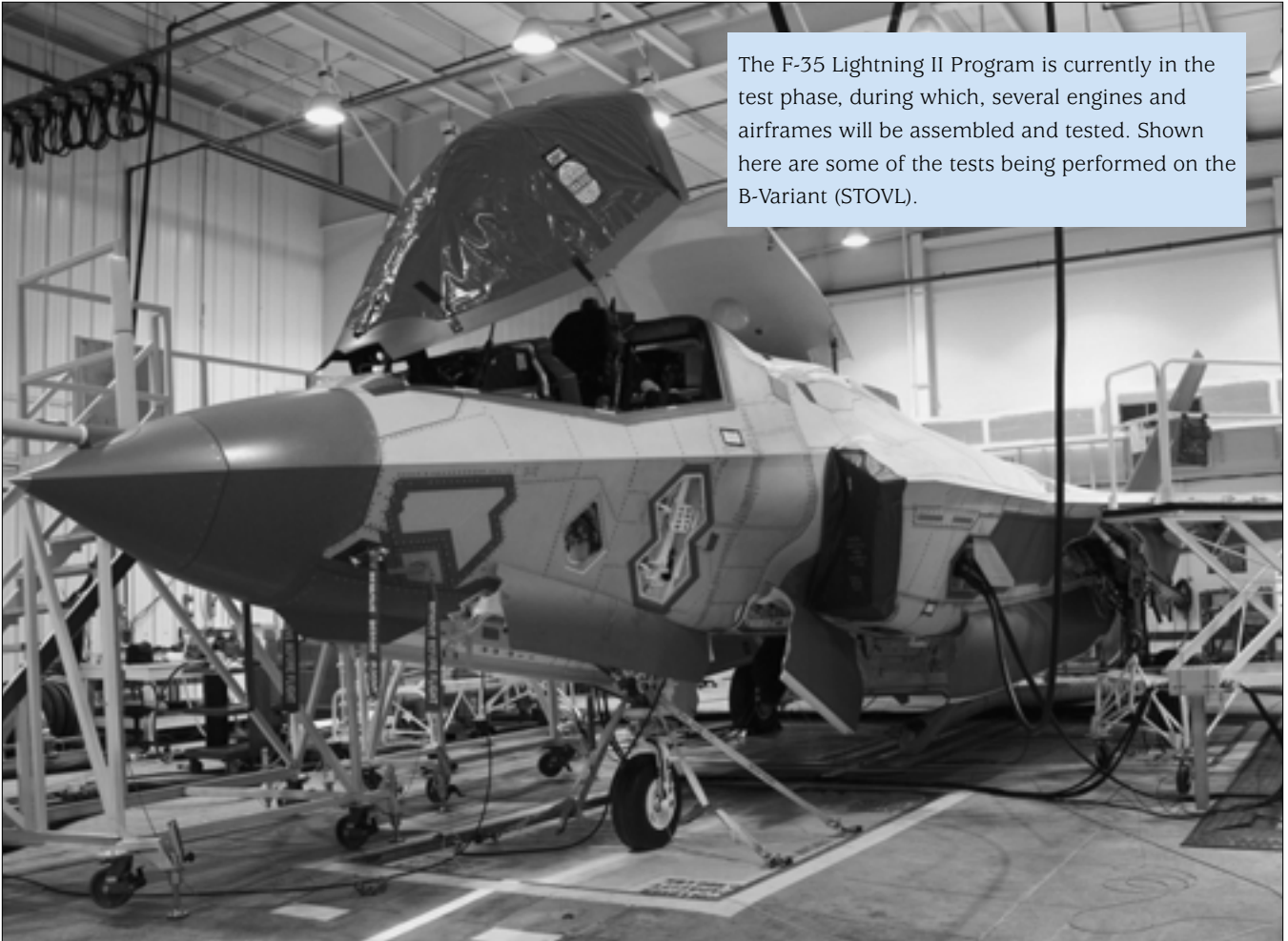
Achieving a usable, valued, and timely capability for the warfighter can be a complex task if you are looking to satisfy everyone's requirements in a single step. Modern-day acquisition programs have found that evolving capabilities to the warfighter can be successful if two factors can be successfully managed: achieving an alignment between the technical maturity of the platform (hardware, software, personnel, etc.) and what the stakeholders feel they must have in order to provide the best system capability for the particular point in the system's life cycle. The challenge is to fully assess the physical potential of the weapons system and the time-critical needs of the full range of users.

Historically, joint-service acquisition programs have had very mixed results in delivering the desired system to all stakeholder users. The ability to balance the performance

Broadus is a DAU professor of systems engineering and acquisition management. Mallicoat is a DAU professor of life cycle logistics and acquisition management. Payne is the director, Air System Requirements, F-35 Lightning II Program. Davis is the PEO, F-35 Lighting II.

necessary to execute diverse mission needs, and at the same time, meet established cost and schedule goals, seems almost unobtainable, but the balance is at the core of solving the classic systems engineering problem for your program. Programs such as the F-4 Phantom did obtain some measure of performance success as a fighter/attack system for the Air Force, Navy, and Marine Corps during the Vietnam era. There are other examples—such as the Abrams tank, infantry equipment, and personal protection programs—that have been successfully introduced in a joint fashion. However, the complexity of these systems, the scale of the budgets, and the number and diversity of stakeholders involved do

Block 0.1—Support First Flight/Flight Test Objectives
Basic functions to get the aircraft flying.

Block 0.5—Initial MS Architecture & Sensor Infrastructure
Mission systems infrastructure build supporting sensor and architecture development.

Block 1—Initial Warfighting Capability
Support for the AI mission (limited target set), allowing meaningful operational test.

Block 2—Multi-Mission Support
Added support for CAS with expanded target set (sensor detection and weapon prosecution).

Block 3—Enhanced Warfighting
Follow-on build to incorporate advanced decision aids, threshold weapons, and limited objective functionality.

Supports 7 Flight Performance Aircraft

Initial MS Tactical Sensors Integration "Avionics FF(A3)" Initial Weapons Testing

Bulk of MS Hardware on Board

Primarily Software Updates with Added Weapons

Spiral Development Process

JSF Strategy—Block Plan

not compare to the F-35 Joint Strike Fighter (JSF) Lightning II. In the program, we have three Services (Air Force, Navy, and Marine Corps); three aircraft variants based around a core of airframe, avionics, and propulsion technologies; full partners and eight international partners (including the United Kingdom); and dozens of other countries buying the system and/or building major subsystems of the program.

So how is the largest Department of Defense acquisition program in history progressing in managing its technical performance within the bounds of the cost and schedule of its acquisition baseline? Before answering that question, we need to understand some of the background challenges the program has recently had to address and resolve.

Joint Strike Fighter Development Program
The JSF development program, led by Lockheed-Martin, is tied to a performance-based specification traceable to the program's operational requirements document. The approach to meet these requirements is to follow the hierarchy of the ORD and JSF contract specification and then develop a mission decomposition effort that would yield tiered specifications as follows:
- Tier 1 spec (air system)
- Tier 2 (air vehicle and autonomic logistics systems)
- Tier 3 (e.g., mission systems)
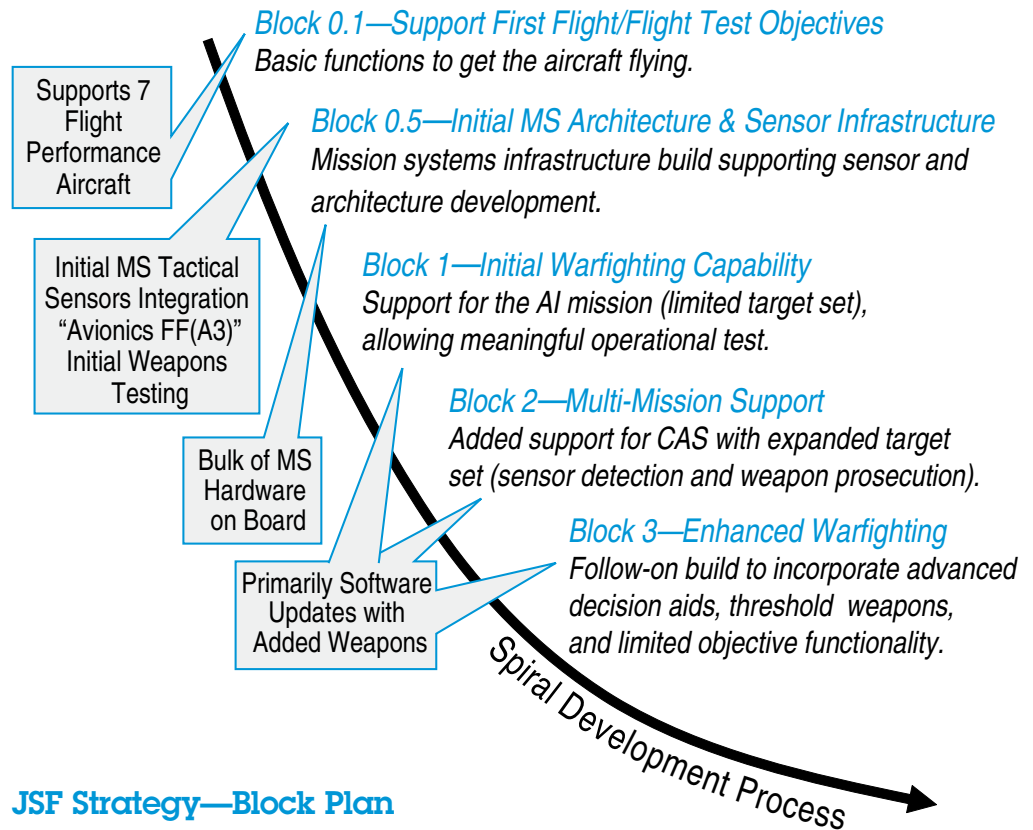
- Tier 4 (e.g., radar)
- Tier 5 & Tier 6 (radar component and subsystems).

In December 2005, a functional baseline system (FBS) audit/reconciliation effort was completed for the JSF contract specification (JCS). The audit focused on the 433 total air system Tier 1 requirements, as well as the Tier 1 (air system) and Tier 2 (air vehicle and autonomic logistics) specifications, to ensure there was clear linkage between them; to ensure traceability to requirements at each tier; and to ensure that they were verifiable. An allocated baseline plan (ABP) audit/reconciliation effort followed the functional baseline effort to complete the linkage, traceability, and verifiable characteristics all the way to the Tier 6 level.

As you might expect, there were some changes made as a result of the effort. In some cases, the efforts were terminated because the linkage was not established; in others, there was additional scope introduced; and in yet others, there was a need to perform additional analyses to determine exactly what was needed to satisfy the requirement. Unfortunately, the unanswered "to be determined" questions prevented the JSF program from completing both the FBS and ABP efforts.

Significant Pressures
Other pressures were also converging at the same time that made answering the "to be determined" require-

ments all the more important. The program had previously frozen requirements for Block 0.5, Block 1, and Block 2 but was having a difficult time converging upon a recommendation for the final system development and demonstration (SDD) block (Block 3) capabilities. An overview of the Block Plan is shown on the previous page. The program had to complete the translation of mission capabilities to aircraft baselines. The application of a rigorous system engineering discipline was required to resolve which specific missions the initial aircraft delivered to the fleet would be able to accomplish. The program needed to ensure the air system satisfied our most important missions and added only the essential capabilities necessary to our last SDD upgrade. To make matters more complex, the program needed to complete a JCS assessment prior to critical design review 3 (carrier-based variant), and resolve challenges in weapons delivery accuracy and the verification concerns associated with it.

To put this translation of missions to aircraft baselines in perspective, there are a total of 23 missions specified in the ORD. Based upon the priorities the Services provided to the program on mission areas and through combining some missions, there were a total of 12 reference missions decomposed for the final SDD Block 3 analyses. One example of the type of problem that required resolution was that of "tactically significant range." The JCS states: "The Air Vehicle shall employ stores against targets and threats at tactically significant ranges as described in the classified annex." So one of the questions answered was

"What is the air vehicle requirement for target location error?" A large number of these questions created a complex dilemma for the program to address.

Mission Decomposition Analysis Team Formed

The response of the program was to charter the mission decomposition analysis team with the objective of providing the required deliverables necessary to complete the FBS and ABP, and establish the mission capabilities required for SDD Block 3. How the MDAT was to approach achieving these results would require insight and guidance from the program leadership, however.

To effectively and efficiently approach their assignment, the MDAT was given a set of objectives from the program leadership to which to align:
- Intelligent use of trade-offs of cost, schedule, and capability
- Prioritization of the missions for Block 3 so as not to trade off real, needed capability for cost and schedule
- Recognition that the program would find other places to reduce cost because cutting capability was not an option
- Admonition not to forget the stakeholders.

To start with, the MDAT was conceived as a true, integrated Lockheed-Martin and JSF program office team effort. Much of the strength of the analysis and its results had to do with the composition of the team. To perform the mission decomposition analysis, Lockheed-Martin created a cross-integrated project team interdisciplinary group that included expertise from every IPT where required. The government portion of the team was led by a Joint Program Office Air System Requirements representative and included Service operational experts (weapons school graduates) from the Air Force, Navy, and Marine Corps to assist in the peer reviews. An additional factor for the Service experts was their stability; they stayed with the MDAT throughout the entire analysis process.

A total of 23 missions are specified in the ORD.

13 THETA

GREAT MOMENTS IN ACQUISITION HISTORY

Bronze Age (3500 BC)
Development of edged metal weapons

Battle of Agincourt (1415 AD)
Widespread use of English Longbow

E.I Du Pont de Nemours & Co. established (1802)
First domestic producer of gunpowder

TO DO LIST
Make Gunpowder
1. Ingredients
  Potassium
  Charcoal
  Sulfur
2. Purify
3. Crush

Discovery of Security Classifications

By Dan Ward, Chris Quaid, Gabe Mounce, and Jim Elmore

From those, 12 reference missions were constructed and analyzed in the MDAT. The 12 reference missions were stressing cases for the air system that emphasized the missions that the Services identified as top priorities for JSF.

Two Products

The mission decomposition team produced two products. The first was a requirements work package (RWP) in the Lockheed-Martin standardized format that was coordinated through all stakeholders. The second was the formal linkage of all requirements between tiers and verification paragraphs in the Dynamic Object Oriented Requirements System. Creation of these products had a direct impact on resolving the to-be-determined questions obstructing the completion of the FBS, ABP, and Block 3 mission capabilities.

The RWP product facilitates coordination and documents changes to multiple design products that are integrated to implement a requirement, a capability, or a function. RWPs:
- Provide support to manage the work required to get a function implemented across multiple products
- Establish acceptance of the responsibility to implement parts of a function
- Identify and document changes to products and designs that implement parts of a function. An RWP may deal with a functional mechanization or a document change or the "arms-around" documentation of the design, analysis, traceability, and verification associated with a requirement.

The life cycle of an RWP began with a selection of the RWP author. The author drafted the RWP, which was then vetted at an internal design peer review. For mission decompositions, this peer review included Lockheed-Martin and Joint Program Office representatives. The next step was the external design review to the Lockheed-Martin/JPO Tier 2 leaders and finally the executive leadership team. Action items were then resolved, and the RWP was approved and changes incorporated.

For each mission decomposition effort the team completed, a tactical timeline was established beginning with the aircraft "fence in," or readiness to penetrate threat envelopes for a mission. The analysis was concluded at the "fence out" portion of the flight, or when the aircraft had safely egressed from threat envelopes. Each mission phase or segment—"tactical ingress," "tactical engage," and "tactical egress"—was further broken down into phase tasks (e.g., detect, track, identify, engage, get battle damage indication). Each phase task was further broken down to analyze what was involved with its execution (e.g., select synthetic aperture radar map, start SAR mapping, end SAR mapping, evaluate SAR map).

Identifying the Gaps for a Better System

What the program learned through the mission decomposition effort was that it had an excellent system, but there were some gaps that needed to be fixed in order to perform the missions effectively. Addressing those shortcomings was what the program did during the Block 3 requirements freeze process, which allowed the team to focus upon those capabilities that truly mattered for mission accomplishment.

The mission decomposition effort analysis has enabled the program to answer the unknowns associated with the program and served as the foundation for what became the final Block 3 recommendations. The results were achieved by using a well-defined process that was conducted at the right time in the maturity of the technology of the aircraft systems using a holistic (Lockheed-Martin, government, warfighter, subject matter expert) IPT approach with stable subject matter experts from all the stakeholder groups. Mission performance of the F-35 actually proved to be better after going through the constrained exercise. Surprisingly, including every "desired capability" versus true mission requirement was actually a detriment to performance. To understand the depth of this success, one needed only to have attended the JSF leadership's briefing to the senior working group and operational assessment groups, where the program received an enthusiastic round of applause.

The authors wanted to understand how the mission decomposition efforts aligned to the overall progress of the JSF and elicited the thoughts of Air Force Maj. Gen. Charles R. Davis, PEO F-35 Lighting II. In Davis's opinion, "There are some lessons we learned at F-35 that are applicable to other programs. First, we had to be brutally honest with ourselves about what performance could be attained in our final SDD capability growth increment within cost and schedule constraints. Next, we saw enormous benefit from the Lockheed-Martin cross-IPT team and consistent warfighter participation. The final key ingredients were a systems engineering process that was uncompromising in its thoroughness, and leadership both in government and industry prepared to deal with good news and bad. The mission decomposition analysis team stands out among the F-35 program's more notable recent successes. We believe the attributes that made it a success have broad application in other acquisition programs. While mission decomposition was largely a paper exercise, decisions were validated recently in a full-up, joint, man-in-the-loop graduation virtual simulated event."

The Increasing Role of Robots in National Security

Ellen M. Purdy

When most people think of national security and the global war on terrorism, they often focus on the activities taking place in Afghanistan and Iraq. However, the war on terrorism is genuinely global and is being fought in many places beyond U.S. Central Command's area of responsibility in the Middle East and the Horn of Africa. From Asia to South America, servicemembers are pursuing multiple strategies to prevent the planning and execution of terrorist attacks. These strategies involve working with our partner nations around the world to conduct humanitarian missions, secure their borders, exchange intelligence, and help train their militaries. A major challenge for the Department of Defense is that there are various issues in many parts of the world and only so many personnel to go around.

So how can we continue to effectively prosecute numerous missions in so many different locations? We must give the servicemembers better tools—such as robots.

Already in Afghanistan and Iraq, servicemembers have embraced a new world in which man and robot work side by side. In 2001, there were only 120 tele-operated robots in theater, conducting cave reconnaissance. Today, ground robots have increased their presence in theater to nearly 6,000, and more are on the way. The robots still conduct reconnaissance, but they also assist with vehicle inspection, roadside inspection, and defeat of improvised explosive devices. Thousands of lives have been saved, thanks to robots that were able to neutralize IEDs before the devices could maim or kill U.S. troops or innocent civilians. Operators have become so adept at the robots' use and so attached to them that they name them and think of them as members of the team.

The Battlefield Extraction Assist Robot (BEAR) is designed to rescue wounded troops and reduce the risk to medics. Photograph courtesy of Vecna Technologies, Inc.

Potential New Military Uses for Robots

We are only at the beginning of what is likely to be a long and growing relationship between robots and DoD personnel. The technology of robotics is growing by leaps and bounds, thanks largely to funding and oversight by DoD's acquisition and technology organizations. In laboratories today, robots are being developed to carry equipment for dismounted soldiers traveling on foot in extreme terrain. Robots are being designed to rescue the wounded, stand sentry duty, detect and neutralize mines, clear ranges of

Purdy *is the director, Joint Ground Robotics Enterprise, within the Office of the Deputy Under Secretary of Defense for Acquisition and Technology. She is responsible for oversight and funding of ground robotics technology development.*

unexploded ordnance, search for dirty bombs, and more. What is so important is not that robots will replace personnel, but that they will allow the same number of personnel to do more, over larger areas of responsibility—exactly what is needed for increased national security.

In U.S. Southern Command's area of responsibility in Central and South America and the Caribbean, one of the most significant threats to national security is the drug trade and narco-terrorism. Drug revenues finance and equip terrorists and insurgents, so if the movement of drugs can be interdicted, then funding for insurgents dries up. A significant challenge for SOUTHCOM is the immense variety of mountainous and jungle terrain that is difficult to see and maneuver through, for which reasons, it is a haven for drug traffickers and insurgents. Since so much of the drug trade operates in jungle conditions, and transport is largely conducted by river, SOUTHCOM is exploring whether different robotic systems could operate together to conduct reconnaissance and interdiction missions.

Reduced Risk of Casualty

Unmanned aerial vehicles equipped with foliage-penetrating radar could potentially scout areas of interest. If suspicious activity is detected, the aerial vehicle would then send global positioning system coordinates to unmanned

The iRobot PackBot searches for explosives.
Photograph courtesy of iRobot Corp.

vehicles on the ground or on a river, enabling the vehicles to conduct reconnaissance closer to the area of interest. Vast areas could be covered by the unmanned systems, and personnel would be sent in only after confirmation that interdiction is warranted. This is an idea that capital-

The increasing role of robots gives soldiers, Marines, sailors, and airmen the ability to conduct their missions with much less risk.

izes on the advantages of robotics. Robots can operate for long periods without becoming fatigued and losing their sharp perception—they don't get tired or hungry—and they keep personnel from being detected and harmed by insurgents.

In addition to battling drug trafficking, SOUTHCOM also operates in areas beset by IEDs and anti-personnel mines. SOUTHCOM is working with partner nation Chile to eliminate anti-personnel mines using another ground robot that has the ability to clear unexploded ordnance day and night, three times faster than human beings and at one third less cost, according to preliminary testing. Beyond the obvious benefit of eliminating the hazards of mines to innocent civilians, there is also the additional payback of reclaiming formerly unusable land for agricultural or economic purposes. A third-order effect is increased security for Chile because as the newly usable land becomes productive, further resources are available to address security issues.

U.S. Pacific Command is also challenged by extreme terrain in its area of responsibility in the Asia-Pacific region. PACOM is exploring the possibility that robots can help carry gear into areas unreachable by ships, aircraft, or land vehicles. Although still in the early development stage, the Defense Advanced Research Project Agency's "BigDog" has caught the attention of PACOM. BigDog is a robotic pack mule that shows great promise in autonomously traversing difficult terrain that must be traveled on foot. This would be of great benefit to today's servicemembers, who are often asked to carry over 120 pounds of gear—an extremely fatiguing activity in high temperature and humidity conditions.

One of the most dangerous missions for Army medics is the rescue of a wounded soldier. Not only is the wounded soldier at risk, but medics could also be wounded or killed trying to reach and extract their injured comrade. The

U.S. Army Medical Research and Materiel Command sees robots as a better way to carry wounded soldiers to safety. The Battlefield Extraction Assist Robot is a promising system in early development. BEAR is required to carry up to 300 pounds and navigate inside buildings, traversing up and down stairs, while carrying a wounded soldier in a way that does not add to his or her injuries.

We Have the Technology. Now How Do We Integrate It?

While DoD is pursuing a wide variety of robotic applications, successfully integrating them into the armed forces requires more than just success in the laboratory. It also requires an understanding of how to actually employ the technology in real-world conditions, in which one may be called upon to perform quite different missions from usual. Determining how to integrate robots is not easy, partly because there are relatively few robots currently in use within the armed forces, and also because there are just not many people in DoD (or the world, for that matter) who have much experience working with them.

A current effort associated with using robotic vehicles in convoys provides an example of what must be considered and resolved before integrating and deploying robots in the field. The military uses convoys all over the world to move supplies and maneuver units from one point to another. Current robotic technology is not mature enough for supply trucks to follow one another in a convoy over a protracted route with no human drivers at all. However, the technology *has* developed to the point where certain vehicle-driving tasks can be performed by the trucks themselves. So now technical experts, military planners, and end-users must work together to consider when, how, and to what extent convoy missions might be conducted using robotic technology.

The answers are not immediately obvious, and many more questions have arisen as various integration scenarios are analyzed. For example:

- If an autonomous truck can drive itself by following a truck in front with a human driver, how many such vehicles should make up a typical convoy—three, a dozen, 40, or some number in between?
- Can the autonomous "follower" vehicle react to unexpected obstacles in the road, such as a deer suddenly running between it and the lead truck?
- How closely should an autonomous vehicle follow the lead vehicle?
- How far apart can the vehicles be while still maintaining the integrity of the convoy?
- How many people are still needed to adequately move the convoy (drive the lead vehicles, provide security, load and unload the trucks, etc.)?
- What ratio and position of trucks with drivers, relative to those without drivers, will provide the most effective convoy configuration? Should every other truck be autonomous? Perhaps only every fourth truck would require a driver?

Just because a technology becomes available doesn't mean it is immediately ready for a role on the battlefield. Tactics and procedures need to be developed to capitalize on new technology. The existing methods for conducting a mission with manned equipment cannot simply be continued with a robot replacing a person. New operational concepts need to be created based on an understanding of both the capabilities and limitations of the robot.

> What is so important is not that robots will replace personnel, but that they will allow the same number of personnel to do more, over larger areas of responsibility—exactly what is needed for increased national security.

A soldier in the 705th Explosive Ordnance Disposal Company prepares his TALON robot in Mosul, Iraq.   Photo courtesy of Foster-Miller, Inc.

Learning to Work Together

This challenge is compounded when considering robots in different domains working together to conduct a single mission. Much of how the armed forces conduct their missions is predicated on two considerations. First, the domain of air, land, or sea determines how tasks are accomplished, since, for example, conducting reconnaissance from the air is very different from performing that same task on the ground in a jungle environment. The second consideration is how to allocate tasks between people and unmanned equipment when working across the domains. The way DoD currently conducts joint operations will change dramatically when robots are introduced to the inventory. Many tasks for which the Army now relies on Air Force pilots will be conducted by unmanned aerial vehicles, so interactions between the Army and Air Force will likely change dramatically.

Next Steps

The next logical step in the employment of robotic technology is the concept of robots in the air, on the ground, under water, and on the ocean surface, all collaborating to conduct a mission. It's easy to envision these autonomous systems working together, but the actual techniques needed to manage interactions between the systems are still very much in their infancy. If unmanned ground, surface, and aerial vehicles are working together to conduct a river-based reconnaissance mission, how do the ground and the surface vehicles react if the aerial vehicle loses communications because vegetation is thicker than originally believed? Do the remaining vehicles continue the mission, or do they stop in place to await restoration of communications? When people are taken out of the mission equation, the military techniques and procedures that robots follow will not always be the same as personnel have previously used to conduct the same type of mission. New operating procedures and tactics will have to be developed.

Fortunately, experimentation with new technology is nothing new for DoD. A variety of opportunities and tools are available to determine how best to answer the types of questions posed above. In addition to creating robots, DoD is creating virtual environments in which actual software algorithms that control the robots and provide the ability to conduct tactical behaviors, such as reconnaissance can be tested before spending the funds to build a complete robot. These virtual environments help refine the software algorithms and provide a greater number of personnel experience with robotic behavior, so operational issues can be more fully explored.

As powerful as these virtual environments are for exploring concepts and testing the effectiveness of software-controlled behaviors, sometimes there is no substitute for live experimentation. Potential user experimentation with robots is uncovering operational insights that can

The technology of robotics is growing by leaps and bounds, thanks largely to funding and oversight by DoD's acquisition and technology organizations.

demonstrate a need for technology that was not originally considered. Users invariably take into account operational aspects that don't occur to the scientists and engineers developing the robots, so an opportunity to experiment with the technology while it is still maturing leads to fielding more effective and suitable robots.

When looking at the robotic convoy concept, for example, users indicated a strong preference for the robots to be able to operate at night. When human drivers conduct night convoy operations, they have to be able to see. Robots have a variety of means to "see" in the dark that can potentially provide the convoy with greater capability for nighttime operations than would normally be possible with human drivers. The potential for traveling with shorter distances between vehicles to enable greater security, the ability to travel without giving off much light to avoid revealing the presence of the convoy in the dark, and the ability to travel at higher speeds yet with greater safety are all benefits the robotic convoy technology can potentially deliver. Live experimentation will help users decide which benefits are most helpful in enabling them to conduct their convoy missions with greater effectiveness and lower risk than they do today. DoD can then focus and prioritize robotic convoy development efforts accordingly.

The list of potential jobs for robots in national security varies widely, but the increasing role of robots gives soldiers, Marines, sailors, and airmen the ability to conduct their missions with much less risk. Even though there are thousands of robots already in the inventory, DoD has barely scratched the surface of what is possible. The expectation over the next 10 years is that DoD will integrate robotic technology into many types of missions, and robots will take their place alongside military personnel in keeping the United States safe and secure.

A Different Kind of Web-Based Knowledge Management

"Little A" Principles Apply to "Big A" Portals

Dr. Joseph P. Avery

Knowledge management is composed of a range of practices deployed by organizations to identify, create, represent, classify, and disseminate knowledge for reuse, awareness, and learning to the benefit of information users. This article demonstrates the practical integration of the principles of KM and systems process by the business enterprise of the Defense Threat Reduction Agency. In this example, a technology-centric approach to knowledge sharing and utilization was adopted to design a simple Web-based system that provided highly needed "how-to" and reference information to DTRA acquisition professionals. The Acquisition ToolBook's successful development and deployment effectively integrated KM with process management, and it permitted a systemic review of the acquisition process for ineffective procedures and policies.

Addressing an Information-Deficit Environment

The idea for the DTRA Acquisition Web ToolBook originated as a result of an information environment characterized by acquisition functional and process information that was scattered throughout a myriad of DTRA Web sites as well as shared and private drives, or it was simply not available in any capacity. This unfavorable environment was exacerbated because DTRA was the merged product of five different defense agencies and programs. It was a hotbed of hide-and-seek information hoarding that was not conducive to efficient acquisition operations. Information search activities for acquisition data were becoming so difficult and time-consuming that they periodically exceeded the anticipated time for actual task completion. DTRA had to develop an information management system that would centralize and consolidate all acquisition reference information, processes, and procedures into a single page on the agency's main Web portal. This tool would be a single and easily accessible, centralized, and functionally based repository of approved information, documentation, procedures, references, and processes available to all acquisition professionals.

Acquisition ToolBook is not a large, Department of Defense-wide acquisition system such as the Acquisition

> ToolBook represents a merger of KM, process management, and operational simplicity— the foundational triad of successful user information systems.

Avery is the DTRA program manager for the Acquisition ToolBook. He has 26 years of military and civilian service, including 23 years in acquisition.

Deskbook or the Acquisition Knowledge Sharing System (AKSS). Although those "Big A" portals serve a purpose of acting as comprehensive repositories of acquisition information and collaboration, in the trenches, project managers are looking for smaller, simpler, and faster portals of information to obtain the how-to and reference information needed to perform the acquisition task at hand without extensive data mining and infinite search activities. The ToolBook information environment was designed to make information easily found and accessed through a single location on the agency-level enterprise information system. More importantly, this micro-level site provides agency-specific acquisition information and processes. The ToolBook would serve as the agency's graphic interface, portraying the entire agency acquisition process represented through 24 activity boxes of related acquisition information and tasks.

The Blueprint to an Effective Information Environment

A DTRA-led team created and posted on the internal agency Web site a detailed process map to guide the agency's acquisition professions. Smaller, simpler, and faster were the hallmarks of the successful acquisition portal. On May 1, 2007, exactly one year from the project start, the Acquisition Tool-Book was successfully installed onto the DTRA Web server.

ToolBook is based upon an integration of Microsoft® SharePoint™, Adobe® Flash®, and Microsoft® net application software tied to a relational database management system (a database in which data and the relationships among data are stored in the form of tables). This combination facilitates simplicity, speed of access and use, and provides system flexibility and a broad array of technical features beneficial to system users. By preventing infinite search activities, ToolBook improves the speed and effectiveness of the user's acquisition task completion. The critical acquisition information provided by ToolBook was tailored to meet the information needs of program and project managers. However, it also benefits contracting officer representatives, contract specialists, and program analysts by assisting them in the performance of their specific acquisition and procurement functions.

ToolBook represents a merger of KM, process management, and operational simplicity—the foundational triad of successful user information systems. Personnel cannot access the information needed if it is too difficult to locate. Whether designing a local information system or a DoD-wide information portal, the fundamental principles of successful Web-based KM systems are the same.

Figure 1: **ToolBook Home Page**
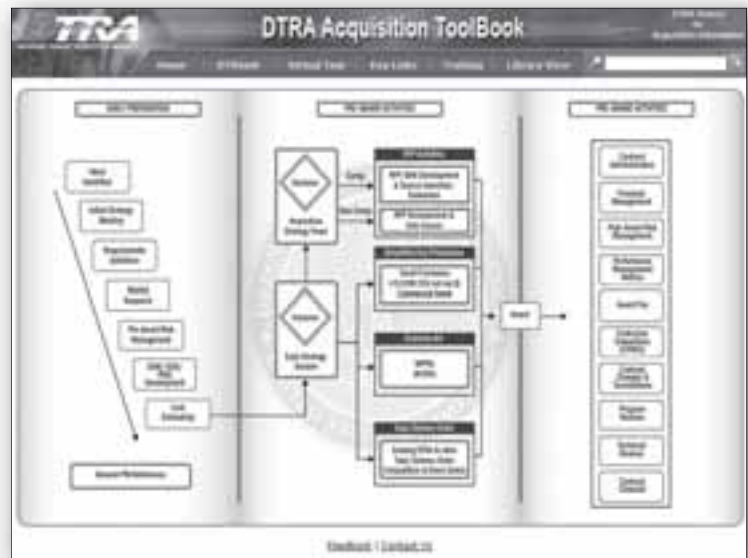
Figure 2: **Second-Level Menu**

Eight Key Principles of Successful KM-Based Systems

- Minimize bells and whistles and maximize quick access and simplicity of operation.
- As the level of site complexity and menus rise, the level of user utility diminishes.
- Needed information should be no more than three-to-five mouse clicks to user acquisition, with three being the technical objective.
- Keep the site menu structure shallow.
- A graphics-based system is normally more user friendly than a text-based system, and a duplex system (a system that uses both functional text and graphic-based methods to retrieve textual information) can be more effective than a graphics-based system alone.

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- Focus system design and technical architecture on speed, easy access, and simplicity.
- Accurate and intuitive titling of data descriptors, menus, or entry points is extremely important.
- Organize information by process, activities, functions, and organization as appropriate for your needs.

ToolBook Structure

In this particular architectural design, the Acquisition ToolBook was structured to follow the DTRA acquisition process from program start to program closeout activities (Figure 1). The site's homepage is divided into three broad phases: Early Preparation, Pre-Award Activities, and Program Execution. Early Preparation contains the initial activities required for up-front acquisition project planning and organization. The Pre-Award Activities section includes all follow-on acquisition and contractual efforts to get the acquisition awarded and on contract. The Program Execution section contains information on the post-award phase, which includes program management and oversight activities required to administer and execute a successful program. The ToolBook Homepage graphic portrayal of the DTRA acquisition process is organized into 24 activity boxes that form a logical progression of the work activities required to get an acquisition effort on contract and executed. There is also one box entitled General PM References that contains broad-based or over-arching documents that do not fit into any one activity box category. Although ToolBook is primarily a graphics-based acquisition portal, it is actually composed of a duplex architecture that can use a graphically-based methodology to search and retrieve data or a text-based library view that can quickly locate and more effectively display related task data. The choice of method used is the user's discretion.

There is only one main sub-level menu for each activity box in the main ToolBook that houses the majority of documents, making users no more than three mouse clicks away from most information they need (Figure 2). There is also one third-level menu for unique enterprise-level documents. Within each activity box in the second-level menu are separate icons for the following six information areas: Tools and Examples, Policy Documents, Issuances (which contains guides, manuals, handbooks, etc.), Training, Ask an Expert, and Enterprise-Unique Documents.

Acquisition ToolBook uses a progressive information approach to information classification and management. For example, if a project manager is unfamiliar with award fee contracts and requires information on how to write an award fee plan, ToolBook offers a progressive level of knowledge to help the user get the job done. First, the user would select the Award Fee activity box. When the second-level menu appears, the five main icons provide a graduated pyramid level of information. The Training icon would provide the user with basic information on the concepts, responsibilities, and requirements of award fee contracts and issues. If more detailed information is required, the Issuances icon, which includes an array of in-depth guides, manuals, handbooks, standard operating procedures, and standard operating instructions, will provide a multitude of detailed information on the subject. Once training and/or detailed information is accessed on the subject, the user can select the Tools and Examples icon, which provides the actual examples, checklists, and templates needed to help complete the task at hand. The Policy icon provides any relevant policy memorandums on the subject. As an avenue of last resort, the ToolBook also features a sophisticated Ask an Expert capability that permits users to send acquisition-related questions to agency experts on the subject. For enterprise-unique processes, procedures, and instructions, users can also access their own enterprise's menu of key documents managed by each enterprise.

The Acquisition ToolBook site is designed for a low user investment in time and training, and also for a low administrative burden. Formal training classes are not required—a narrated virtual tour movie provides users with an overview of the entire ToolBook site. A directory of Internet addresses provides direct links to nearly all key agency and DoD acquisition references as well as to Web pages that explain how to perform subsidiary tasks (such as the completion of travel forms required for the Defense Travel System). There are also links for Contractor Performance Assessment Reporting System reporting, DTS, AKSS, DoD 5000 series acquisition directives, Federal Acquisition Regulation, DoD FAR Supplement, federal grants, the Office of the Secretary of Defense Small Business Innovation Research site, Wide Area Work Flow, and a myriad of other valuable Web sites. ToolBook also supports a document search function and a library view capability that can simultaneously display documents by each category for a particular activity box for all documents.

A Successful Knowledge Management Portal

The "little a" principles of acquisition KM appear to apply to "Big A" acquisition portals. Both have a specific set of users who demand similar attributes of system operability: operational simplicity, swift data location and extraction, and a logical taxonomy and data organization scheme to find and manipulate acquisition data. KM, process management, and operational simplicity—the foundational triad of successful user information systems—were successfully merged with this system. The DTRA Acquisition ToolBook has effectively managed to integrate the positive elements of portal and process development to the benefit of its acquisition workforce.

Postmodern Program Management

Maj. Dan Ward, USAF ▪ Maj. Chris Quaid, USAF ▪ Capt. Gabe Mounce, USAF

The Modernist worldview took root during the so-called Scientific Age of the late 19th century, which was marked by a belief that the newly industrial and mechanized world had reached a permanent apex. Even the name "Modernism" conveys a sense of having arrived at a goal and having achieved a sort of optimal understanding of the way the universe works, particularly as compared with the "primitives" who came before. Modernist thought was a key contributor to 20th century industrialization worldwide and continues to influence organizational behavior up to the present day, though not always with positive results.

Among other interesting characteristics, Moderns believe in the discoverability of universal principles, the virtue of standardization to an optimized standard, and the long-term value and viability of absolute certainties. While the Modernist influence on architecture, politics, art, and religion might be interesting topics for discussion in other places, this article focuses instead on Modern expressions in management and organizational dynamics.

Modernist Management: The Machine with No Soul

Let's start with the father of scientific management, Fredrick Winslow Taylor—occasionally referred to as Darth Taylor by certain irreverent authors. His scientific approach to management is a clear expression of a Modern worldview. Along with Henry Ford, Taylor encouraged companies to focus on discovering the One Best Way to accomplish tasks. This led to vastly improved efficiencies for American manufacturing, among other benefits. It also led to the dehumanization of work and to institutional arteriosclerosis, among other, less desirable side effects. Whether or not it was a net gain is open to debate.

Early critics described Modernism as soulless and mechanistic, a criticism Modernism has certainly lived up to in many ways. One of the earliest assessments of this type can be found in the pages of *Scientific American* and actually predates Taylor's work by more than half a century. In 1856, 55 years before Taylor wrote his seminal *Principles of Scientific Management*, *Scientific American* published a chilling prophecy of the negative impact brought about by the division of labor, scientific or otherwise:

> The division of labor, though it may bring to perfection the production of a country up to a certain point, is most deleterious in its effects upon the producers. To make pins to the best advantage, it may answer for a time to divide the operation into 20 parts. Let each man concentrate the whole of his attention on the one simple work, for instance, of learning to make

Ward, currently a student at the Air Force Institute of Technology studying systems engineering, holds degrees in electrical engineering and engineering management. He is Level III certified in SPRDE and Level I in PM, T&E, and IT. Quaid is currently a mission director in the Northern Virginia area. He holds an MBA and a Level II COTR certification. Mounce holds an advanced degree in electrical engineering from the Air Force Institute of Technology. He is Level I certified in T&E and PM.

Image rendered by Jim Elmore

pin heads, and on this ever let his time be consumed. It is astonishing the perfection and rapidity which he will acquire in performing the operation. But what is the result on the man? His powers of mind will dwindle, and his head becomes, for all practical purposes, after a number of generations, no larger than that of one of the pins he makes. He ceases to be a man, and becomes a mere tool.

Naturally, these human tools do not need to use intuition or initiative. They simply need to execute their assigned tasks according to the scientifically established One Best Way. Thus, they become pinheads. Sadly, this view of people as tools was precisely and scientifically accepted by Henry Ford as he began designing his assembly line. After observing that workers tend to perform repetitive tasks at the slowest rate that goes unpunished, he concluded the problem lay not with leadership or motivation, but with the inefficient design of the task. Let's be generous and describe his conclusion as "interesting."

Historical attempts to turn program management into a precise scientific discipline are based on the Modern worldview, while those who view program management as more of a craft tend to take a Postmodern position.

ONE BEST WAY
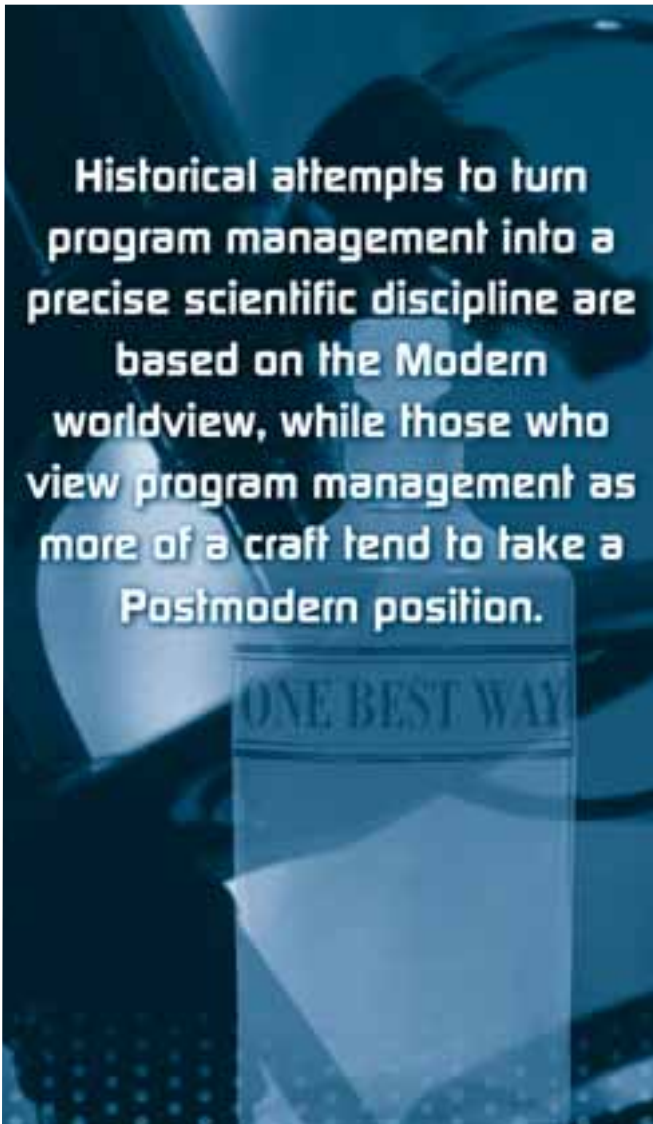
Building on this dubious—ahem, interesting—conclusion, in true Modern style, Ford set about designing optimized processes to maximize efficiency. The result was remarkably efficient assembly lines, which ultimately led Charlie Chaplin, in 1936, to make the aptly titled film *Modern Times*. Watch the movie to see what we mean.

Postmodernism: The Humanist Reaction

Along comes Postmodernism (sometimes called Pomo), a humanist reaction to Modernism's cold calculations. Definitions of Postmodernism vary widely, but it is often described as fundamentally being driven by "incredulity toward metanarratives," whatever that means. For us normal folks, Pomo can be understood as a worldview that is skeptical of Modernism's certainties. Postmodernism doesn't necessarily deny Modern certainties—it just questions, examines, and deconstructs them, investigating the underlying assumptions, particularly when those assumptions are flawed, hidden, ignored, or otherwise not made explicit.

For the sake of argument (and who doesn't like a good argument?), let's draw some of the battle lines in this philosophical—perhaps even religious—conflict, acknowledging, of course, that the drawing of lines is a Modernist construct and that Postmodernists tend to see boundaries as more fluid and flexible. Nevertheless, perhaps the following comparisons will help illustrate some of the differences between these two worldviews.

On Success
Mod: Thorough planning is critical to success, so we don't need to rely on improvisation or individual judgment. It is OK to be precisely incorrect, so long as we execute the method properly. The best success is repeatable success.
Pomo: Flexibility and individual judgment are critical to success, so we don't need to rely on perfect planning and foreknowledge. It is OK to be imprecisely correct, even if it means a deviation from the method. The best success is unique success.

On Waivers
Mod: The default answer to a waiver request is "No." The burden of proof is on the person requesting the waiver. This assumes the standard operating procedure is optimal and the requestor is trying to get away with something.
Pomo: The default answer to a waiver request is "Yes." The burden of proof is on the person rejecting the waiver. This assumes the standard operating procedure is incomplete and the requestor is a professional who knows what he or she is doing.

On Control
Mod: Leaders establish specific rules and boundaries to dictate and constrain behavior. Followers are expected to accept the leader's judgment.

Pomo: Leaders establish general principles and vectors to guide and influence behavior. Followers are expected to use their own judgment.

On Facts and Models
Mod: Facts are universal proof. We know things, and we are right. We use facts to build models that are correct, precise, and accurate to four decimal places. Mathematical models are preferred, particularly if they are rigorous.
Pomo: Facts are situational evidence. We think we know things, and we may be right. All models we build are wrong, but some are useful. Narrative models are preferred, particularly if they are funny.

On Boundaries
Mod: Boundaries are firm, impermeable, and clearly defined. Moderns see a world of boxes, lines, and either/or situations.
Pomo: Boundaries are flexible, changeable, fuzzy, and hard to nail down. Postmoderns see a world of connections, clouds, and both/and situations.

On Each Other
Mod: Postmodernism is chaotic and risky, unreliable, and out of control. Its relativistic perspective leads it to inappropriately deny absolute truths that clearly exist. It is absurd.
Pomo: Modernism is arrogant, risk-averse, and ill-suited to a dynamic environment. Its tunnel vision inappropriately disregards inconvenient data and asserts the discovery of absolute truths where they do not exist. It is absurd.

Modernist PM, Pomo PM
We hope the relevance to program management is clear from these brief examples. Program management is fundamentally an exercise in judgment and an expression of philosophical values and worldviews, such as whether or not boundaries are firm, models are correct, or exceptions are permissible. These differences matter because, for example, a Modern PM will implement a very different kind of waiver request process from that of a Postmodern PM—and end up with very different outcomes.

Historical attempts to turn program management into a precise, scientific discipline are based on the Modern worldview, while those who take a Postmodern position tend to view program management as more of a craft. Let us be quite clear: We emphatically advocate a Postmodern approach to program management. In fact, we recently realized that Postmodernism is the underlying philosophical foundation of nearly all our previous articles.

Why the Pomo Worldview Works
Let's consider some advantages of the Postmodern worldview. One advantage a Pomo PM enjoys over a Modern one is simply that Postmodernism comes after Modernism. It therefore has the benefit of both hindsight and,

to a certain degree, the last word (like a defense attorney delivering a closing argument after the prosecution has finished making his or her case). Because it comes after, Postmodernism has the opportunity to address and correct flaws in Modernism—an opportunity not shared by Modernism.

However, the advantage goes further than simply holding the chronological high ground. Postmodernism is also inherently more flexible and responsive to a dynamic environment than Modernism because it rejects the Modernist belief in the One Best Way. Thus, while Pomo PMs *can* repeat past behaviors when faced with a familiar situation, they are not *required* to do so. Similarly, Pomo PMs can and do make plans, just like their Modern counterparts, but they can more easily deviate from the plans when the situation requires it. This provides, as least theoretically, a Pomo PM with all the advantages of a Modern PM, plus more.

Further, because Pomo PMs do not insist on standardization to the degree Modern PMs do, they spend much less time producing the voluminous, detailed documentation that Modern PMs require to ensure precise repeatability, and much more time on actually doing things (perhaps recognizing that documentation and user guides are historically ignored and unread). By acknowledging the possibility of variation and focusing more on results than on process, a Pomo PM can be more efficient—a value that Modern PMs should appreciate.

The previous comment about efficiency notwithstanding, we must be careful not to judge the effectiveness of a Pomo PM by the metrics and values of Modernism. Postmodernism is not simply more efficient or accurate at hitting the same targets Modernism aimed at. Properly expressed, Postmodernism deconstructs everything, *including* the targets. Pomo PMs therefore have different (dare we say better) goals and objectives than their Modern counterparts. Rather than simply increasing production rates at the expense of the humans doing the production, Postmodernism asks if there is a way to produce a sufficient quantity of needed objects at an acceptable cost without turning us all into pinheads.

Modern to Postmodern in DoD
Thankfully, there are signs that DoD is moving away from its Modern roots and embracing some Pomo principles, at least in some areas. Until 1994, DoD-STD-2167 mandated that PMs use the waterfall development process—a Modern, rational, five-step approach to program management that, in actual practice, failed to produce positive results 87 percent of the time. The new DoDI 5000.2 (released May 12, 2002) establishes a simplified and flexible management framework for translating mission needs and technology opportunities. It authorized Milestone Decision Authorities to tailor procedures to achieve cost, schedule,

Thankfully, there are signs DoD is moving away from its Modern roots and embracing some Pomo principles, at least in some areas.

The Capability Maturity Model Integration, a process improvement approach whose latest release (version 1.2) came out in 2006, is also quite Modern and focuses heavily on standardizing outputs and removing process variation. Full analyses of process re-engineering or CMMI are beyond the scope of this article; we mention them now simply to point out that Darth Taylor's intellectual grandchildren are alive and well.

This is not to say process re-engineering and the CMMI aren't useful, just that they are built on certain underlying (often unspoken) Modern assumptions that might be worth closer examination—and they are more useful in certain situations than others. Postmodern alternatives to these approaches are not hard to find: Tom Peters' Professional Service Firm model; Dee Hock's chaordic leadership concept, which combines characteristics of chaos and order; or Dr. David Boje's 1995 book *Postmodern Management and Organization Theory*.

Modernism is indeed an effective approach for a rational, static world where surprises are rare, measurements are precise, humans are tools, and our understanding of the system dynamics is very nearly complete. If the PM's world was linear and predictable, then Modernism would work just fine. But the reality is, reality is messier than that. Things change unexpectedly, surprises surprise us, people are people, and the system dynamics are both unstable and nonlinear. In this sort of environment, Modernism breaks down.

Is an Apple Round?

As G. K. Chesterton pointed out in his 1908 book *Orthodoxy*, "Life is not an illogicality; yet it is a trap for logicians. It looks just a little more mathematical and regular than it is; its exactitude is obvious, but its inexactitude is hidden. … It is this silent swerving from accuracy by an inch that is the uncanny element in everything. An apple or an orange is round enough to get itself called round, and yet is not round after all. … Everywhere in things there is this element of the quiet and incalculable."

Chesterton's uncanny element, this quiet incalculable inexactitude, is generally ignored by Moderns and acknowledged by Postmoderns. Postmodernism does not deny the apple's roundness, just the exactitude of that roundness, and it questions the wisdom of acting on the assumption that apples are round.

In the final analysis, Moderns may be surprised to discover that apples are not really circles, no matter what the model might say.

and performance goals. It explicitly acknowledges that one size does not fit all, and if One Best Way exists, we haven't found it.

In true Pomo fashion, DoDI 5000.2 states: "There is no one way to structure an acquisition program to accomplish the objective of the Defense Acquisition System. MDAs and PMs shall tailor…" Similarly, the National Security Space acquisition guidance (NSS 03-01) states: "The 'model' acquisition process outlined in this document should be tailored to properly fit the circumstances of each NSS program." DoD policy wasn't always like this, and the rejection of the One Best Way approach represents a significant departure from DoD's Modernist roots.

And yet Modernism persists within the program management discipline, both inside DoD and in industry. Michael Hammer's popular process enterprise framework is clearly a Modern approach, and his legions of "Hammerheads" are not difficult to find. Hammer's approach explicitly seeks to drive out chaos, establish predictability, and develop careful plans to dictate "exactly what work is to be done by whom, when, and where." This is obviously the product of a Modern worldview.

The authors welcome comments and questions. They may be contacted at daniel.ward@afit.edu, chris.quaid@gmail.com, and gabemounce@earthlink.net.

Diversity and Freaks

Capt. Gabe Mounce, USAF

Illustration by Jim Elmore

I n the May-June 2006 issue of *Defense AT&L*, I wrote about the funkified traits of small teams. In particular, I argued that small teams could innovate faster because they were free of the constraint that holds so many organizations back—bureaucracy! However, being small isn't the only factor that rockets an organization forward. To be smoking-fast, it requires something else: diverse and independent thinkers.

The trouble with most groups is the propensity to herd. True, like-mindedness often enables a group to move faster, but not always in the right direction. Herding is mainly the result of the strong identity the members of a group share with one another and the group as a whole, giving each undue influence on another and making dissent unimaginable.

Additionally, small groups (and groups in general) suffer from the illusion that collective decisions are all about coming to a consensus, which often, as James Surowiecki puts it in *The Wisdom of Crowds,* "encourage[s] tepid, lowest-common-denominator solutions which offend no one rather than exciting everyone."

But a small group can be much more than the sum of its parts. There is a way to enable small, speedy teams to point in the right direction, make wise decisions, and innovate faster: Encourage dissent and seek out the freaks!

Bring On the Dissenters
In order to tap into the valuable knowledge of every team member, foster an environment where ideas can flow freely, regardless of how kooky they may seem. This is the key to innovation and speed. You get the right solution more quickly when you allow all the ideas to surface and try them out as fast as possible. The good ones will stick, the bad ones won't. But squelching ideas before they've been fully articulated assumes that bad ideas can be identified beforehand from past experience—a classic mistake. Past success is no guarantee of future suc-

Mounce is Level I certified in T&E and PM, has over eight years' experience in defense acquisition, and holds an advanced degree in electrical engineering.

cess, and past failures cannot predict future outcomes. Similarly, squelching dissent sends the message that only "logical," mainstream ideas are acceptable, which serves to discourage creativity and innovation.

Dissent, not consensus, should be valued and encouraged. This is especially true when it comes to countering the ideas of the boss. Members of a team should have no inhibitions in challenging the thinking of the boss or flat out defying his or her ideas for that matter, as long as they have good reasons to do so.

> "Where do good new ideas come from? That's simple! From differences. Creativity comes from unlikely juxtapositions."
>
> *Nicholas Negroponte, head of the MIT Media Lab*

Dissent is usually a natural by-product of diversity. The best way to encourage dissent is to build a team of diverse people—people who come from different backgrounds, who have different appreciations, and who think differently. Diversity is the key to enabling small groups to break away from the mold of homogeneous thinking. The organizational theorist James G. March explains, "Groups that are too much alike find it harder to keep learning, because each member is bringing less and less new information to the table."

For a small group to move fast, it absolutely has to value wacky ideas and be willing to try them out as quickly as possible. This means filling your team with experts and nonexperts alike, with the naïve and the ignorant, with the old and experienced—and maintaining an environment of insolent respect.

Seek Out the Freaks

Encouraging dissent and diversity means finding people who value independence—and this often means hiring freaks. Freaks are the crazy people with wacked-out ideas. The 22-year-old college grad you ask to sit on the strategic planning committee. The finance guy you ask to look at the latest engineering plan. Freaks are anybody who doesn't fit the stereotype of who should be on the team. These people bring in that outlying knowledge that just might make the difference between producing something cool, quickly, or something dull, slowly. Tom Peters, the world-renowned expert on business and innovation, loves freaks. He believes that, as a society currently sitting in a disruptive age (an age of high standard deviation), we need to deal with "weirdness" by getting "weird" our-

selves. He describes freaks, in his book *Re-imagine*, as "Incredibly Cool People, statistical outliers, people on the fringe, mavericks with a willingness to take on the powers that be and risk it all, dissidents, rebels, exemplars, people who have the nerve to stand up, stick out, and fight conventional wisdom!"

He argues that all value, economic or otherwise, in the current disruptive age comes from intellectual capital—that is, ideas. Creative ideas. Innovative ideas. And the only way to uncover such capital is to encourage and seek out those that retain it—namely people you might not consider at first glance but who, nevertheless, bring that different angle into your perspective. Peters goes on to argue that current business has long flushed out these types in efforts to become more efficient and organized. Employees often "had to park their imaginations at the door."

To encourage diversity and dissent, it is incumbent on you, as a leader or simply as a teammate, to seek out the freaks and put them on your team. Instead of flushing them, encourage them to do their thing such that the intersecting threads connecting all the incongruent pieces are revealed. This also requires the team to value the minority opinions along with the majority, even if they seem far, far out there. What's more, you have to develop an environment that ensures these freaks and their ideas are safe from the corporate immune response, which is that most sinister of bureaucratic actions responsible for purging anything aberrant.

Don't Fear Failure

"Fail faster. Succeed sooner." Those are the words of David Kelly, founder of the design consultancy IDEO. Above all, you need people who are not afraid to make mistakes. At a profoundly deeper level, fostering diversity is all about relinquishing control and trusting the people you work with. As a leader this means giving teammates the freedom to use their own intelligence, to make decisions, and to make their opinions known. And I'm not talking about empowerment. I'm talking about a true handing over of the reins to the decisions of the group. It may seem too cumbersome and inefficient, but in reality, it is no slower than having a single person, who is advised on all the topics, make a final decision. In fact, it's usually faster because it allows solutions to percolate to the surface more quickly than if they had to traverse some type of hierarchy. Check out Surowiecki's research for the proof.

In his book *The Medici Effect*, Frans Johansson gives an excellent account of how the Allies, using a diverse team of codebreakers, conquered the German enigma machine during World War II. Enigma was the cipher machine the Germans used to encrypt communications between submarine units, allowing them to sink some 600 ships during the war. The Allies set up a team made up, Johansson

> **"Diversity plays a large role in the way we're developing our engineering organization around the world. ... In the end, these efforts help us more accurately and relevantly represent our users, and our continued success depends on the best minds working from different perspectives and insights."**
>
> *Alan Eustace, Google senior vice president, engineering and research*

writes, of "mathematicians, scientists, classicists, chess grand masters, and crossword addicts"—in other words, not your typical cryptologists—to work the problem. Together, this odd assortment of people managed to break the code and turn the tide of the naval war.

Here's another case in point. The military analyst Thomas P.M. Barnett, in *The Pentagon's New Map*, advocates a military structure that is divided into two forces: the Leviathan force and the Sys Admin force. The Leviathan force would be what we currently think of as a military. It goes in fast, strikes hard, then gets out. The Sys Admin force, on the other hand, would be the force that operates by doing what the United States is currently trying to do in Iraq—win the peace. This force would be made up of social scientists, computer geeks, cultural experts, and linguists, all working to stabilize and build up a country. The Army recently began using such units, known as human terrain teams, to great effect in Iraq.

It's Not About the Cost

In today's acquisition environment, many PMs are loath to invest in any option that does not show some concrete evidence of success. The costs of acting upon the hare-brained ideas of freaks are just too great. I argue that the cost of not taking this risk far exceeds the cost of betting on the sure thing. Even if this weren't true (and it is), the upfront cost associated with freaky ideas is far less than that expended through traditional means. Suroweiki states it well in *The Wisdom of Crowds*, saying that "what makes a system successful is its ability to recognize losers and kill them quickly." His argument—based on research with companies that have followed the principle—is that when you try out ideas really fast, you don't have time to invest a lot of money (simply because you can spend only so much in a short amount of time).

Creativity and innovation are essential to staying ahead of the competition, so most efforts to innovate are well worth the cost. Take Google™ for example. These, according to its Web site, are some of the things Google does to keep employees motivated and inspired:

- Google works in small teams to promote spontaneity, creativity and speed.
- Google listens to every idea, on the theory that any Googler can come up with the next great one.
- Google provides the resources to turn great ideas into reality.
- Google offers engineers "20-percent time" so that they're free to work on what they're really passionate about. G-mail, Google News, Google Suggest, AdSense for Content, and Orkut are among the many products of this perk.

And consider the U.S. military's own fairly recent success story: the Air Force Research Lab Commander's Challenge of 2006. The challenge: to find a way to stop vehicles from running checkpoints in Iraq without killing the passengers or destroying the vehicle. The freaks: two teams composed of six military engineers and scientists, each with less than five years' experience. The cost: $60,000 and six months.

Two of the designs thought up by these teams won. One device was a type of sled with two aluminum boxes containing airbags, one with a set of grappling hooks on one end. If a vehicle didn't stop, the grappling hooks were remotely engaged to latch onto the vehicle while the airbags deployed to lift the vehicle off the ground, successfully stopping it. The other device was a simple wooden wedge. If you didn't stop, your vehicle would run up onto the incline of the wedge and gradually stop and slide backward. Both ideas are effective, simple—and unorthodox.

It's All About Accepting Risk

In the end, it all boils down to accepting risk and accepting it in much larger doses than are currently tolerated. To build fast teams, you have to take up the risky proposition of diversity—team members who are not like you, but who come from different educational backgrounds, different cultural mindsets, and who might actually disagree with your ideas. You also have to accept the risk of giving up control to a set of freaks who might know more than you. Finally, you must accept the risk of failure—fast, furious, multiplicative failure. Only then can your small, dynamic team move forward quickly.

Only then can you succeed.

The author welcomes comments and questions and can be contacted at gabemounce@earthlink.net.

What's Wrong with This Picture?

Wayne Turk

The project is grinding to a halt. You're behind schedule and over budget, your people are unhappy, and upper management is screaming for results. What's the problem? Could you, the program manager, be at fault? Or is it something else?

Let's take a look at some problems, considerations, and potential solutions. But let me say this first: There is no golden bullet, no single panacea for all problems. Even the same apparent problem on different projects can be different. Every project is unique, thus the solutions will probably have be unique, too. Yes, there are fixes that may apply to many project problems, but how to apply them, in what combinations, with what intensity, and with whose help, if any, makes the final management solution basically one of a kind.

Budget Problems

Budget issues, sadly, are one of the common problems facing PMs today. The first question is who determined the budget. Was it set by someone outside the project, or did you, the PM, determine what was needed? Was it realistic from the beginning? Was it estimated based on similar projects, and if so, what makes your project different? Was there a thorough cost analysis? Did someone make a mistake somewhere? Or was it just a guess—a frequent source of budget problems? Where did the inputs come from? Was something overlooked? If you set the budget, were you trying to keep it to the minimum to make it more palatable/acceptable to upper management? What exactly caused or is causing the budget problem: equipment, personnel, testing, development problems, something else, or some combination? Once you have thoroughly examined where the problem lies, you can try to fix it.

Probably the simplest in concept, yet the hardest fix to execute, is to revise the budget. Finding additional sources of funding or adding funding can solve the problem, but your chances are slim in most cases unless your project is critical and has some highly placed champions. If you were wise, you included a management reserve in the original budget. It's time to dip into it.

Turk is an independent management consultant with Suss Consulting. He is a retired Air Force lieutenant colonel and defense contractor and the author of Common Sense Project Management, *ASQ Press. He is a frequent contributor to* Defense AT&L.

Even the same apparent problem on different projects can be different.

If a revised budget is not possible, that means making other changes. Start with cutting out unnecessary requirements or even necessary ones whose absence won't ruin the project. You might want to try to find a cheaper technological solution. Applying spiral or agile development techniques can sometimes help and may give you results that can lead to more funding for the next phases. Review and delay—or even cut—equipment purchases. You could always take the draconian step of cutting people. But keep in mind that either of the last two could impact your schedule. Here are some other suggestions that might help, although most are usually for staying within a budget, rather than correcting overruns:

- Don't allow scope creep unless the dollars accompany the new requirements, and even then, try not to allow it.
- Use earned value management in some form to track costs and compare them to planned costs.
- Project upcoming costs and revise them as changes occur.
- Consolidate tasks for cost savings.
- Don't use "gold-plated" requirements.
- Use cost-benefit analyses to help you make decisions.
- Don't waste resources on unnecessary work.
- Do things right the first time; rework is expensive in dollars and time.
- Prioritize requirements and tasks so you know in advance what can be cut if it becomes necessary.
- Scrutinize contractor and vendor invoices for errors.

Schedule Slips

The questions for schedule slips are essentially the same as for the budget. The biggest questions, of course, are what exactly caused the schedule slip and how you'll get back on track.

Of course, revising the schedule to keep it realistic is the best answer, but there are other things that you can do. Usually the best way to compress a schedule is to consolidate as many of the tasks as possible or make them paral-

lel rather than sequential. For example, it is sometimes possible in the software world to develop the software in modules. Work can proceed on multiple modules at one time. Then testing can be done on each module when ready, with final integration testing done at the end.

Cutting out requirements is another way to shorten project time. Maybe the eliminated requirements can be added back in for later versions (assuming the project results in a product, rather than a service). Don't reinvent the wheel. Leverage previously developed work from other projects. Use things (documents, plans, techniques, products, software, etc.) that others have spent time and dollars developing or buying. Get more people involved or have some work contracted out. Naturally, this can impact the budget. (Of course, you can always hope for divine intervention, but don't count on it!) Here are a few other helpful hints:
- Consolidate tasks where possible.
- Don't accept or assign tasks that are unnecessary or allow scope creep.
- Give all tasks a timeline or suspense.
- Assign responsibility for each task to a specific person.
- Set up a tracking system for tasks, suspenses, and action items and review the status at least weekly.
- Don't delay completing tasks until the last minute.
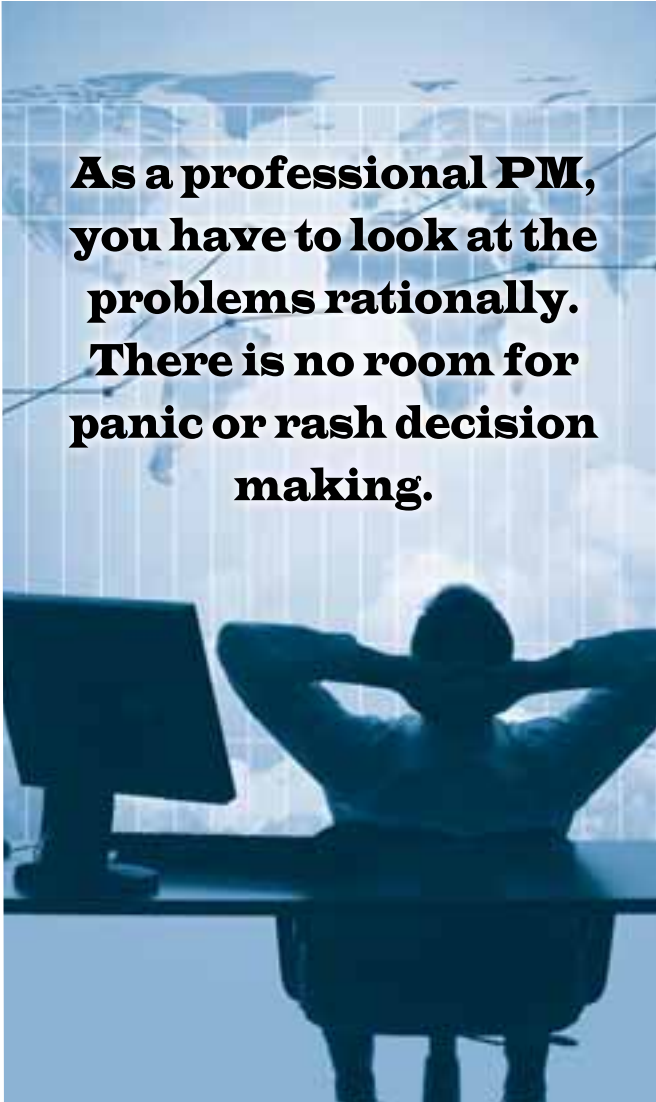
People

People problems are the easiest to see, but it is sometimes hard to diagnose what the real problem is. As for fixing them, that takes time and effort on your part as the PM. The problems can be broken down into three sub-areas: personnel, relationships, and communications, with some overlap in the last two.

Start with personnel. Do you have enough people? Do you have the *right* people with the right skills? Do they have the training and equipment that they need? Are they working on the right tasks? Those are all problems that you as the PM must solve. You can get help from other departments, but you are the one in the hot seat.

Relationships are a slightly different story. Are your team members motivated? Are there conflicts? Can they be resolved? Are your management techniques the right ones for the situation? Disagreements can be caused by conflicting needs, styles, perceptions, goals, pressures, roles, and personal values, as well as unpredictable policies. Conflict resolution is the topic for articles and books in abundance. There are also a ton of books and articles to help you with your management style and techniques. .

Finally, in the people category of problems are communications breakdowns. Communication may be the most important part of project management. Make sure everyone is aware of what is going on. Communicate

> **As a professional PM, you have to look at the problems rationally. There is no room for panic or rash decision making.**

With the right technology (if your project is developing new technology) you can reap benefits for the users. Going the wrong direction can be a waste of time and money. Weigh the risks carefully. Are the benefits and costs worth it? Be realistic in the considerations. Using the right support technology and software can save time and money. However, your people have to know how to use it, and it has to be right for the project. Don't buy equipment or software because you think it is neat or because others are using it. Ensure that it is appropriate for your project. And if you can piggyback on another project and share their equipment and/or software (legally), do it.

And the Myriad Other Problems

There can be a myriad of other problems for a project. The following are just a few of the most common problem areas:
- Bad, vague, or unrealistic requirements
- Unintended consequences of actions or decisions
- Poor risk management
- No configuration management
- Not having good, repeatable processes or having bad or overstructured processes
- Vendor or contractor problems
- Outside influences, such as pressure from upper management or another agency.

Don't Panic

Every project has problems at some point. As a professional PM, you have to look at the problems rationally. There is no room for panic or rash decision making. You have to find a solution or set of solutions unique to your project. You don't have to depend only on yourself. Turn to your team or even to outsiders for help or suggestions. Talk with others who have more experience and who have faced similar problems. They can provide good guidance on what went right (or wrong) when they attacked problems. Do some reading and research. There are plenty of books and articles that can help.

The best idea, though, is to plan and implement the project correctly from the beginning. Lay out the plans, get the right people, ensure that you have the funding (or adjust to the funding that you do have), make sure the schedule is realistic, and so on. Whether it is the organization of the project team, the project management plan, or some other aspect, designing and putting the right project activities into place at the right time can help minimize the problems. So think it out in advance.

up the chain, with your peers, and with your team. Give your team members feedback on their work and on the project status and plans. Keep them informed about what is happening, what changes are occurring, and why. Discuss problems with your team and listen to what they suggest as ways to fix the problems—finding solutions doesn't have to rest on your shoulders alone. Keep your boss informed. Let him or her know what is happening with the project on a regular basis. And communicate with others outside your organization who need to be kept in the know. Good communication can both prevent and resolve problems.

Technology

Technology problems are usually unique to your project, but again, there are some questions that you can ask. Do you have the right technology? Do you have the right support equipment, and are you using the best software for the job? Do your people know how to use what they have?

Classic DoD Acquisition Standards Still the Cornerstones

David M. Eiband

Some observers look at military-industrial relations as a confrontational environment fraught with dissension and conflict—after all, why does one read regularly about aborted programs and ongoing litigations? Admitting at the outset that not all programs are conceived or conducted perfectly, there remains, nonetheless, a common set of values that benefit both the Department of Defense and the industrial base. The most important thing is that both camps require each other to succeed.

As a starting point, one must understand the motivations of both groups. DoD has a continual requirement to develop and field products that address the national interest, and those products should be procured at prices acceptable to the American taxpayer. Industry, on the other hand, is in the business of business, which is making a usable product that returns a reasonable profit while positioning for the future. While different, the goals are not mutually exclusive, and thus, there are mutual interest areas that can be exploited to benefit both groups.

The question, then, is what shared tools could be used to mutual benefit. One area that comes to mind is the use of standards. To that end, DoD began an effort to remove im-pediments to effective product development and procurement. The Perry Initiatives (named for former Secretary of Defense Dr. William Perry) greatly reduced the mandatory regulatory rules imposed on industry. By freeing up industry to use established commercial standards, the hope was to decrease both time and cost. The result was the downgrading of many formerly mandatory standards and specifications to advisory status, placing them in handbooks, and the outright elimination of many other standards. The end product is a current listing of some 10,000 commercial standards adopted for use by DoD. However, it must be noted that not all commercial standards have been adopted, but all the adopted standards can be found in DoD's ASSIST database, < http://assist.daps.dla.mil > . Accepting that commercial standards are preferable to DoD or government standards, one must then ask if there is any value in the remaining DoD standards or processes.

The answer to that question is yes. I will not discuss every available standard but will instead focus on four essential areas found almost universally on acquisition programs: work breakdown structures, data, statements of work, and specifications. Each of those areas is defined by DoD tools; the tools themselves are eas-

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Eiband is a systems engineer with SAIC, Tucson, Ariz., and a retired professor of systems engineering with the Defense Acquisition University.

> The bottom line is this: Whether government or industry, how can professionals ignore fundamentally useful tools that are free for the taking?

ily accessible; and both government and industry would utilize these type of techniques in day-to-day operations. In fact, it would be difficult to find an acquisition program that does not routinely perform in all four areas.

Work Breakdown Structure: Not an Option

Without stretching the point, it can be shown that there is considerable utility in DoD tools. For example, there are many methods for developing a work breakdown structure, and there can be little doubt that, with the exception of the simplest development, a well-designed WBS is a necessity, not an option. MIL-HDBK-881A, *Work Breakdown Structures for Defense Material Items*, provides an excellent tool for crosschecking requirements during program development and may be found in the ASSIST database. In DoD acquisition context, WBSes are "product-oriented family trees composed of hardware, software, services, data, and facilities" that "relate the elements of work to be accomplished to each other and to the end product." This definition should not be taken lightly, as it can be seen that the definition properly describes a complete system as well as possible component elements. The handbook contains eight specific categories of defense items: aircraft systems; electronic/automated software; missile systems; ordnance systems; sea systems; space systems; surface vehicle systems; and the newest group, unmanned air vehicle systems. These major defense systems can also be combined to define complex composite systems, such as a surface-to-surface missile mounted on a tracked vehicle with both systems containing electronic and computer components. In addition, the handbook provides definitions for the common elements to be considered on any system. Using the handbook as a checklist provides a comprehensive set of considerations that should be addressed on any type of system, so rather than having to divine derived requirements out of the ether, the handbook forces the developer to ask whether or not all requirements have been properly addressed.

MIL-HDBK-881A: Lessons from History

For the government user, MIL-HDBK-881A offers many advantages. Built on the lessons of accumulated history, the handbook represents a well-founded approach to many programs. This basis can be used directly in completing the program WBS, which will be the basis for the contractor's WBS for development of the program products. As the Defense Acquisition University's *Systems Engineering Fundamentals* notes, the WBS is the "foundation for all program activities, including program and technical planning, event schedule definition, configuration and data management, risk management, specification preparation, statement of work preparation, status reporting and problem analysis, cost estimates, and budget formulation." Clearly, in DoD's view, a WBS is intended to cover a myriad of seemingly disparate functions.

Many of these very same benefits are available to industry, and this knowledge is a competitive advantage in cost-effectively defining a program approach. Using this publicly available information, a company can anticipate DoD's approach to many programs, especially when MIL-HDBK-881A is being employed. And since the bottom line really does matter, note that this information is also free.

Besides the previous shopping list of uses, it can also be seen that MIL-HDBK-881A is useful well beyond merely making a block diagram, and it adds value by providing an umbrella of pertinent areas/issues for consideration. As most defense professionals are aware, an earned value management system is required on DoD programs greater than or equal to $20 million, and a formal EVMS validation is required on programs greater than or equal to $50 million. On smaller programs (less than or equal to $20 million), earned value management is optional. The EVMS process directs development and delivery of five separate data reports, and not surprisingly, MIL-HDBK-881A is the common structure for all five reports. In other words, the handbook is extremely useful for technical and programmatic planning, and it also forms the foundation of the EVMS process. There is no doubt that this free tool is of value to industry and is obviously of interest to DoD.

Data: Not Just an Administrative Function

Use of MIL-HDBK-881A for EVMS points to another area of common interest: data. To collect data, DoD uses DD Form 1423, Contract Data Requirements List, to define the data and provide a basis for costing the data development and delivery. The CDRL form can be found at < www.dtic.mil/whs/directives/infomgt/forms/formsprogram.htm > and contains instructions for completing the form, contract and data item information, information on requirements and frequency for data submission, explanations of distribution, and remarks for data development.

In turn, the CDRL is based on the use of a common set of 1,220 data item descriptions that are located, as are standards and handbooks, in the ASSIST database previously discussed. DIDs define content across every aspect of DoD operations, from management to software

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to human factors to finance to logistics—in all, covering 50 specific identified subject areas. Nonetheless, people unfamiliar with the process often comment that the DID system doesn't have the coverage required on their programs. Illustrating just several examples, a quick review of ASSIST indicates there are 254 DIDs covering systems engineering standards and specifications, 30 DIDs covering information processing standards for computer software, and 131 DIDs covering management. But if, among those 50 subject areas, one truly needs a unique DID, it can be created using the existing MIL-STD-963, *Data Item Descriptions*, process.

By intention, each DID addresses applicable referenced documents, general and preparation instructions, format, and content. So regardless of the subject area, the user can expect an understandable, standardized, usable package. Presenting clear, unambiguous requirements is a definite advantage to both DoD and industry, and because of the large costs associated with procurement of any data, it is imperative that both DoD requirements and the proposed industry product and cost are well managed.

The CDRL or DID disbeliever should consider two facts. First, Defense Federal Acquisition Regulation Supplement (DFARS) 215.470(b) clearly states that "when data are required to be delivered under a contract, include DD Form 1423, Contract Data Requirements List, in the solicitation." Therefore, since use of the CDRL is not optional, it also follows that a DID must accompany the required CDRL. Second, data are not simply an administrative activity, as there actually are ramifications to data development. The Government Accountability Office noted in its report GAO-06-839 that the Services have "encountered limitations in their sustainment plans for some fielded weapon systems because they lacked needed technical data rights." And the report further recommended that it is "during the development of the solicitation and the subsequent negotiation of a proposed contract that the government is in the best position to negotiate and secure required technical data rights." Both the government and industry play a role in properly addressing the issues raised by these two facts.

Contracting: Importance of the SOW

The above GAO recommendation discusses solicitations and contract negotiations. Contracting is critical to both DoD and industry, and some preliminary definitions may be useful. The *Glossary of Defense Acquisition Acronyms & Terms* defines a contract as "an agreement between two or more legally competent parties, in proper form, on a legal subject matter or purpose and for legal consideration." Further, we should stipulate that a contract, by Federal Acquisition Regulation definition, exceeds the simplified acquisition threshold of $100,000. Despite finding the term "legal" three times in our definition, we do not necessarily need an attorney on retainer, as DoD provides an aid to

contracting, MIL-HDBK-245D, *Handbook for Preparation of Statement of Work (SOW)*. All military handbooks and standards are located in the ASSIST database.

While seemingly obvious, a well-structured statement of work may not be simple or easy to prepare, and many of the MIL-HDBK-245D suggestions are not only sound but are truly insightful. For instance, the handbook states that "qualitative and quantitative design and performance requirements are contained in specifications" while "all work (non-specification) performance" should reside in an SOW. Julius Caesar suggested the same approach with "divide and conquer." Or consider another 245D suggestion: an "SOW prepared in explicit terms will enable offerors to clearly understand the government's needs. … This facilitates the preparation of responsive proposals and delivery of the required goods or services." The old saying "if you don't know where you want to go, any road will do" meets the opposite approach. Given that contracts are legal documents and can, therefore, end up in court, exercising some prudence is a good idea. In that light, the handbook suggests that "in a dispute concerning performance, rights, or obligations, clearly defined requirements will enhance legal enforceability." Fram Oil Filters certainly summed up this approach when they advertised "you can pay me now or you can pay me later." It would be difficult to argue that the government's preparation of solicitations, industry's subsequent development of proposals, and both groups' contract negotiation and execution would not benefit from these and many other recommendations in the handbook. These examples and many others throughout the handbook offer both experience and insight pointing directly to MIL-HDBK-245D's continued and regular use.

Many readers would not search out military handbooks for entertainment, but MIL-HDBK-245D can even assist there as well: Appendix B provides three pages of "good" words and Appendix C provides two pages of "not-so-good" words. More accurately, Appendix B suggests work and product terms while Appendix C compiles phases that have multiple meanings—and as we have already discussed, clarity and a lack of ambiguity are unarguably positive attributes.

Specifications: Clear and Simple

As mentioned when discussing MIL-HDBK-245D, the technical and performance aspects of an acquisition program are properly described in a specification, and (no surprise here) DoD already fully defines specifications in MIL-STD-961E, *Defense and Program-Unique Specifications Format and Content*. Many of the same philosophic approaches are found in both MIL-HDBK-245D and MIL-STD-961E: clear and simple language, no vague terms, and commonly used words and phrases are provided with accompanying rules in proper usage. Both documents also present a standardized preparation format that allows for easy

personnel assimilation when moving to new programs. Government and industry clearly benefit when following such commonly accepted guidelines.

MIL-STD-961E also provides specific instructions on preparation and use. The standard clearly notes that a specification "describes the essential technical requirements for material *and* the criteria for determining whether those requirements are met" (emphasis added). The standard further applies six criteria to describe requirements:
- Stated in such a way that an objective verification can be defined
- Cross-referenced to the associated verification
- Only those necessary, measurable, achievable, and verifiable are included
- Worded to provide a definitive basis for acceptance or rejection
- Described in a manner to encourage competition
- Worded such that each paragraph addresses only one requirement or topic.

These six criteria are simply fundamental to proper requirements development.

Likewise, the standard defines verification as accomplishment by "analysis, demonstration, examination, testing, or any combination" and further goes into some detail describing verification inspection approaches such as first article, qualification, conformance, sampling, or inspection lot. Since both government and industry have a vested interest in the appropriate development of performance requirements and the verification of those requirements, both groups stand to suffer potentially significant losses when unsuccessful, making this knowledge even more important.

As we started this subject, only two issues really mattered—usable tools and cost. And since cost is important to both DoD and industry, we can agree that husbanding funds is universally understood and valued. For tools, DoD has a stable of assets to assist the practitioner in developing program definition and structure (MIL-HDBK-881A), technical definition (MIL-STD-961E), and non-technical and data documentation definition (MIL-HDBK-245D, DD Form 1423, and the ASSIST database). These DoD assets are well-established, have passed the test of time, and are available at no cost to either DoD or industry. The bottom line is this: Whether government or industry, how can professionals ignore fundamentally useful tools that are free for the taking?

The author welcomes comments and questions and can be contacted at eiband@cox.net.

Don't Forget Your Lessons Learned!

A Review of 16 Years Worth of Notes

Maj. Russell W. Burley, USAF

I originally came up with the idea for this article while sitting in a bookstore drinking coffee. Perhaps it was the caffeine affecting my senses, but a book on management written by the first winner of *The Apprentice* caught my attention that day. After I stopped laughing, I figured if a guy can write about his management techniques and prowess after spending two months winning a television contest with The Donald, I should be able to jot down some ideas I've learned after being in the Air Force for more than 16 years. Looking back on my lessons learned, many are common-sense practices, but it's easy to lose track of the simple things when you become engrossed in day-to-day program activities.

In addition to spending time at the neighborhood bookstore, I was also busy packing up my office for relocation to another facility. I have natural engineering packrat tendencies, but even I was amazed at the stuff I had saved and the amount of notes I had taken in the past year. Connecting the dots between filing and hanging out at the bookstore, it dawned on me that as acquisition professionals, we sometimes forget that our own experiences can help form a good lessons-learned notebook or management book to help guide us in future endeavors. While the number of self-help books at the local bookstore is impressive, perhaps the best learning examples are what we can document ourselves. Looking back on my experiences, I have been able to identify nine key lessons learned.

1. Incorporate and use effective communication skills.

Although it is perceived in today's high-tech environment that disseminating information quickly and accurately is easy, I have found that it takes a lot of upfront effort and discipline. First, it is important to communicate progress, issues, and achievements to management and leadership. One technique that has greatly helped me with this is submitting summary status reports, on a regular basis, that highlight progress and issues. This serves two purposes. First, it provides a program status and notes any possible issues to leadership, and second, it allows a person to develop critical thinking and assessment skills. It is always easy just to report information (throw information over

It's easy to lose track of the simple things when you become engrossed in day-to-day program activities.

Burley is a project manager for the National Geospatial-Intelligence Agency. He holds a master's degree in aeronautical and astronautical engineering from Purdue University. He is Level III certified in program management and Level II certified in systems planning, research, development, and engineering.

the fence), but it's a different process to analyze data, understand the impacts, and be able to provide recommendations as needed.

2. Understand the big picture.

One of my personal weaknesses is a desire to jump into a problem as soon as possible. However, it is worth the upfront investment in time to understand and appreciate the overall strategy. As a first step, one should understand the mission, vision, organizational construct, and general budget of the customer. From this, the customer's priorities and primary objectives can be discerned. A better picture emerges of how the specific acquisition program falls into the overarching mission, and in turn, this provides insight into how the program contributes to the agency's goals. Regarding the big picture, it is important to understand those issues that concern senior leadership. Knowing the program's critical path and how resources are allocated can give you important insight into how management thinks, behaves, and operates. Additionally, having a firm grasp of the master plan and of what is important to management can help guide what is included in status reports.

3. Know and understand the program's master schedule, acquisition strategy, and program risks.

Developing this insight helps project managers build credibility among their counterparts and also helps them to focus on what they need to be focused on. Adopting an approach in which you seek to understand the schedule, cost, and technical performance effects on the program's critical path will make you a much more effective project officer or program manager. In any acquisition program, there will always be a myriad of issues and associated resolution activities. Crucial to ensuring proper program office resource allocation is a focus on the activities having the largest impact or posing the greatest risk to the program's critical path.

4. Adopt a standardized, systematic approach for understanding, troubleshooting, and resolving issues.

The first step is to understand the issue. In dealing with hardware testing issues, this might include a thorough investigation of the testing configuration and all known facts. The second step is to appoint experts to troubleshoot the issue, with an emphasis on root cause analysis. Once the issue is understood and has been studied and researched in detail, the best path forward can then be formulated. Finally, the path forward should be implemented with follow-up activities to ensure that the defined resolution steps are being taken and the issues are being resolved as planned. Following this systematic approach will make it easier to report progress to management on resolving the issue.

5. Give appropriate focus and concentration to the review process.

From my experience in the Air Force, this fact has been continually reinforced. First, for major reviews, it is paramount to develop agreed-upon event entrance and exit criteria upfront and early with the prime contractor. It is often assumed that the mere fact of hosting and/or conducting a design review means that the review was successfully closed. But it should always be acknowledged

Crucial to ensuring proper program office resource allocation is a focus on the activities having the largest impact or posing the greatest risk to the program's critical path.
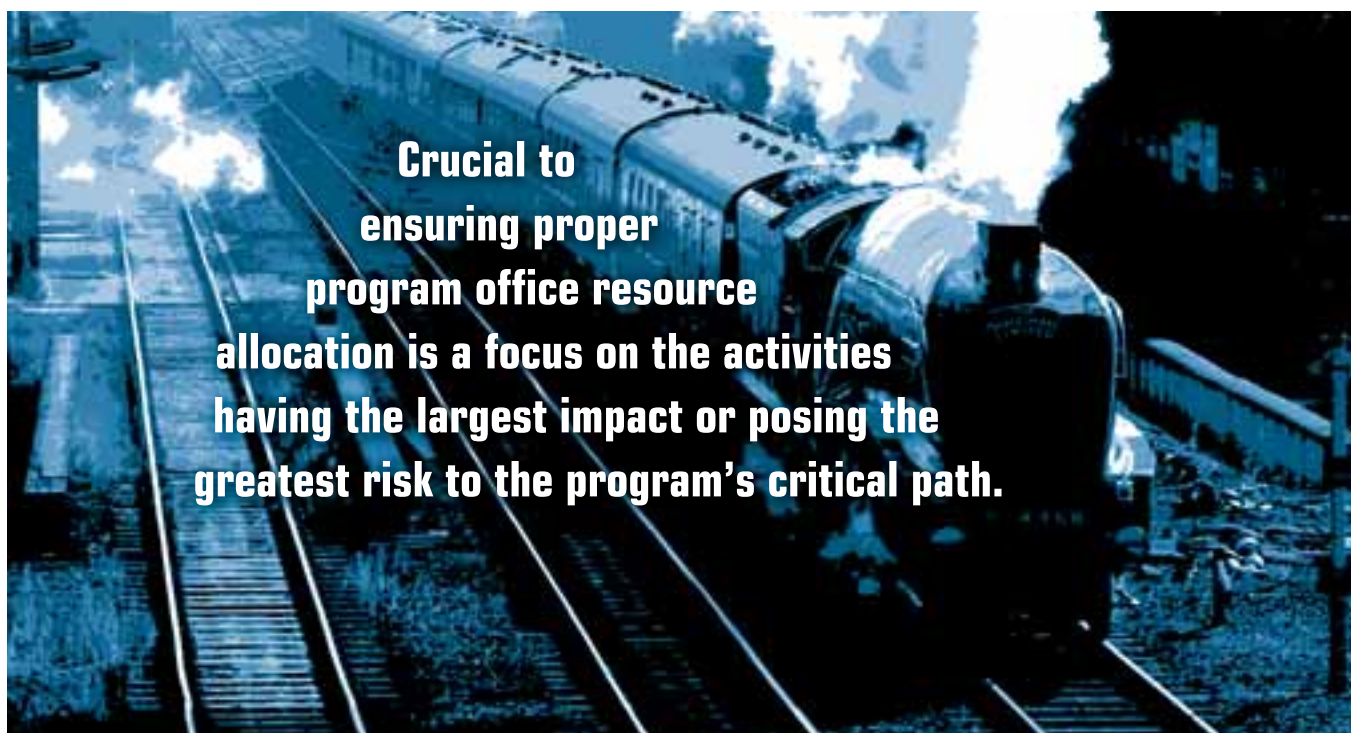
that the review itself is an outbrief of a program's status at a particular point in time. For example, leading up to the overall system review are subsystem design audits, analyses reviews, and document completion, which are folded into the system review. Accordingly, the contractor is ready to host an event when entrance criteria have been developed and are satisfied prior to the review. The readiness of having a review can be assessed prior to the review (approximately a week or two out) by conducting a "go/no-go" meeting. Typically, this is a vital decision gate that evaluates if the entrance criteria have been satisfied going into an important program milestone.

6. Plan and conduct quality/successful events.

I have seen several examples of a key review or briefing being driven primarily by a date, which has resulted in a rush to conduct the review or briefing. Of course when this happens, it leads to incomplete events, which ultimately means a delta (or follow-up) review must be conducted at a later date. Preparing for delta reviews drives additional effort, which impacts both cost and schedule and subsequently puts added pressure on both the contractor and government team to effectively close out the event. This affects the ability to plan, implement, and execute the next phase of the program.

7. Expect the unexpected.

This is especially true when dealing with the acquisition of hardware and software. For instance, in assembly, integration, and testing, problems will occur that will challenge the program office and the contractor team. The key is having the right people and the right processes in place. These two elements will normally make the difference in solving the issue appropriately.

8. Take care of the people doing the heavy lifting.

As a deputy program manager, I made it a priority to submit personnel in our division for quarterly awards (both individual and team). This really helped me to understand and appreciate their contributions to the program. When drafting award write-ups and performance appraisals, it is important to focus on clarity, attention to detail, and crisp writing in capturing the appropriate accomplishments. As a leader and manager, I owed it to my people to put this philosophy into action. As an acquisition manager, it is important to keep up-to-date on your personnel's training needs, including making sure personnel are keeping up with their acquisition professional development program courses and are certified appropriately.

9. Don't overlook your own professional development.

As acquisition professionals, we need to keep current with our Defense Acquisition University courses and to make sure we are Defense Acquisition Workforce Improvement

Learn from the experts, as they are battle-tested.

Act-certified in the appropriate acquisition career fields. From my experience, it is vital to work closely with your training point of contact to ensure you get the proper training to help do your job. In addition, people who have a wealth of experience and success in working on major acquisition programs may surround you in your program office. Learn from these experts, as they are battle-tested.

In summary, I hope this article has focused on the importance of learning from your own experiences. It's amazing how going back and reflecting on your personal experiences, notes, and reports can help lead to additional insight into current problems and issues. Doing this periodically can provide invaluable insight into how successful (or not) a particular course of action was in alleviating an issue. You may also be surprised at the wealth of practical experience and knowledge that you have gained in working as an acquisition professional. Who knows, perhaps one day you will use your own lessons learned to make your program successful or to be a future winner of *The Apprentice*.

Shaping Industry Interaction Through Secure Information Sharing

Part III: Putting Theory Into Practice

Paul Grant ▪ *Jim Cisneros* ▪ *Jeff Nigriny*

The Transglobal Secure Collaboration Program (TSCP) is a global consortium involving the U.S. Department of Defense, the United Kingdom Ministry of Defence (MoD), the Netherlands Ministry of Defence, and seven of the world's largest aerospace and defense (A&D) companies. These parties have come together to address one problem: how to securely share information to enable collaboration throughout the A&D global community.

This is the final installment in a three-part series, "Shaping Industry Interaction Through Secure Information Sharing." Part II, published in the previous issue, examined the collaboration efforts of the TSCP to set industry-wide specifications for secure collaboration. The series has explored the nature of the problem of securing external data transfer, the value organizations can gain by overcoming the obstacles, and how the TSCP has embraced collaborative best practices to establish and deliver collaboration solutions to the broader community. Now, TSCP's vision is being realized in the field. The Army's Future Combat System (FCS) program was an early candidate ideally suited to take advantage of the advanced security specifications the TSCP has published over the past five years. Below, we share some of the specifics of its implementation and benefits.

Overcoming the inherent barriers to A&D collaboration is the primary industry-level challenge faced by government-industry partnerships. In the past, DoD agencies working with commercial contractors relied on a government-to-company model in which the agency swore the supplier to absolute secrecy on the project. Secrecy is still a big part of defense work, but two key differences exist today:

1. The commercial firms on which agencies have relied for decades provide services for worldwide governments and have operations in nearly every country—industries are no longer geopolitically aligned.

2. Today, large defense acquisitions typically involve named prime contractors and some number of named subprime contractors. After the contract is awarded, a supply chain is created and there is a need to share information. However, even the strongest contracts cannot guarantee that information will be seen by only the intended recipients, or that the intended recipients truly have a need to know.
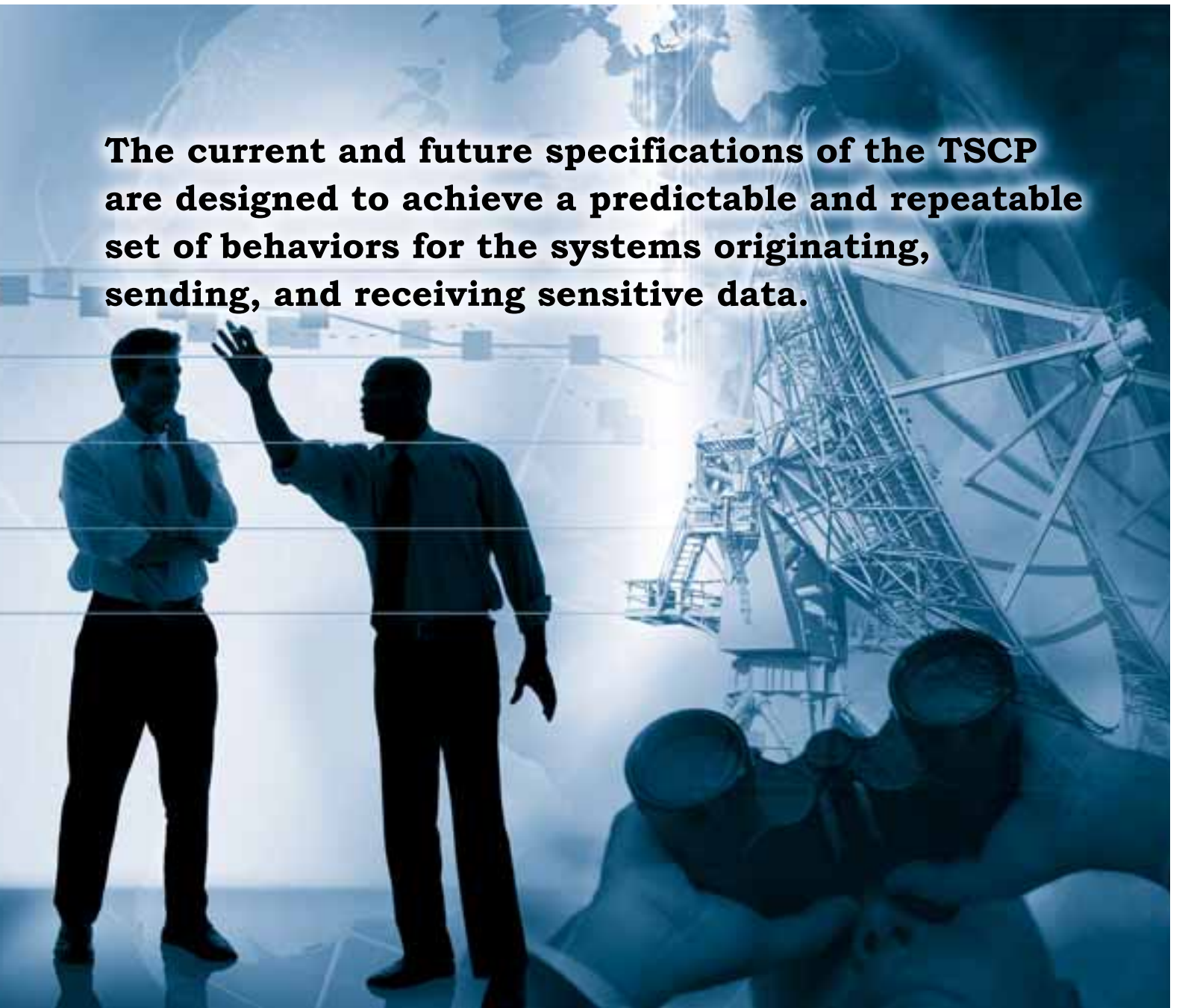
In both cases, it is essential to know who is on the other end of a document exchange, communication, or signed form. This identity management requirement is central to secured collaboration. U.S. policy documents NIST Special Publication 800-63 and HSPD-12/FIPS 201 express the importance of such secure collaboration.

Once assurance in another party's identity can be ascertained, all of the classical security problems still exist, but these problems can be solved in previously unknown ways. Data no longer needs to be tied to the originating application or server. Data owners no longer have to lose control over how their data are being used in a remote network or for how long. We have long allowed global supply chains to be artificially constrained by information technology systems that do not scale. How, then, do we trust data to move from system to system and country to country, across the Internet—across what is sometimes described as a hostile network?

Allowing Trust Between Parties

The TSCP has published and is publishing systems specifications that allow end points to be trusted. End points are the sending and receiving systems for sensitive data that must be secured. If you consider the importance of identifying individuals and judging whether they are trustworthy before sharing sensitive information, this same logic dictates that the actual systems handling the data exchange and presentation must also be judged as trustworthy. However, judging a system as trustworthy is different from judging individuals. People are judged as trustworthy based on previous actions, which is an imperfect system, of course, because past behavior is not a perfect predictor of future actions. In computer systems,

Grant *is the deputy information sharing executive for the Department of Defense.* **Cisneros** *is the deputy CIO for the Future Combat Systems at Boeing.* **Nigriny** *is president of CertiPath and chief security officer for Exostar.*

The current and future specifications of the TSCP are designed to achieve a predictable and repeatable set of behaviors for the systems originating, sending, and receiving sensitive data.

though, understanding how a system will act in a given set of circumstances can be near perfect.

The current and future specifications of the TSCP are designed to achieve a predictable and repeatable set of behaviors for the systems originating, sending, and receiving sensitive data. If all systems in the trust fabric do not adhere to the same specification, then two critical qualities are lost. First, trust is not possible because behavior is not predictable, and second but equally important, scalability is lost. DoD has stated that there are 300,000 supplier organizations in which it wished to have a greater degree of identity assurance. This doesn't even begin to describe the scope of the individuals represented by that many organizations. Without a free and public specification that all can implement, DoD's requirements would be impossible to meet, as would the global demand for

secure information sharing. The goal of the TSCP is to establish such secure information sharing.

The Art of Information Sharing

Present thinking about information security in the supply chain can be described as a best-case scenario, ready to quickly excuse the obstacles of legacy systems and corporate cultures resistant to change. Fans of Harvard Business School case studies will be familiar with what it takes to tear down those barriers for large, complex organizations: a clear, compelling case for competitive advantage.

The security models and techniques that follow are radical enough to represent disruptive technologies in larger organizations—the key ingredient in creating an opportunity to gain competitive advantage. While it is perhaps unusual to think of IT security as an area in which competitive advantage could be gained, that is just part of what makes

this new model so disruptive. For the risk averse, there is also good news. The new models and techniques have already been widely accepted as the only realistic way to solve the problems of identity, authentication, and access control among government and industry security organizations alike.

TSCP and Future Combat Systems

The Boeing Company's FCS Program has a very large supply chain that is representative of large A&D programs today. Within Boeing, there are efforts under way intended to support programs like FCS and to leverage the work being done to promote the use of secure identification and authentication technologies. These efforts will provide Boeing programs with improved capabilities to protect data and information being exchanged electronically while working with this large supply chain of partners. There are, in fact, three areas in which Boeing is working to pilot and validate approaches within FCS, in cooperation with the TSCP and with the goal of moving towards a production capability with the Army's support.

The first area is in the use of secure medium-assurance hardware certificates. Boeing has recently conducted a successful pilot with the Army Knowledge Online group. AKO is the host for the collaborative tools used by FCS to support its need to hold virtual meetings. FCS team members originally used less-secure user names and passwords to obtain AKO access. Working with AKO leadership and the AKO technical support team, Boeing was able to apply its secure medium-assurance hardware certificates to log into the AKO environment. The success of the pilot was communicated to the DoD Identity Protection and Management Senior Coordinating Group, where the results were well received. The IPMSCG consists of general officer and senior civilian representatives from each of the military services, joint staff, the Office of the Secretary of Defense, and DoD organizations. The IPMSCG focuses on ways to use identity management tools while protecting an individual's privacy. Follow-on steps to prepare for production implementation are being planned.

A second area being addressed within FCS is improving how Boeing, as the FCS lead systems integrator, provisions accounts and authorizes access to the FCS Advanced Collaborative Environment, which houses a majority of the information being produced and used on FCS today. The FCS ACE supports the program by providing a collaborative environment through which FCS team members can deposit and share information and take advantage of capabilities like automated workflows to improve the approval and configuration management of the information generated in support of FCS. Boeing, to date, has had to provision accounts for each of its suppliers assigned to the FCS program for access to the FCS ACE. When suppliers want to gain access to the FCS ACE, they access the Web site, respond to an authentication challenge, and are

granted or denied access accordingly. While this model works, using the same authentication approach used by the AKO pilot offers improved access control and administration features. In the current model, Boeing needs to be notified when an FCS team member has left the program, so that the access privileges can be removed. Additionally, should people forget their password or require an update to any personal attributes, Boeing must expend resources to service the request. If something changes in a person's status so that he is no longer assigned to the FCS program, Boeing is dependent on the partner organization to remember to inform Boeing that the person's access needs to be revoked. Using the medium-assurance hardware approach from a cross-certified provider, each partner would then be responsible for verifying when employees exit the program or leave the company for whatever reason, and Boeing would not have to expend resources to track this information.
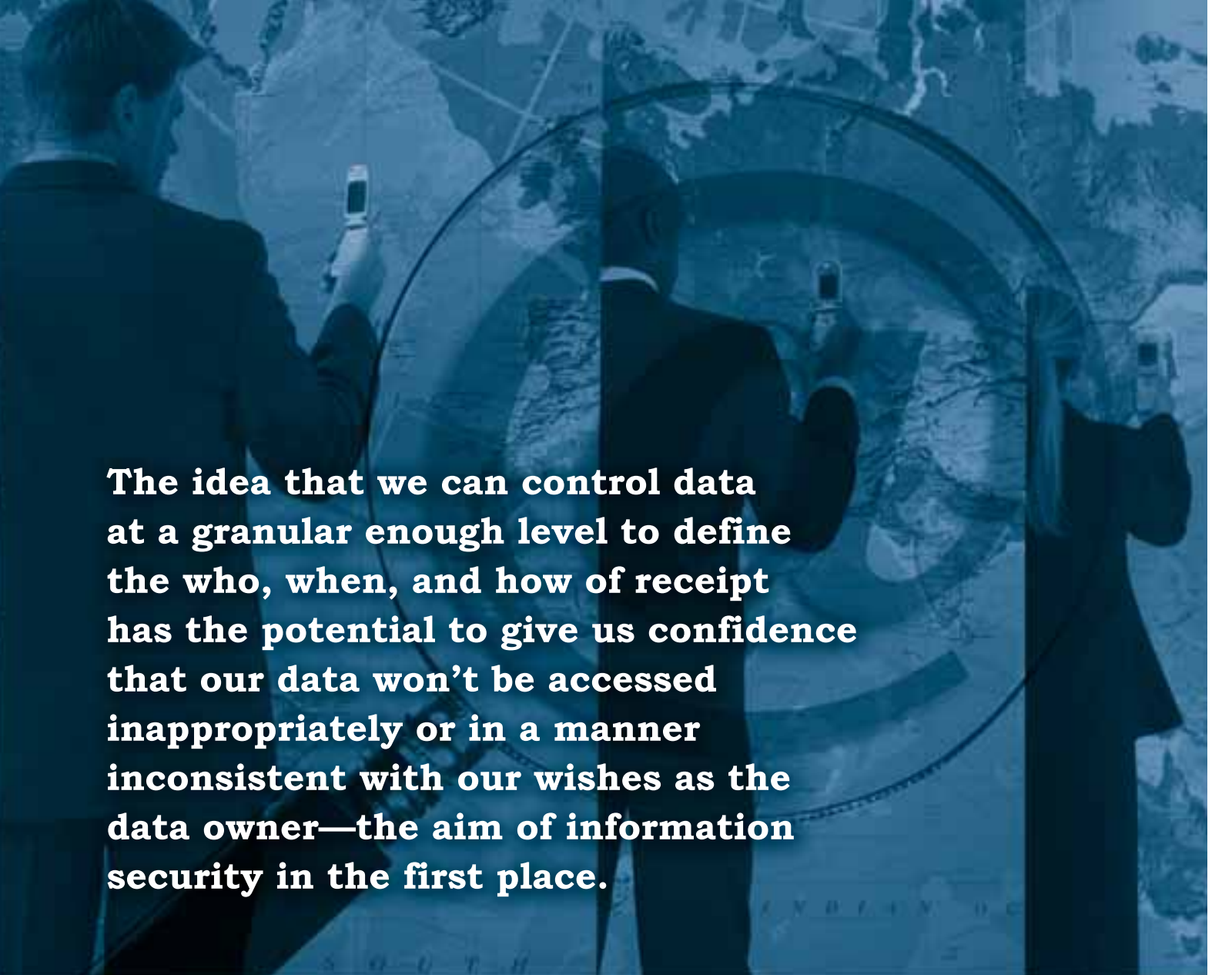
Identity federation provides a solution to all these problems and, when combined with a single strong credential leveraged with all partners, eliminates the inherent risk found in today's password-based approach for authentication.

The third area that FCS is seeking to address is in the use of medium-assurance hardware/software (or class 3) certificates in the secure e-mail area. FCS currently uses business-to-business, or B2B, encryption to exchange encrypted and digitally signed e-mail. This provides encrypted e-mail on a user-to-user basis across company/partner boundaries utilizing basic-assurance (class 2) certificates. The expected benefits of moving to class 3 certificates would be to demonstrate Boeing's alignment with DoD's plan for adopting advanced public key infrastructure and further outline the value proposition for using class 3 certificates. It will also demonstrate the reduced time/cost for configuring infrastructure for bilateral trust and configuring systems to establish trust in the validity of CertiPath, the A&D industry's PKI bridge. This pilot will additionally assist in identifying any interoperability issues between class 2 and 3 infrastructures, provide an understanding of what and which PKI and e-mail products need to be modified or improved, and identify where and what infrastructures are not in a state of readiness among Boeing's tier 1 suppliers—otherwise known as FCS One Team Partners.

The fact that a number of the TSCP participant companies are also FCS One Team Partners make this a win-win situation as FCS presses forward in testing and verifying these capabilities.

A Shared Commitment to Collaboration Excellence

The FCS is one example that demonstrates the value of secure information-sharing strategies in enhancing the

The idea that we can control data at a granular enough level to define the who, when, and how of receipt has the potential to give us confidence that our data won't be accessed inappropriately or in a manner inconsistent with our wishes as the data owner—the aim of information security in the first place.

department's efficiency and effectiveness. In the near future, DoD hopes to recognize some of the potential benefits for other major acquisition programs in becoming early adopters of the TSCP output, including JSF, DDx (a U.S. Navy destroyer ship in design), and Alliance Ground Surveillance.

DoD's intention is to provide better guidance on compliant use of data, which will aid the implementation of DoD policy in areas such as the unique identification of tangible assets and the achievement of net-centricity, with inherent data-segregation management and federated, collaborative identity and access management.

Looking ahead, major initiatives for DoD and the TSCP are intellectual property protection and export control inside a product life cycle management environment, and then the same intellectual property protection and export control in real-time collaboration (for example, online whiteboarding—a capability that enables globally located conference attendees to annotate and draw collaboratively on shared images or slides appearing on the screen).

A key enabler of these next two initiatives is a technology and policy concept called digital rights management. DRM provides the mechanism through which trust can be extended from the data owner to a single data recipient, even at a remote organization. The idea that we can control data at a granular enough level to define the who, when, and how of receipt has the potential to give us confidence that our data won't be accessed inappropriately or in a manner inconsistent with our wishes as the data owner—the aim of information security in the first place.

The authors welcome comments and questions and can be contacted at paul.grant@osd.mil, james.m.cisneros@boeing.com, and jeff.nigriny@certipath.com.

Weird Leonards: Intuitors Need Experience

I enjoyed the irony in "Weird Leonards in History" [January-February 2008 issue of *Defense AT&L*]. Dan Ward and Chris Quaid took Gladwell's idea about intuition and pursued it to an extreme while also making some valuable points.

As a scientist, however, I must point out that the term intuition, although it helps to sell books, really clouds an important point. The common meaning of *intuition* is a thought that appears in the absence of a deliberate thinking process. But the scientific evidence showing that intuition is of value in decision making is based on studying decision makers who have many years of experience in their fields. These people benefit sufficiently from that experience so that they can often make good decisions even without a deliberate thinking process. Others, like Weird Leonard—who lacked experience with the strength of mechanical structures, the power of jet packs, and the workings of brakes—do significantly less well using their untrained intuition. Many of the other examples that Ward and Quaid provide do, indeed, indicate that successful intuitors have considerable experience in the fields where they are operating.

One of the more important things that we can do is to make clear to military decision makers that their intuition, if it is not based on years of relevant experience and training, is likely to prove to be the very worst way for them to make decisions.

Michael Drillings, Ph.D
Director for MANPRINT, G-1

The authors respond: *We basically agree with everything Dr. Drillings wrote.*

Successful intuitors typically draw on significant experience to support their mysterious decision-making process. And, as Dr. Drillings pointed out, the examples we provided support that hypothesis. We think it's cool that we intuitively arrived at a conclusion that his scientific approach supports!

Ultimately, the article was about two things: the courage to follow your hunches and the danger of following a hunch (for what need is there for courage in the absence of danger?). Those who fearfully or analytically rejected their intuition failed just as surely, albeit less spectacularly, as those who bravely or foolishly followed their intuition. And those timid souls who shunned failure and sought certainty before experimentation learned and discovered much less than they could have. The world is a poorer place because of their reticence.

In the end, successful outcomes are typically the result of persistence, experience, guts and intuition—all of which necessarily come before scientific certainty and precision. That is to say, a correct idea arrived at intuitively is correct, even before it is scientifically supported. Similarly, an incorrect idea with scientific support is still incorrect, even before science corrects itself, as it so often does. And as Octave Chanute points out in his book, Progress in Flying Machines*, the path to success is paved with necessary, enlightening, and productive failures.*

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In the News

ARMY MAY PURCHASE 95 HAZARD-DETECTING TRUCKS

Lisa Burgess

ARLINGTON, Va.—The Army has obtained permission from the Pentagon to purchase 95 vehicles that will help protect U.S. troops against the modern battlefield's most terrifying trio: nuclear, chemical, and biological weapons, officials said.

The Nuclear, Biological, Chemical Reconnaissance Vehicles, or NBCRV, are the newest members of the Stryker family of tracked combat trucks. This will be the second Army purchase of the vehicles, which are designed by General Dynamics Land Systems as a replacement for the Army's M93-A1 Fox Chemical Reconnaissance Vehicle.

The original purchase of 21 NBCRVs was used to support operational testing, which began in December 2005, according to Army Lt. Col. Jonas Vogelhut, joint product manager for reconnaissance and platform integration at Aberdeen Proving Ground, Md. In April 2007, nine of those trucks were sent to Iraq "as an urgent need," and given to the three deployed Stryker brigade combat teams there, Vogelhut told *Stars and Stripes*. The Army hopes to buy 355 of the vehicles by 2012, Vogelhut said. With the latest in computerized sensor technology, the NBCRV can sample the ground and atmosphere for contamination, whether moving or standing still, and then automatically transmit a digital warning message of possible contamination to follow-on forces.

All seven Stryker brigade combat teams will get three NBCRVs, and each of the Army's heavy brigade combat teams will get two, Vogelhut said. The Army's 40 chemical companies will each get six vehicles apiece, he said. Since the Fox was fielded only to active duty chemical companies, this will be the first time that the National Guard and Army Reserve companies will have their own sensing vehicles, Vogelhut said.

Burgess writes for Stars and Stripes, *Mideast edition.*

INNOVATIVE SCIENCE HELPS TANKERS WORK SMARTER NOT HARDER

Pvt. Naveed Ali Shah, USA

Construction was completed Nov. 20 on an Operational Preservation System for the tanks and Bradleys of the 2nd Battalion, 9th Infantry Regiment, 1st Heavy Brigade Combat Team, 2nd Infantry Division.

The system was installed by the Tank-Automotive Research, Development and Engineering Center, spearheaded by Ali Baziari, team leader.

"It's basically a big dehumidifier," said Baziari. "It's an easily applied, low-cost, high-return technology."

A generator blows warm, dry air into the vehicles via a tubing system attached to one of the tank driver's vision blocks, said Baziari. The tubing is set up so that a total of 14 tanks and 16 Bradleys can be hooked up at any time. The attachments to the vehicles have a sensor to detect the interior level of humidity and temperature so the system can compensate accordingly. It also has a built-in automatic shut-off to prevent overheating, Baziari said.

The warm, dry air prevents condensation from building up in the interior of the tank, which leads to the corrosion of the tank's electronic equipment. Of the damage that occurs from natural wear-and-tear, corrosion is the most expensive and time consuming to repair.

"The Army National Guard and Marine Corps already have this system in place, and we've received very positive feedback," said Paul M. Wiatr, logistics management specialist, 403rd Army Field Support Brigade. "This is one of the reasons that we decided to implement this technology here."

Shah writes for 1st Heavy Brigade Combat Team Public Affairs Office.

DOD ANNOUNCES VENUE FOR WEARABLE POWER COMPETITION

The Department of Defense announced the inaugural $1.75 million Wearable Power Prize Competition will be held at the Marine Corps Air-Ground Combat Center (MCAGCC), Twentynine Palms, Calif., **Sept. 22 until Oct. 4, 2008.**

The Wearable Power Prize Competition was first announced in July 2007. Its 13-day capstone event culminates on Oct. 4 at MCAGCC with a "Power Wear-Off" Competition. The Wearable Power Prize Competition gathers and tests wearable power-generating methods and techniques. The goal is to reduce the weight of power systems that warfighters carry to operate their radios, navigation, weapons, and other gear. Competitors will demonstrate wearable systems that can power military equipment for

96 hours, but that weigh less than half the current battery load.

Finalists, whose entries must produce power on test stands continuously for 88 hours, will wear their power systems in field conditions, testing their ability to work when in motion and exposed to weather.

The first place team meeting the required energy requirements will win $1 million for building the lightest weight system that generates 20 watts average power for 96 hours (including the "wear-off"). The second place team will win $500,000, and the third place team, $250,000. A total of 169 teams have registered for the competition.

The Wearable Power Prize Competition is sponsored by the director, Defense Research and Engineering. William S. Rees Jr., deputy under secretary of defense for laboratories and basic sciences, is responsible for overseeing the competition.

"We are pleased to host this competition because it directly addresses one of the real, growing problems of our ground warriors," said Brig. Gen. Melvin Spiese, commanding general, MCAGCC.

"This competition focuses the ingenuity and creativity of inventors, scientists, engineers, and students on finding the best light-weight, wearable power systems," says Rees. "It makes sense to compete at Twentynine Palms, a place that replicates many of the real-life conditions our warfighters face everyday. I thank Gen. Spiese and his leadership team for recognizing the value of this competition and helping us move it forward. We are eagerly looking forward to this exciting and successful event."

On the final day of the competition, the top three competitors that demonstrate a complete, wearable system that produces 20 watts average power for 96 hours and weighs less than 4 kilograms ($\sim$ 8.8 pounds) will be determined.

For more information about the competition, visit < www. dod.mil/ddre/prize >.

ARMY NEWS SERVICE (JAN. 7, 2008)
LOGISTICS MODERNIZATION TRANSFORMS BUSINESS PRACTICES
Jacqueline Boucher

TOBYHANNA ARMY DEPOT, Pa.—Tobyhanna is in the final stages of integrating the Army's Logistics Modernization Program, which has introduced business processes that are consistent with current industry standards.

The LMP multi-year transformation, begun in December 1999 to modernize logistics and the supporting information technology to meet current and future military readiness requirements, is scheduled for completion in March 2009.

"There's no doubt it's been a difficult transition, but as the system matures, people will be pleasantly surprised at the amount of information available to make our work easier," said Frank Zardecki, deputy depot commander.

"There are over a half a million data points resident in the system that will make manual reporting and analysis of program status a thing of the past. We are a very unique business, and as we continue to grow, we cannot survive without advanced enterprise resource planning systems."

Officials here are using a Web-based enterprise resource planning system to link the depot's business practices so that users can share information with the click of a mouse. The ERP is a framework for organizing, defining, and standardizing business processes. It's a one-stop-shop concept that replaces hours of research and information verification with accurate, real-time data.

"People who use the ERP system can find information in one place," said Jim Antonelli, assistant program officer, Master Production Schedule Office. "The ERP brings together the various elements of being able to do planning for an organization, whether it's material planning, demand planning, or capacity planning."

Tobyhanna's commander is committed to integrating LMP into all aspects of the depot's business processes.

"We are engaged in an enormous task to modernize the Army's logistics and maintenance systems. This is bigger than Tobyhanna and even Army Materiel Command—it impacts the entire army logistics and maintenance systems from the foxhole to the strategic industrial base," said Col. Ron Alberto, depot commander.

"As the Army's LMP prototype, it is our task, and we must embrace this responsibility in order to move Tobyhanna, all depots, and the Army logistics system into the 21st century. The objective is to maintain the highest effectiveness while providing service to the warfighter," he said. "It is imperative that depot employees embrace the cul-

tural, system, and process changes that come with LMP. It is a challenge and mission we must meet head on and overcome."

LMP staff members noted that transformation is necessary if the depot is to continue being competitive in this industry.

"We have a lot of confidence in the ability of the system to do the job as advertised," said Ted Bienkowski, prototype team leader.

"We're starting to see benefits from what we did with the material organizations [in the early stages of the transformation]. The ERP allows us to better meet deadlines and provides for more reliable schedules. It also helps us project our people requirements and provide more valid numbers," he said.

Transforming Tobyhanna's business practices from 1970s logistics technology and 30-year-old processes has not been easy. Since introducing the system in 2003, the LMP team members have overcome obstacles such as learning how to use the complex ERP system, introducing cultural changes to the general depot population, and getting people to understand the level of data quality that's required.

Bob Edmunds started working with LMP about three years ago. "This initiative [LMP] is a huge transformation," he said. "The future of the depot depends upon its successful implementation, and the challenges it presents are significant." Edmunds is the branch chief for the materiel accountability and analysis branch, materiel management division, production management directorate.

"It's not simply software; it's a re-engineering of our business processes, and we need to communicate to everyone involved the benefits of using an ERP system," he said.

If asked, Bienkowski and Antonelli readily admit they have faith in the LMP philosophy. "We're believers," they said. "Now we can do things in a cool, calculated, and methodical way that makes everyone's job easier."

Both men agree LMP is a mindset. According to them, it's not just a system, but an entire philosophy on how to run a business.

"We're heading toward cutting-edge technology," Bienkowski said. "There's so much promise in this system."

The Army chose Systems Applications and Products in Data Processing to develop an ERP system to bring its business practices more in line with industry standards. SAP is a business software company that develops resource planning solutions for companies around the world.

Computer Science Corporation further tailored the ERP system to meet the special needs of the Army.

"When we originally brought the system in, we tried to alter it to fit our existing business processes and it didn't work too well," Antonelli said, explaining that change was necessary for the depot to get the most out of the complex system. "The depot wasn't gaining any benefits from all the good tools available in the ERP system."

Furthermore, Antonelli noted that the LMP team wasn't savvy on system's capabilities. "We had to educate ourselves, and as we got smarter, we realized we could do so much more with the software."

The software features processes that have been refined over the years to be the best business processes in the industry.

"Tobyhanna is making a quantum leap to catch up with industry," Bienkowski said. "I can't believe how much we've learned."

The master production planning team has received extensive fundamental education in ERP and association of operation management. The team is also engaged in continuing education that will lead to certification.

"We're juggling a lot as we [the depot] grow and move the organization into the future," noted Antonelli.

The LMP team consists of about 30 people who develop new business processes and guide the implementation of those processes.

"These people are great," said Antonelli. "They became experts in the system while attending training and conducting workshops for depot employees."

The Army's industrial base, arsenals, and depots will use Tobyhanna's transformation as a benchmark while developing their LMP processes.

"Tobyhanna is the prototype installation implementing what the Army refers to as enterprise expansion, of which

our LMP system is a part," Antonelli said. "What we do here will be the standard all other Army depots and arsenals will follow as they roll out LMP."

The second deployments at Corpus Christi Army Depot, Texas; Letterkenny Army Depot; and U.S. Army Aviation and Missile Command, Redstone Arsenal, Ala., are tentatively scheduled for the second quarter of 2009. Data quality, legacy systems, and new concepts were a few of the challenges logistics experts faced while integrating the ERP system.

"Our biggest challenge is being one of the prototype sites—there's no roadmap for us to follow," Edmunds said. "We're blazing our own trail and learning as we go.

"Data quality is another significant challenge," he added. "Legacy systems did not force data integrity across business disciplines; LMP demands it."

Another major challenge is trying to re-educate employees and get them to accept change, according to Linda Caso, production controller in the manufacturing scheduling division.

"When everyone is trained properly and they understand why they are doing this, it becomes obvious that everyone will benefit from this [LMP]."

Caso was on hand to witness the December roll out and observed first hand the benefits of the new system. "In my opinion, it's a win-win situation for both the customer and Tobyhanna," Caso said. "The system is designed to have material at arm's length as opposed to waiting weeks and sometimes months for deliveries. The shops are gainfully employed and, in turn, this satisfies the customer because they are getting a quality product in a timely fashion."

The ERP is being introduced one directorate at a time. The material management division in the production management directorate started using the material management portion of the material requirements plan in December.

It's going to take 18 months to roll out the rest of the depot, according to Bienkowski. The next phase will launch a prototype for the TSC-93 and TSC-85 weapons systems in the satellite communications division, communication systems directorate.

"The prototype will exercise the system to see if all the business processes that we've developed over the past year work," said Antonelli. "It will give us an opportunity to see where we need to make changes and tweak processes."

The prototype is scheduled for completion in December, and the rest of CS will come online in January. Antonelli explained that if all goes well, other depot organizations will roll out every two months: systems integration and support directorate, followed by command, control and computer/avionics directorate, and lastly, intelligence, surveillance and reconnaissance directorate.

AMERICAN FORCES PRESS SERVICE (JAN. 7, 2008)
NEW HELMET SENSORS TO MEASURE BLAST IMPACT

Donna Miles

FORT BELVOIR, Va.—Soldiers from the 101st Airborne Division preparing to deploy to Afghanistan are being issued sensors that attach to their helmets to measure the impact from blasts, roadside bombs, and other activities.
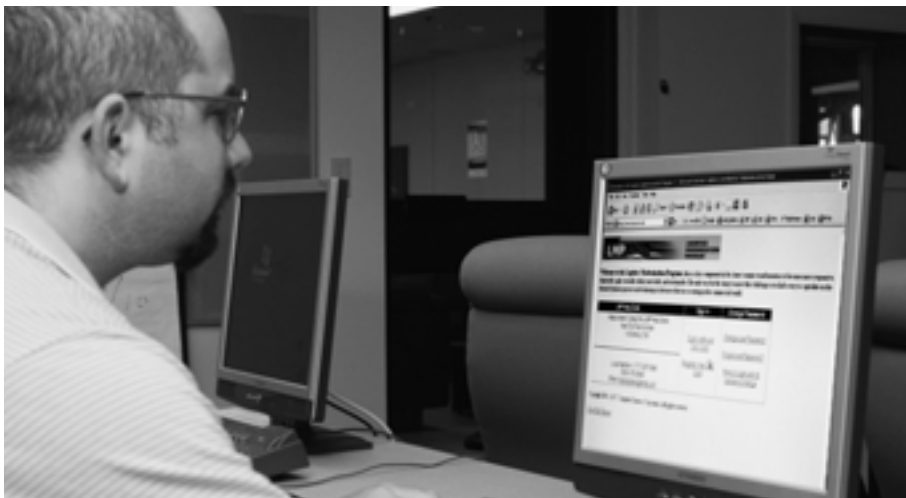
Gary Roberts helps design the business processes and procedures that Tobyhanna Army Depot will use once master production scheduling is implemented. Roberts is a Logistics Modernization Program (LMP) production controller and member of the depot's master production scheduling team.   *Photo by Steve Grzezdzinsks*

In the News

About 1,200 "Screaming Eagles" already have the new sensors, and the rest will receive them within the next month, said Maj. William Schaffer, a product manager in the Army's Program Executive Office Soldier, based at Fort Belvoir.

Meanwhile, troops from the 4th Infantry Division are scheduled to receive helmet sensors with similar capabilities before their deployment to Iraq this fall, Schaffer said.

The sensors gather data on impacts ranging from a dropped or kicked helmet to a vehicle crash to a nearby weapon firing or explosion, Schaffer explained. They measure two specific actions: the energy wave generated by the event and the acceleration or jolt that follows.

In the short term, data collected through the sensors are expected to help the Army improve the helmets and other protective equipment it provides its soldiers, Schaffer said.

A longer-term application—one Schaffer emphasized the medical community isn't yet ready for—is to use impact data to help diagnose traumatic brain injuries.

"With the number of IEDs that we're seeing in Iraq and the traumatic brain injury that's coming out of it, obviously, somewhere down the line, we are looking at correlating the blast and the injury," he said. "But in the near term, we are looking at developing a more protective piece of equipment. The advanced combat helmet we have out there is the best in the world, but we are always looking at ways to make our products better, and this is a great way to start."

Army Maj. William Schaffer in the Program Executive Office Soldier at Fort Belvoir, Va., displays a Kevlar helmet with an externally mounted sensor that collects blast data, and the sensor itself. The 101st Airborne Division is receiving the sensors before deploying to Afghanistan. *Photo by Donna Miles*

Gen. Richard A. Cody, Army vice chief of staff, ordered the helmet sensor program in June. Three months later, the Program Executive Office Soldier had come up with several potential helmet sensors and was putting them through extensive testing at Aberdeen Proving Ground, Md.

Within six months of getting its marching orders, officials narrowed the field to the most promising models: one mounted externally and one internally. "We came up with two of the best sensors, and we're now preparing to field both of those," Schaffer said.

The model going to the 101st Airborne Division attaches to the back of the advanced combat helmet, protected by a hardened casing that is covered by a camouflage flap. It weights about 6 ounces and has a six-month battery life. The sensor remains in a "sleep" mode, automatically turning itself on and capturing data from an event, then turning itself off. It has enough memory to store data on 527 events.

To harvest information from the sensor, a soldier simply connects it to a computer using a USB port, hits "save," and sends the data to a secure database.

An internally mounted model to be fielded to the 4th Infantry Division sits under the padding in the crown of the helmet. It has a rechargeable battery, but otherwise has the same capabilities as the externally mounted sensor.

"One is protected by the helmet itself, and one by the hardened casing around it," Schaffer said. "Both measure impact and acceleration."

Initial input from 101st Airborne Division soldiers shows they are happy to play a part in helping the Army improve its helmet protection, Schaffer said. He noted that many of the soldiers have experienced blasts or accelerations during past deployments and recognize the value of the sensor technology in developing the next-generation combat helmet.

"This shows everybody that the Army cares," Schaffer said. "We have got the best equipment in the world, but we are not resting on our laurels. We are always looking forward, always looking for the next generation of protective equipment to take care of the soldiers."

Miles writes for American Forces Press Service.

ARMY NEWS SERVICE (JAN. 17, 2008)
ARMY, NAVY, COAST GUARD TO SHARE BUSINESS TRANSFORMATION CAPABILITIES

In a ceremony Jan. 15 at Coast Guard offices in Rosslyn, Va., the U.S. Army, the Department of the Navy, and the U.S. Coast Guard signed a joint memorandum of understanding formalizing an agreement to share capabilities for business transformation.

This agreement was signed by Michael Kirby, deputy under secretary of the Army for business transformation; Anita Blair, deputy assistant secretary of the Navy for total force transformation and acting assistant secretary of the Navy for manpower and reserve affairs; and Rear Adm. Jody A. Breckenridge, director, strategic transformation team, U.S. Coast Guard.

The Army and Navy first signed a memorandum of understanding making formal a data-sharing agreement for workload performance in November 2007. This agreement also formalized use of the unified Army and Navy Data Center in Fairfield, Calif., referred to as the Business Innovation Center.

The data sharing agreements are critical to business transformation, allowing each Service to leverage best practices while reducing costs associated with research and development, and gain a better understanding of technology and how it can be applied across the Service's enterprise.

Besides the sharing of the Business Innovation Center, some of the programs or processes to be shared are applications of organizational design, case studies gained from use of Lean Six Sigma, use of executive management and decision support tools, shared business transformation-oriented contracts, and outcomes from various workload and performance capabilities.

MEDICAL COMMUNICATIONS FOR COMBAT CASUALTY CARE (MC4) PUBLIC AFFAIRS
DEPLOYED NURSES PROVIDE HEAVY LIFTING FOR THE DIGITAL MEDICAL RECORD

Bill Snethen

In the emergency room of a combat support hospital (CSH) in Afghanistan, a multi-disciplinary team assesses a soldier's wounds before being transferred to the operating room. In an intermediate care ward (ICW) in Iraq, nurses keep a watchful eye on a soldier prior to his evacuation to Landstuhl, Germany. Meanwhile, a team of nurses treat severe dehydration at a forward deployed outpatient clinic in Kuwait.

Throughout Southwest Asia (SWA), nurses remain at the hub of activity in medical treatment facilities (MTFs). They shoulder the heavy load of treating sick and injured patients, mobilizing soldiers from litters to beds, running down lab results, and shuffling orders from one end of a hospital to another.

Next to administering care, nurses are charged with capturing critical pieces of information. Given this responsibility, any nurse will admit that charting patient care is far from their favorite duty. Few will disagree how important it is that the patient's information be recorded and shared.

"One of the downsides to medical care is that no one likes to chart patient care since it takes away from the time we could spend helping other patients," said Army Capt. Kara Beattie, an emergency room nurse previously deployed to Baghdad, Iraq, with the 10th CSH. "But having this information allows others to know what treatments have been given. This can also provide insight of what care still needs to be done."

Today's standard for recording patient information is electronic, where medical teams can access data easily and immediately, where results are delivered without flight of foot, and where supervisors can mine legible data and output reports to pinpoint trends. This standard has already

spread to tented hospitals, aid stations, and mobile clinics overseas—more than 200 MTFs to be exact.

Army-issued laptops, handhelds, servers, and printers reside in every level three MTF and outlying Army and Air Force treatment facilities in SWA. These systems, called Medical Communications for Combat Casualty Care (MC4), provide the deployed medical workforce with a means of digitally recording patient information in communications-challenged environments.

When connectivity is present, they transfer patient information to a worldwide accessible database, providing commanders with a medical situational awareness capability they never had before. But the success of the system relies solely on the users, placing nurses directly in the crosshairs. Their efforts using MC4 have contributed to the collection of nearly 3 million medical records. Also having the ability to check patient data electronically to administer timely care has proven to be a benefit over paper-based methods.

"We had a patient admitted to the ICW for gastroenteritis, and the doctor ordered some routine labs, including a complete blood count," said Army 1st Lt. Mary Miller, nurse with the 325th CSH in Al Asad, Iraq. "I was able to quickly access the electronic lab results and noticed this patient had a very low hemoglobin and hematocrit. The patient was able to receive care for anemia in a timely manner. Had I waited for a printout of the results, the treatment could have been delayed."

Having the ability to view a patient's deployed medical history enables every member of the medical team to make the best informed decision by seeing the big picture, thus improving continuity of care.

"One patient had a bruise on his back, and we noted this in the record," Beattie said. "It turned out to be a bruised kidney. Having this information in the EMR [electronic medical record] allowed other providers to watch the situation and test for additional injuries."

The use of EMRs also helps eliminate records being lost in transit, thus eliminating the chance for redundant or unnecessary procedures.

"I think that it's our job as a health care team to ensure that *that* information travels with *that* patient wherever they may go," Beattie said. "EMRs allow nurses and physicians in a multi-disciplinary team to make clear decisions on the care being administered to our soldiers as they go

through the various health care facilities before they get back home."

While the collection of EMRs adds to the workload, nurses understand the importance of taking the time to electronically capture all of the patient data, especially on the battlefield.

"We're the advocate for the soldier," Beattie said. "We're the ones making sure that a soldier's injuries and treatments are documented accurately so that the additional health care they receive is appropriate and accurate based upon the medical history. EMRs have allowed us to do that in such a way that is unbelievable. We have that opportunity to impact a soldier's life, not only on the battlefield but all the way into retirement or medical retirement. And if we don't do that, we're not doing our jobs as health care providers."

Snethen writes for Medical Communications for Combat Casualty Care (MC4) Public Affairs.

AIR FORCE PRINT NEWS (JAN. 24, 2008)
AIR FORCE DEVELOPS FRIEND VS. FOE IDENTIFICATION SYSTEM

Mindy Cooper

WRIGHT-PATTERSON AIR FORCE BASE, Ohio— Air Force Research Laboratory officials recently developed a technology that helps identify friendly forces during combat exercises.

Working with Lumitex Inc., of Strongsville, Ohio, members of AFRL's materials and manufacturing directorate developed and fielded the Target Recognition Operator Notification, or TRON system, which has the potential to save lives and increase combat effectiveness.

"Responding to established needs, the materials and manufacturing directorate partnered with Lumitex Inc., to further develop methods established by the Army," said Air Force 1st Lt. TJ Turner, the lead engineer for combat support technology. "Lumitex Inc., produced a fiberoptic cloth that materials and manufacturing directorate researchers realized could be used to develop a more accurate system of identification."

The directorate acquired the fiber-optic cloth and worked closely with Lumitex and user groups to create the TRON system and produced 108 prototypes in a period of six months. The directorate used funds from their company grade officers' initiative program, which provides lieutenants and captains the opportunity to receive funding to

work on a special project outside their core technology area.

TRON is comprised of Lumitex' patented thin and flexible fiber-optic-woven cloth cut to military specifications. The sheets of the fiber-optic cloth are laminated into layers and can be formed into lighting devices of multiple shapes and sizes. The woven nature of the cloth emits light in a controlled way, creating a uniform light-emitting surface, Turner said.

Officials said they expect the technology to be inexpensive and rapidly transferable to the field. It has a long battery life, running 200 hours on two AA batteries, and weighs less than 3 ounces. The system can be worn under the clothes, on outer tactical vests, on an arm, or mounted to a helmet.

"The TRON I system was first tested at the Team Patriot exercise at Volk Field, Wis.," Turner said. "Feedback from Army aviation units showed that the system clearly allowed them to identify friendly forces on the ground. Design changes were also suggested by Army and Air Force personnel, which will lead to the future development of TRON. The improved system includes a better electronics package, modified flash rates, and a new case design."

After the initial TRON evaluation, Air Force Special Operations Command members requested that larger units be made to identify friendly positions during close-air-support operations. This system, known as TRON III, is made of the same fiber optic cloth but has six times the brightness of TRON I. It hooks into a vehicle's power supply, so there is no need for an external power supply.

It is brightly colored for daytime recognition as well. This prototype was developed as a joint effort between the materials and manufacturing directorate, which decided on the specifications, and Lumitex, which built the system. TRON III was developed and put in the field for testing three months after the need was established.

"Currently, TRON I and III are being used in deployed locations, and were used at Red Flag, a joint air operation exercise held at Nellis Air Force Base [Nev.]," Turner said. "In real world conditions, TRON I was used to successfully mark and cordon an unused improvised explosive device, enabling a bomb disposal team to come in and quickly identify and destroy it. It has also been used in over 40 close-air support missions. TRON III has been used for at least two successful close-air support missions."

Cooper is with Air Force Research Laboratory.

Air Force 1st Lt. TJ Turner is shown through night-vision goggles holding Target Recognition Operator Notification III (left) and TRON I in January near Bagram Air Base, Afghanistan. Air Force Research Laboratory officials partnered with the civilian industry to develop the identification system to save lives and enhance combat effectiveness. Turner is a member of the 455th Expeditionary Mission Support Group. *U.S. Air Force photo*

In the News

SOLDIERS TRY OUT IMPROVED BODY ARMOR

Maj. Wayne Marotto, USA

BAUMHOLDER, Germany—For as long as the Army has used Interceptor Body Armor, soldiers have complained that it is too heavy, too hot, and too cumbersome.

But those complaints may be a thing of the past for soldiers in U.S. Army Europe's 2nd Brigade Combat Team, 1st Armored Division. Those soldiers recently donned the Army's newest body armor—the Improved Outer Tactical Vest.

"The IOTV is a lot more comfortable because of the mesh lining inside," said Sgt. Brian Freeman, a tanker with 2nd BCT's 1st Battalion, 35th Armor. "The waist strap also makes it fit better by redistributing the weight off my shoulders and moving it around my waist."

Freeman ought to know. He deployed with the 2nd BCT for the first iteration of Operation Iraqi Freedom carrying woodland camouflage pattern IBA.

"We didn't even get small arms protection insert plates until the fifth month in country," said Freeman. "I like the mesh lining; it makes it more comfortable."

The mesh is intended to keep the wearer's body cooler by improving ventilation.

The IOTV is the Army's latest evolution of body armor designed to protect the soldier's torso area.

According to information released by the Army's Program Executive Office Soldier, the agency in charge of developing and fielding new equipment, the IOTV meets PEO Soldier's goals of providing troops the most advanced protective gear available, while also improving comfort and mission effectiveness.

The Army spent a good deal of time asking soldiers for suggestions and feedback about existing body armor, and then tested new designs based on their responses.

As a result, the IOTV has several advantages over its predecessor. It is three pounds lighter; it provides more coverage in the small of the back; it sits higher around the armpit area; and it sits lower on the torso, said Tony Perez, Team 5 fielding leader for Engineering Solution Products,

the contractor selected by the Army to field the IOTV to the 2nd BCT.

Perez noted that the new design addresses one of the biggest complaints about earlier body armor models—that the addition of side small arms protective insert body armor plates forced the soldier's arms awkwardly away from his body.

"The side plates on the IOTV are in a better position, decreasing the profile and allowing better arm movement," Perez said.

Brigade soldiers who tried on the IOTV called it a welcome improvement.

"The IBA had zero cushioning inside, especially on the shoulders," Freeman said. "The IOTV fits better and it has a quick release, which makes it better than the IBA."

The quick-release cable feature allows soldiers to get out of the IOTV with one pull by disassembling the vest into two parts that fall to the ground. That innovation should help a soldier get out of the IOTV quickly when needed—such

Army Sgt. Brian Freeman pulls the quick-release cable on Army Sgt. William Huff's Improved Outer Tactical Vest during a training session for soldiers of U.S. Army Europe's 2nd Brigade Combat Team, 1st Armored Division in Baumholder, Germany, Jan. 23. The quick-release, one of several improved features of the new armor, is designed to allow the wearer to quickly remove the IOTV when needed. 2nd BCT soldiers are being issued the IOTV in preparation for the brigade's planned deployment to Iraq in the spring.
Photo by Maj. Wayne Marotto, USA

as when a military vehicle rolls over into water—allowing the soldier to escape the submerging vehicle or be pulled more easily to safety. The quick release should also help medics to treat injured or wounded soldiers quickly.

Pfc. Tony Gonzales, a tank driver for 1-35th Armor, said the IOTV "is a lot better, because it fits better around the body and is more comfortable."

Pfc. William Fraleigh, an infantryman from the 2nd BCT's A Company, 1st Battalion, 6th Infantry, conceded that the IOTV allows for better flexibility and movement, and even admitted that the quick-release could prove invaluable if needed during an emergency. But giving up his IBA will be like throwing away a comfortable pair of old shoes, and he was a bit superstitious about the idea.

"It always worked for me in combat, and I felt comfortable in it," said Fraleigh.

"I liked the IBA better, because it is easier to put on than the IOTV. I don't like the emergency quick-release, because it might get snagged on something during a patrol and the body armor comes undone. You don't have time to put it back together while patrolling."

The 2nd BCT continues its preparation for its scheduled spring deployment to Iraq.

Marotto is the public affairs officer for 2nd Brigade Combat Team, 1st Armored Division.

DEPARTMENT OF DEFENSE NEWS RELEASE (JAN. 28, 2008)
FISCAL 2008 NEW START AND ADDITIONAL FISCAL 2007 JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS ANNOUNCED

The Department of Defense announces the selection of seven Joint Capability Technology Demonstration (JCTD) projects for fiscal 2008 and three JCTD projects that started at the end of fiscal 2007.

Fiscal 2008 New Starts

Combat Autonomous Mobility System (CAMS)

Autonomous, ground-mobile system that leverages manpower for Special Operations Forces
- Combatant Command/User Sponsor: U.S. Special Operations Command (USSOCOM)
- Transition Service/Agency: U.S. Army Special Operations Command

- Project Oversight: Office of the Secretary of Defense/ Director, Defense Research & Engineering/Advanced Systems and Concepts (OSD/DDR&E/AS&C)

Communications AirBorne Layer Expansion (CABLE)

Integrated Services airborne communications relay and gateway effort to provide seamless mesh network environment for data, voice, and Internet Protocol (IP)-based networks
- Combatant Command/User Sponsor: U.S. Strategic Command (USSTRATCOM)
- Transition Service/Agency: Navy and Air Force
- Project Oversight: OSD/DDR&E/AS&C

Collaborative Online Reconnaissance Provider/ Operationally Responsive Attack Link (CORPORAL)

Scalable, IP-based, plug and play open architecture tailored to the ground warfighter for critical information sharing
- Combatant Command/User Sponsor: U.S. Central Command (USCENTCOM)
- Transition Service/Agency: Marine Corps
- Project Oversight: OSD/DDR&E/AS&C

Hard Target Void-Sensing (HTVS) Fuze

Void-sensing, cockpit-programmable, and BLU-109/113/122 warhead-compatible fuze that functions in greater than 10,000 pounds-per-square-inch concrete
- Combatant Command/User Sponsor: USSTRATCOM
- Transition Service/Agency: Air Force
- Project Oversight: OSD/DDR&E/AS&C

Joint Force Protection Advanced Security System (JFPASS)

Integrates and automates access control and perimeter security for expeditionary military installations
- Combatant Command/User Sponsor: U.S. European Command (USEUCOM)
- Transition Service/Agency: Army
- Project Oversight: OSD/DDR&E/AS&C

Multi-Function Threat Detector (MFTD)

Affordable hostile fire indicator with threat classification
- Combatant Command/User Sponsor: USCENTCOM
- Transition Service/Agency: Navy
- Project Oversight: OSD/DDR&E/AS&C

Shadow Harvest (Classified)

Obscured target mitigation via a rapidly tailorable multi-intelligence on-board package
- Combatant Command/User Sponsor: U.S. Southern Command
- Transition Service/Agency: Air Force
- Project Oversight: OSD/DDR&E/AS&C

In the News

Three additional Fiscal 2007 New Starts

Global Observer (GO)

High-altitude, long-endurance, liquid hydrogen-powered unmanned aerial vehicle
- Combatant Command/User Sponsor: USSOCOM and USSTRATCOM
- Transition Service/Agency: USSOCOM
- Project Oversight: OSD/DDR&E/AS&C

Joint Surface Warfare (JSuW)

Integrated multiple airborne Intelligence, Surveillance, and Reconnaissance and strike platforms with dynamic retasking of existing stand-off weapons for maritime interdiction
- Combatant Command/User Sponsor: U.S. Pacific Command
- Transition Service/Agency: Army
- Project Oversight: OSD/DDR&E/AS&C

Zephyr

Joint, real-time, battlefield persistent surveillance and communications via an extended-duration, solar-powered, unmanned aerial vehicle
- Combatant Command/User Sponsor: USCENTCOM and USEUCOM
- Transition Service/Agency: TBD
- Project Oversight: OSD/DDR&E/AS&C

The JCTD business model, entering its third year, completely replaced the ACTD model in fiscal 2007 to rapidly move advanced technology and innovative concepts into the hands of warfighters in the field. Building on the successful ACTD model in which new operational concepts are combined with maturing technologies in a joint environment, JCTDs focus more on tailoring projects to a combatant commander's specifically identified needs—emphasizing "needs pull" over historical "technology push."

A JCTD enables faster project start-up by providing more resources earlier in the traditional two-year DoD budget cycle and a flexible start process that facilitates urgently needed combatant command-driven capabilities throughout the fiscal year. One key aspect of the JCTD program is the enhanced transition planning process, which seeks to deliver enduring capabilities to the combatant commands.

The JCTD program also demands faster fielding of interim capabilities; structures funding to provide incentives for military service and agency participation without requiring the Services or agencies to fund from their existing

programs; and provides Services and agencies clear visibility in their participation of joint efforts.

For more information on the ACTD/JCTD programs, visit < www.acq.osd.mil/jctd/ > and go to "FY08 New Start Project Summaries."

PROJECT MANAGER, DEFENSE COMMUNICATIONS AND ARMY TRANSMISSION SYSTEMS PRESS RELEASE (FEB. 12, 2008)
PRODUCT MANAGER, DEFENSE WIDE TRANSMISSION SYSTEMS CONNECTS ARMY LOGISTICIANS WITH 1,000TH CSS VSAT

Stephen Larsen

SPRINGFIELD, Va.—The program to connect Army logisticians with their own, dedicated communications system reached a significant milestone when the 1,000th combat service support very small aperture terminal (CSS VSAT) rolled off the assembly line at the plant of L-3 Global Communications Solutions, Inc. (GCS) in Victor, N.Y., on Jan. 9, 2008.

The program, managed by the product manager, Defense Wide Transmission Systems (PM DWTS)—part of the Army's Program Executive Office, Enterprise Information Systems' Project Manager, Defense Communications and Army Transmission Systems (PM DCATS)—started in May 2004 as the solution to the Army G-4's (deputy chief of staff logistics) number-one priority after Operation Iraqi Freedom I to connect logisticians with their own communications system to pass requisitions, and at the same time eliminate the need for soldiers to go in harm's way in convoys to hand-carry requisitions.

Some 90 Army leaders and their industry partners met at a PM DWTS facility on Jan. 31, 2008, to mark the milestone.

Borrowing an analogy he heard from former Army Chief of Staff Gen. Peter Schoomaker, Thomas Edwards, assistant deputy chief of staff, Army G-4, compared the early process of trying to connect Army logisticians to "slogging through a swamp," and said that for the G-4, the CSS VSAT solution was like "jumping out of a swamp and onto a rocket ship.

"The number one logistics issue out of the war [Operation Iraqi Freedom] was to connect the logistician," said Edwards. "You can't run a distribution system if you don't know what the user wants. If you [the CSS VSAT govern-

ment and industry team] hadn't been able to step up and make that happen, we'd still be on the sidelines. You have my personal and enduring thanks for that."

Maj. Jeff Etienne, the assistant product manager, DWTS-Belvoir, told the group the history of the CSS VSAT program, from the first generation of 18 prototype units in March 2004 that utilized a 0.96 meter dish to the current fourth generation 1.2 meter Hawkeye II-enhanced units that were fielded starting with the 901st unit in November 2007. He said soldiers' demand for CSS VSATs continues to increase because the technology allows users to share documents, pass requisitions, collaborate and conduct meetings online, and make voice over Internet Protocol telephone calls—all without moving from their location.

Also Connects Medical, Biometrics, and Homeland Security Users

Lt. Col. Clyde Richards, PM DWTS, said that the factory-to-foxhole Internet capability enabled by CSS VSATs provides information dominance for CSS warfighting units and noted that, in addition to connecting logisticians, CSS VSATs also save soldiers' lives by digitally transporting medical supply and casualty-care transactions, and sup-

port force protection by digitally transporting biometrics and homeland security transactions. "We've also provided VSATs to support disaster relief efforts, such as we did after Hurricane Katrina," said Richards.

Emphasizing that his objective as a PM was to provide a faster, better, and cheaper system, Richards said that he was proud that the PM DWTS and industry team had worked together to reduce the cost of individual CSS VSATs by 35 percent and to make process improvements, such as doing quality inspections at the vendor's plant and shipping directly from there to users. "I also want to tell you that, operationally, we have not lost one single VSAT out of 1,000," said Richards.

Richards said that the original requirement from the G-4 was for 775 CSS VSATs, that there were 1,000 more in the pipeline, and that the figure could ultimately grow to 3,000 CSS VSATs.

Media contact is Stephen Larsen, 732-427-6756 or stephen. larsen@us.army.mil.

A Six-pack of Tips for Defense AT&L Authors

1 Look at back issues of the magazine. If we printed an article on a particular topic a couple of issues ago, we're unlikely to print another for a while—unless it offers brand new information or a different point of view.

2 We look on articles much more favorably if they follow our author guidelines on format, length, and presentation. You'll find them at < www.dau.mil/pubs/dam/DAT&L % 20author % 20 guidelines.pdf >.

3 Number the pages in your manuscript and put your name on every page. It makes our life so much easier if we happen to drop a stack of papers and your article's among them.

4 Do avoid acronyms as far as possible, but if you must use them, define them—every single one, however obvious you think it is. We get testy if we have to keep going to acronym

finder.com, especially when we discover 10 equally applicable possibilities for one acronym.

5 Fax the *Certification as a Work of the U.S. Government* form when you e-mail your article because we can't review your manuscript until we have the release. Download it at < www.dau. mil/pubs/dam/DAT&L % 20certification.pdf >. Please don't make us chase you down for it. And please fill it out completely, even if you've written for us before.

6 We'll acknowledge receipt of your submission within three or four days and e-mail you a publication decision in four to five weeks. No need to remind us. We really will. Scout's honor.

Spotlight on DAU Learning Resources

CONTINUOUS LEARNING OPPORTUNITIES SUPPORTING THE AT&L WORKFORCE

The Continuous Learning Center is dedicated to the delivery of continuous learning opportunities supporting the acquisition, technology and logistics (AT&L) workforce. To fulfill the DoD AT&L requirement for obtaining 80 continuous learning points every two years, the Continuous Learning Center offers topics in the following areas:

- Acquisition Management
- Business
- Contracting
- Engineering and Technology
- Harvard ManageMentor Plus topics
- Logistics
- Program Management.

As of Jan. 17, 2008, the Continuous Learning Center < http://clc.dau.mil > offers 206 online modules to the AT&L workforce. Modules are available in browse mode < https://learn.dau.mil/html/clc/clc.jsp > or for registration < https://learn.dau.mil/html/clc/Register.jsp >.

New Modules
- Defense Priorities Allocation System (DPAS)—CLC 043
- Technology Refreshment Planning—CLL 019
- Contingency Contracting Simulation: Barda Bridge— CLC 039
- DoD Packaging—CLL 013
- RFID—CLM 044

Updates to Current Modules
- DoD Government Purchase Card—CLG 001
- DoD Government Purchase Card Refresher—CLG 004

Modules Coming Soon
- Capacity Measurement
- Engineering Change Proposals
- SLAMIS (SSN-LIN Automated Management & Integrating System–Army)

DAU AND NDIA TO SPONSOR DEFENSE SYSTEMS ACQUISITION MANAGEMENT COURSE OFFERING FOR INDUSTRY MANAGERS

DAU and the National Defense Industrial Association will sponsor an offering of the Defense Systems Acquisition Management (DSAM) course for interested industry managers June 9-12, 2008, at the Hyatt Regency Denver–Colorado Convention Center, Denver, Colo.

DSAM presents the same acquisition policy information provided to DoD students who attend the Defense Acquisition University courses for acquisition certification training. It is designed to meet the needs of defense industry acquisition managers in today's dynamic environment, providing the latest information related to:

- defense acquisition policy for weapons and information technology systems, including discussion of the DoD 5000 series (directive and instruction) and the CJCS 3170 series (instruction and manual)
- defense transformation initiatives related to systems acquisition
- defense acquisition procedures and processes
- the planning, programming, budgeting, and execution process and the congressional budget process
- the relationship between the determination of military capability needs, resource allocation, science and technology activities, and acquisition programs.

For further information see "Courses Offered" under "Meetings and Events" at < www.ndia.org >. Industry students contact Phyllis Edmonson at 703-247-2577 or e-mail pedmonson@ndia.org. A limited number of experienced government students may be selected to attend each offering. Government students must first contact Bruce Moler at 703-805-5257, or e-mail bruce.moler@dau.mil prior to registering with NDIA.

COMPETENCY MANAGEMENT—AN OVERVIEW

In October 2006, the under secretary of defense for acquisition, technology and logistics deployed a joint competency management initiative involving DoD AT&L functional leaders; component acquisition leaders; field subject matter experts; the Defense Acquisition University; and the Center for Naval Analyses, which specializes in competency modeling. This effort will result in a standard competency model for each career field in the DoD AT&L workforce. Each model maps the array of competencies and performance criteria required to be successful in the acquisition career field. The collective goal is to create a common language that will describe workforce capabilities and the criteria required for superior job performance.

To date, three of the 13 DoD AT&L career field competency models have been developed—Contracting, Life Cycle Logistics, and Program Management. Competency models for the Business, Cost Estimating, and Financial

Spotlight on DAU Learning Resources

Management (BCEFM) and Systems Planning, Research, Development, and Engineering (SPRDE) career fields are in development; the remaining career field competency models will be completed during FY08.

The Contracting community is conducting a community-wide assessment targeted for completion in June 2008. Future assessments will result in a stratified sampling technique; to ensure research integrity, a survey response rate adequate to conduct analyses and make conclusions at the 95 percent level of confidence is needed. The goal is to achieve the highest response rate possible in the acquisition community; this will help ensure adequate representation of the Services/components, certification levels, and acquisition professionals' specialty roles within the workforce. In addition, a large participation rate will allow model developers to have a more robust data set to identify gaps in the workforce. The assessment results will assist senior leaders in implementing workforce strategies to address critical skill gaps as well as targeting new education and training resources. Updates will be provided as the competency modeling team moves forward with this very important initiative.

For additional information, contact Jeff Birch at jeffrey.birch@dau.mil.

TWO NEW GUIDES AVAILABLE ON AKSS

The AT&L Knowledge Sharing System (AKSS) program office is pleased to announce the contribution of two new guides, created to provide members of the AT&L user community with information essential to job support and performance improvement.

The Space and Naval Warfare Systems Command (SPAWAR) Clinger-Cohen Act (CCA) Survival Guide < https://akss.dau.mil/lists/guidebooks % 20 % 20handbooks/s.aspx > provides users with a tool using a logical integrated workflow to meet CCA requirements. The guide incorporates the latest policy provided by the Department of Navy, Chief Information Officer via Secretary of the Navy Instruction 5000.2, and statutory and regulatory references.

The Contract Management Process Guide (CMPG) < https://akss.dau.mil/lists/guidebooks % 20 % 20handbooks/c.aspx > is a user-friendly, Web-enabled tool designed to benefit program offices by providing guidance, tools, and resources to improve the quality of contractual documents, streamline the procurement process, and reduce cost and time to execute contract awards and modifications.

AKSS welcomes the submission of new guides, learning tools, performance improvement tools, and handbooks from any of the military services, major commands, and associated agencies. Each contribution further enhances the knowledge base of the acquisition community and potentially improves the cost and performance effectiveness of every acquisition. All suggestions are welcome as the Defense Acquisition University and AKSS strive to make AKSS a world-class tool for the world-class AT&L community. Send your suggestions to issc@dau.mil.

GAMING AND SIMULATION IN EDUCATION

In a continuing effort to enhance the standard of excellence for the AT&L workforce, the use of games and simulations within the Defense Acquisition University curricula has become an exciting initiative for FY08-09. While 15 DAU courses currently incorporate a variety of games and/or simulations, an effort headed by DAU's e-Learning and Technology Center and Learning Capabilities Integration Center, in partnership with the University of Central Florida, has identified an additional 15 courses that are highly amenable to the inclusion of gaming and simulation-based technology.

Games and simulations will be customized for integration into most of the recently identified courses during the FY08-09 timeframe. One flagship game template, also developed in conjunction with researchers from the University of Central Florida, is a card-based game designed to reinforce pre-Milestone B objectives.

The game allows up to six players from classroom and intact teams to understand the dynamics of their respective positions, teamwork, and the course-specific issues common to the acquisition process. An Internet-based version of the card game was highlighted recently at the grand opening of the Center for Simulation Training and Research (CSTAR) at Fort Belvoir, Va. This game is scheduled to appear in several courses during FY08.

INTEGRATED DEFENSE AT&L LIFE CYCLE MANAGEMENT FRAMEWORK CHART

The Defense AT&L Life Cycle Management Framework Chart Version 5.2 will be revised in mid-2008 to reflect changes in the acquisition process that are now being finalized. DAU will reprint the new framework chart as soon as it receives the approved version. The university currently anticipates availability of the new chart for general distribution around spring 2008. Because DAU has a very limited quantity of the existing 5.2 version, distribution is currently limited to students

attending DAU courses. The 5.2 online version, however, remains available for viewing and printing at < https://akss.dau.mil/ifc/ >.

DEFENSE ACQUISITION UNIVERSITY 2008 CATALOG

A prepublication copy of the DAU 2008 Catalog is now available at < www.dau.mil/catalog/default.aspx >. Once the catalog is printed, you may request a copy from the DAU Student Services Office at student.services@dau.mil.

Information in the hardcopy catalog is current as of Oct. 1, 2007. The catalog is updated online periodically throughout the training year, and new CDs are produced with each update. (DAU is printing fewer hard-copy catalogs because the information is readily available and current online. In general, we will limit the number of paper catalogs to one per requestor.) Currency of information contained in hard copies and CDs should always be confirmed on the catalog Web site.

DEPOT MAINTENANCE TRAINING AVAILABLE

The office of the assistant deputy under secretary of defense for materiel readiness and maintenance policy and the Defense Acquisition University have deployed three new Life Cycle Logistics Continuous Learning Modules, all focusing on depot-level maintenance and associated Title 10 statutes. Additional training modules are planned for development in FY08. These three new training modules, as well as two existing modules are available now at the DAU Continuous Learning Center < http://clc.dau.mil/ > :

- CLL 006 (Depot Maintenance Partnering)
- CLL 022 (Title 10 Depot Maintenance Statute Overview)
- CLL 023 (Title 10 U.S.C. 2464 Core Statute Implementation)
- CLL 024 (Title 10 Limitations on the Performance of Depot-level Maintenance (50/50)
- CLL 025 (Depot Maintenance Interservice Support Agreements (DMSIA)

Defense Acquisition University Strategic Partnership

Through the years, the Defense Acquisition University has established strategic partnerships with universities and colleges, defense-sector corporations, professional associations, other government agencies, and international organizations. Such partnerships with academic institutions allow DoD AT&L workforce members to transfer DAU course work toward college and university degrees and certificates. Partnerships with industry, professional societies, government agencies, and international organizations focus on sharing training materials, tools, modules, and training opportunities. A complete database of DAU Strategic Partnerships can be found at < **www.dau.mil/about-dau/partnerships.aspx** >. In January 2008, another partnership was added to the database:

Clark State Community College in Beavercreek, Ohio, has signed a strategic partnership agreement with the Defense Acquisition University Midwest Region (DAU Midwest). The DAU Midwest Region campus is located in Kettering, Ohio. The articulation agreement, which outlines the terms under which Clark State and DAU Midwest will work together, was signed on Jan.11, at the new Clark State Greene Center in Beavercreek, Ohio. DAU Acting Midwest Region Dean Carl Hayden and Clark State President Dr. Karen Rafinski took part in the signing ceremony hosted by the Greene Center. Staff and faculty members from DAU Midwest Region and Clark State also attended.

"We are looking forward to serving AT&L students at the Greene Center," said Rafinkski. "Clark State is actively pursuing partnerships with area organizations in order to create more education opportunities for the citizenry of Greene County and surrounding communities."

Career Development

USD(AT&L) ANNOUNCES TWO NEW WORKFORCE TOOLS

Under Secretary of Defense for Acquisition, Technology and Logistics John Young has announced the creation of two tools that will help foster an open and collaborative environment. They are the AT&L Living Library and the AT&L Reading Library. Both libraries are linked to the AT&L Knowledge Sharing System Web site at < https://akss.dau.mil/default.aspx > and the Defense Acquisition University Web site at < www.dau.mil >.

The Living Library is a forum for leaders to share experiences and lessons learned related to everything from configuration steering boards, program stability, program planning, to cost control and much more. The first interview was with Rear Adm. Steven Enewold, vice commander of the Naval Air Systems Command and former program executive officer for the Joint Strike Fighter program. The Reading Library houses recent policy memos for easy reference.

DOD LOGISTICS HUMAN CAPITAL STRATEGIC PLANNING

The office of the assistant deputy under secretary of defense for supply chain integration, under the leadership of James D. Hall, is leading the DoD Logistics Human Capital Strategic Planning (HCSP) effort in support of AT&L Strategic Goal 1 and AT&L Human Capital Strategic Plan v3.0. The DoD Logistics HCSP vision is to develop a multi-faceted, agile logistics workforce that will succeed in a joint operating environment using a competency-based Professional Development Framework.

The competency-based, enterprise-focused logistics workforce will empower a flexible workforce to support requirements, sustain the knowledge base, optimize resources, provide consistent expectations and application of competencies and skills requirements, and provide a common lexicon for communication. It will benefit the workforce by providing a DoD enterprise system to identify and utilize competencies to meet mission needs, and logistics synergy to deliver capabilities for current/emerging mission requirements. For the individual, it will provide cross-functional development for more flexibility and growth.

Accomplishments to date are: the definition of logistics career fields; assessment of future logistics trends; identification and definition of the logistics technical competencies; development of proficiencies mapped to Supply-Chain Operations Reference (SCOR) Model 4.0 level 3;

incorporation of the Office of Personnel Management's core functional competencies; and the development of the professional development framework. The next set of events includes developing training, education, and developmental assignments; developing a Web-based assessment process; and populating the professional development framework.

The DoD Logistics HCSP, overseen by a senior-level Logistics Executive Steering Group, is a joint effort that includes the coordination of the Services, the Office of the Secretary of Defense, the Joint Staff, U.S. Transportation Command, the Defense Logistics Agency, DoD Civilian Personnel Management Service, and industry and academia partners.

For more information, contact Carol Conrad at carol. conrad@osd.mil.

ARMY NEWS RELEASE (DEC. 13, 2007)
ARMY ANNOUNCES LOGISTICS BRANCH

The Department of the Army announced Dec. 13 the establishment of a new branch, which will become effective Jan. 1, 2008. The logistics branch is the newest branch of the Army for commissioned officers. Ordnance, quartermaster, and transportation officers from the ranks of captain through colonel will be united into the logistics branch. This change will occur across all components of the Army.

"Establishment of the logistics branch fully supports the needs of the modular Army," said Lt. Gen. Ann Dunwoody, deputy chief of staff, G-4. "It promotes the development of multi-skilled logisticians, capable of anticipating requirements, planning, integrating, and executing all types of deployment and sustainment activities that enable our nation's forces to initiate and sustain full-spectrum operations. As a result of Army transformation and modularity, Army logistics has shifted from a functional to a multifunctional focus. The reduction of functional logistics commands and the increase of multifunctional logistics commands at all levels make this a natural evolution for Army logisticians."

"New lieutenants will still begin their careers as ordnance, quartermaster, or transportation officers to become technically and tactically proficient in their basic branch specialties," she said. Upon promotion to captain and completion of the Combined Logistics Captains' Career Course, these officers will begin their journey in the logistics branch.

Career Development

The ordnance, transportation, and quartermaster branches will still remain. The technical skills of enlisted soldiers, noncommissioned officers, warrant officers, and lieutenants remain consistent with the needs of the transformed Army and the requirement for functional expertise within these branches.

AIR FORCE PRINT NEWS (DEC. 20, 2007)
CSAF ANNOUNCES SELECTEES FOR NEW SENIOR OFFICER PROGRAM

Staff Sgt. Monique Randolph, USAF

WASHINGTON—Seven senior officers were recently selected to be part of a new program directed by Chief of Staff of the Air Force Gen. T. Michael Moseley.

As part of the Chief of Staff of the Air Force Fellows Program, these select officers will work directly for the chief of staff in lieu of serving as a group or vice wing commander, and after successful completion of the program will be strong candidates for operational wing command or equivalent positions.

"The CSAF Fellows Program is a prestigious opportunity to develop some of the Air Force's most talented officers," Moseley said. "It will provide these hand-selected officers with the opportunity to cultivate their skill sets in career-broadening positions specializing in national military strategy, national defense policy, and international relations."

The intent of the CSAF Fellows program is to develop a strong group of senior officers with breadth and depth in operational, command, and joint/interagency experience, he said. Officers are selected based on their strong competency and potential to serve in senior positions.

Tour lengths for the program will vary from one to two years, and participating officers will still be expected to complete a program such as Air War College to receive credit for developmental education.

"Maintaining peak combat capability begins and ends with talented, motivated, trained, and well-equipped airmen," Moseley said. "This prestigious program provides distinguished officers with the right experience at the right time in their careers."

Officers selected for the program are:

Lt. Col. Gary W. Henderson, a senior developmental education student at NATO Defense College in Rome, Italy.

Lt. Col. David A. Krumm, commander of the 43rd Fighter Squadron at Tyndall AFB, Fla.

Col. Michael T. Plehn, commander of the 27th Special Operations Group at Cannon AFB, N.M.

Col. Kathleen C. Sakura, deputy director for joint staff intelligence support for the Joint Chiefs of Staff at the Pentagon.

Col. Jeffrey B. Taliaferro, an Air Force Fellow at the Center for Strategic and International Studies in Washington, D.C.

Col. Stephen N. Whiting, commander of the 614th Air and Space Operations Center and director of the Joint Space Operations Center at Vandenberg AFB, Calif.

Col. John M. Wood, deputy commander of the 60th Operations Group at Travis AFB, Calif.

Randolph writes for Secretary of the Air Force Public Affairs.

AMERICAN FORCES PRESS SERVICE (JAN. 8, 2008)
PERSONNEL SYSTEM OFFERS WORKERS OPPORTUNITIES, OFFICIALS SAY

Sgt. Sara Moore, USA

WASHINGTON—In its second year of implementation, the Defense Department's new civilian personnel system is meeting its goal of shifting the department to a performance-based pay system while giving employees the power to boost their own careers, two officials with the program said here yesterday.

The National Security Personnel System now covers about 130,000 of the department's civilian employees, and feedback has been positive about the system, which ties employees' pay raises and bonuses more directly to annual performance evaluations, Michael Dominguez, principal deputy under secretary of defense for personnel and readiness, said in an interview.

"What I've been hearing is, the system is doing what we've intended it to do, which is to galvanize conversations in the department and with our employees about our mission [and] what it is we need to achieve," Dominguez said.

DoD recently issued the 2008 NSPS pay schedules, which were effective Jan. 6. This year, 60 percent of the base sal-

ary increase for federal employees will go to pay increases for employees who receive a final rating of 2 or higher on their evaluations, which includes virtually all federal employees. Forty percent of the base salary increase will go to "pay pools" to be allocated as performance-based salary increases to employees with a rating of level 3 or higher.

Mary E. Lacey, program executive officer for NSPS, said that in last year's NSPS payout, the January salary increase was not at all tied to performance. However, this year the department changed that to bring the annual pay increases more in line with the performance-based management system, she said. DoD had planned to make January pay increases exclusively performance-based by next year, but under an agreement with Congress, the split will remain 60 percent and 40 percent, as it is this year, Lacey said.

Lacey said she has seen data on about 60 percent of the payouts that will be made under NSPS this year, and the results are promising. About 5 percent of employees are being rated as level 5, or "role model," about 60 percent of employees are rated at level 3, and practically no employees are rated as level 1, or "unacceptable," she said.

"I think most employees will find, at the end of the day, … that they did pretty darn well under NSPS, and some of those fears will die down," Lacey said, referring to some employees' anxieties about the new system.

Lacey and Dominguez agreed that implementing a new system is challenging, and supervisors and employees alike have had difficulty adjusting to the new performance-based culture. However, they said, it is a welcome change because it gives employees a clearer understanding of what is required of them to advance and even gives them the opportunity to advance more quickly than they could under the old system.

"To some extent, it's a choice for employees in terms of how they want to approach their work, and … if they want to rocket up the scale, if you will, [be] hard-driving [and] take on the tough challenges, then there is the potential there for them to take on more responsibility and increase their salary because of their performance," Lacey said.

To ensure that employees and managers understand the system, DoD officials have invested a lot of time in training and education about how the system works and why it is beneficial, Dominguez said. He stressed that leaders at every level, including military leaders who have em-

ployees or colleagues under NSPS, need to understand the system completely and ensure their subordinates understand it.

NSPS is a system that's first designed to support DoD's national security mission, Dominguez said. It's also designed to update the civil service system to meet the demands of the 21st century, where workers expect to be rewarded based on performance, instead of how long they've been in a job, he said.

"In NSPS, you can go as fast and as far as you want to go," Dominguez said. "It's not a time-driven system; it's a performance-driven system."

DoD plans to bring about 57,000 more employees under NSPS in the spring, Lacey said. The department will also work with organized labor to bring even more employees under the system, she said.

Because DoD is such a large, complex organization, it will continue to take time to get everyone trained and under the new system, she said. In fact, pay systems for some employees—those in the intelligence field, for example—are covered under statutory authority, and they will never come under NSPS.

Overall, about 500,000 civilian employees will come into NSPS over the next three to five years, Lacey said.

"This is probably the most significant investment we have made in our civilian workforce in terms of their leadership, management, and soft skills [such as communication and coaching employees] ever—in my career, at least," Lacey said. "We will continue that pace as we train folks up to bring them in."

Moore writes for American Forces Press Service.

FEDERAL ACQUISITION INSTITUTE TRAINING UPDATES

The process to procure Federal Acquisition Institute Certification in Contracting (FAC-C) core training classes for FY08-12 is near completion. As soon as new class schedules are available, an announcement and class schedules will be posted to the FAI Web site at < www.fai.gov >. For questions or more information, e-mail FAI Student Services at questions@FAI.gov or call 703-805-2300.

Career Development

FEDERAL ACQUISITION INSTITUTE NEW CONTINUOUS LEARNING MODULES

The following continuous learning modules are now available. To enroll in these courses and others, login to the Federal Acquisition Institute Training Application System (FAITAS) at < https://atrrs.army.mil/channels/faitas/student/logon.aspx?caller = 1 > and select Continuous Learning Modules on the left side of the screen.

CLC 039

Contingency Contracting Simulation: Barda Bridge—2 Continuous Learning Points

This module begins in the pre-deployment phase at the home station. Situations requiring effective contingency contracting officer (CCO) skills and competencies are presented with decision points. Each decision will be played out with corresponding results. After pre-deployment, the CCO moves into initial deployment in the warfighting zone. The simulation continues through the build-up phase with a final major project theme as a critical decision among all other CCO issues. The CCO then returns to the home station.

CLL 013

DoD Packaging—3 Continuous Learning Points

This module, primarily for program managers, logistics managers, packaging specialists, and product specialists will allow learners involved in the packaging, handling, storage, and transportation (PHS&T) process to obtain sufficient knowledge of the value of PHS&T throughout its life cycle. An effective knowledge and application of PHS&T principles will benefit users throughout the life cycle of a program and ensure that the warfighter is properly supported.

CLL 019

Technology Refreshment—3 Continuous Learning Points

The goal of this module is to provide the learner with an overview and introduction to technology refreshment as it applies across the weapon system life cycle. The module covers basic concepts, regulatory material, and applications used in technology refreshment.

U.S. ARMY MATERIEL COMMAND NEWS RELEASE (JAN. 15, 2008)
ANNISTON ARMY DEPOT CO-OP PROGRAM EDUCATES STUDENTS, PROVIDES CAREER SKILLS

Beth E. Clemons • Miranda Myrick

Since 2001, Anniston Army Depot and the Alabama Department of Education have combined efforts to support the ANAD Career Academy.

Recognizing the need for educated and skilled workers at the depot and within the community, ANAD leadership developed the academy to provide local high school students with the academic coursework and on-the-job training required to become viable employees for the depot.

"We are very proud of our co-op students and enjoy having them on the Anniston Army Depot Team. Being a part of the career academy is an op-

Homer Parton (right), academy instructor, observes Cordelra Denson and Justin Daniel working on a Detroit V-8 engine at the Anniston Army Depot Career Academy.

Photo by Miranda Myrick, Tank-Automotive and Armaments Command–Life Cycle Management Command

Career Development

portunity of a lifetime and a chance to support the soldier in the field," said ANAD Chief of Staff Ray V. Minter.

For students training at the academy, it's the first part of a three-phase cooperative program. After graduation from high school and the academy, they begin their coursework in a technical college while working part-time in the depot's Nichols Industrial Complex. Career progression, the third phase of the program, begins when the student graduates college and becomes a full-time employee.

Students are recruited from approximately 45 schools in 11 counties, located within a 35-mile radius of the depot. Those selected for the academy are placed into one of five co-op opportunities: machining, mechanics, welding, hydraulics/pneumatics, and electronics.

Selected students attend their respective high school for half a day and train at the academy the remainder of the day. While at the depot, students attend one hour of state-mandated coordinated studies taught by a certified educator.

"It's the best thing that's ever happened to me," said Malachi King, a hydraulics student at the academy.

After their coordinated studies, students conduct three-and-a-half hours of on-the-job training with depot instructors. Training is provided in an Occupational Safety and Health Administration-approved facility outside the depot's industrial area.

"The parts they're working are those that they'll be working when they graduate high school and make their way to the industrial area," said Larry Simmons, instructor at the career academy.

Simmons has worked at Anniston Army Depot for six years—two as a machinist in the depot's Nichols Industrial Complex and the last four as a machining and hydraulics instructor at the academy. He already had a teaching certificate before coming to the depot, so his work experience and education led to his position at the academy.

A senior at White Plains High School, Tyler Ponder works and studies diesel mechanics at the academy where he builds Detroit V-8 engines—the same ones used in the combat vehicles produced in the depot's industrial area. He and his co-workers at the academy receive parts from the depot's machine shop and build the engines just like they do in the east industrial area.

"It's great to already kind of know what I'll be doing when I enter the depot on a full-time basis one day," said Ponder.

For their hard work, students are rewarded with one high school credit for the coordinated studies class and two credits for on-the-job training. Besides the beneficial work experience and school credits, co-op participants are paid employees and earn appropriate benefits such as sick and annual leave.

To be eligible for the academy, students must meet several requirements, some of which include: being 16 years old; maintaining a C grade-point average; passing the Alabama high school graduation exam; and successfully interviewing for the position.

"It feels good I can help contribute to our soldiers," said Holli Eubanks, a senior at Pleasant Valley High School and a diesel mechanics student at the academy. "I hope to stay a mechanic here," she said.

Once the students complete the academy's program and graduate from high school, they are eligible to enter into the depot's Technical College Co-op Program, the second phase. Prospective students must meet specific requirements, be selected into the program, and accepted to a post-secondary educational institution.

"The program opened up a door of opportunity for me," said Evan Bush, a senior at Etowah High School in the academy's welding area who drives 48 miles, one way, to work at the depot. Bush said he looks forward to attending college in the fall as a college-level cooperative education student.

Students can earn up to nine hours of college credit at Gadsden State Community College. Participants who successfully complete an accredited post-secondary education will be eligible for non-competitive conversion to a full-time position if one is available.

The success of the program can be seen in its growth; the first high school co-op class in 2001 had 24 students. There are 100 students currently enrolled in the 2008 class. The facilities have also grown; the original facility measuring 6,000 square feet consisted of a classroom, tool crib, administrative office, and shop area. An additional 5,000 square feet has been added and includes welding bays and hoods, office space, locker room, and a break room.

Career Development

Academy officials report interest in the program DoD-wide. The private sector has noticed too—Mercedes-Benz prototyped the co-op facility for its operations in Vance, Ala.

For more information on the Anniston Army Depot Career Academy, contact Susan G. Hill or Anthony Stamper at 256-741-5340.

Clemons works for Headquarters, U.S. Army Materiel Command Public Affairs; Myrick works for Tank-Automotive and Armaments Command–Life Cycle Management Center.

AIR FORCE PRINT NEWS (FEB. 20, 2008)
NEW WEB-BASED ASSIGNMENT APPLICATION DEBUTS MARCH 3

RANDOLPH AIR FORCE BASE, Texas—The power to apply for your next home-basing and follow-on (HB/FO) assignment will soon be literally at your fingertips.

Starting March 3, all active duty enlisted members and officers, lieutenant colonel and below, who are slated to serve an unaccompanied tour of 15 months or less will have the ability to submit Web-based applications from any location worldwide, 24/7.

The new self-service application process is part of Air Force leadership's ongoing commitment to personnel services delivery transformation.

"This change will help streamline the application process by eliminating paperwork and unnecessary trips to the military personnel element," said Letty Inabinet, chief of the assignment programs and procedures branch at the Air Force Personnel Center. "Starting March 3, an airman will be able to fill out the application online, and if eligible, the system will validate it on the spot and send it to AFPC for consideration."

Even though the HB/FO assignment program will be Web-based, the benefits remain the same.

"The program continues to be a win-win for the Air Force," Inabinet said. "It helps reduce stress among our airmen who don't know where their next duty station will be after they serve the unaccompanied tour, and it provides stability for our Air Force families."

Home-basing assignments offer airmen an assignment back to the same continental U.S. location, or long-tour location in Alaska or Hawaii, from where they left. Follow-on assignments offer airmen assignment consideration to a preferred CONUS location or the overseas long-tour location of their choice. Airmen can choose up to eight CONUS locations and up to eight overseas choices.

For convenience and accessibility, the application will be made available March 3 at the Virtual Military Personnel Flight. The program's guidelines are outlined in Air Force Instruction 36-2110, Assignments. Applicants are encouraged to thoroughly read the sections on entitlements and restrictions before submitting their application.

For more information about the program, visit AFPC's "Ask" Web site and search for "Follow On." The 24-hour Air Force Contact Center (toll free 1-800-616-3775, DSN 665-5000) is also available to answer questions.

OMB ANNOUNCES RESULTS OF NEW 2007 CONTRACTING WORKFORCE COMPETENCIES SURVEY

WASHINGTON, DC—The Office of Management and Budget (OMB) has released the results of the 2007 contracting workforce competency survey, the first-ever baseline analysis of the proficiency levels of the civilian agency contracting workforce.

The survey by OMB's Office of Federal Procurement Policy (OFPP) and the Federal Acquisition Institute (FAI) indicates that the civilian agency contracting professionals are generally operating at appropriate levels, but require training in such areas as project management, requirements definition, performance-based acquisition, and negotiation.

"This survey is a comprehensive review of our workforce and will guide strategic development and succession planning efforts. Agencies have a unique opportunity to identify specific organizational competency gaps and are using this information to develop plans to close those gaps," said Paul Denett, Administrator for Federal Procurement Policy in the Office of Management and Budget.

OFPP will continue to work with agencies, the Federal Chief Acquisition Officers Council, and other stakeholders to ensure coverage of essential competency gaps, as well as improve upon strengths identified by the study.

View the entire contracting competency survey results at < www.fai.gov/sturep.asp#acq >.

Conferences, Workshops & Symposia

INSTITUTE OF INDUSTRIAL ENGINEERS CONFERENCE AND EXPO 2008

The most significant industrial engineering event of the year is the Institute of Industrial Engineers (IIE) Annual Conference and Expo 2008. This year's conference will be held in Vancouver, Canada, May 17-21. IIE 2008 is the ideal place to gather your tools for today, fuel for tomorrow, and network with the best and brightest in your field. Educational sessions will address virtually every aspect of the profession; and awards will be presented to recognize superior achievement of top professionals and students. An exhibit hall will feature products from companies that value industrial engineers. Enjoy opportunities to build your network and reconnect with professional acquaintances. For more information, contact the Institute of Industrial Engineers at 1-800-194-0460 or fax 770-449-0460.

INSTITUTE FOR DEFENSE AND GOVERN-MENT ADVANCEMENT 3RD ANNUAL MILITARY ARMOR PROTECTION CONFER-ENCE

The Institute for Defense and Government Advance-ment (IDGA) will sponsor the 3rd Annual Military Armor Protection Conference May 19-22, 2008, at The Westin Alexandria in Alexandria, Va. The 2008 theme of the conference is "Advancing Vehicle and Body Armor Protection in an Asymmetric Environment." IDGA's Mili-tary Armor Protection Conference is the premier forum for the exchange of ideas on new armor technologies, challenges and developments in protective equipment, and recent research on armor components.

Participants will learn to identify and reduce armor short-comings and increase performance by bringing together the military and government leaders tasked with ensur-ing the nation's warfighters and vehicles have the best possible armor protection against the persistent threats. Key decision makers will debate how capabilities and technology can be optimized and will evaluate current and future strategies and solutions. For more informa-tion on the 2008 conference, call 800-882-8684 or e-mail info@idga.org. Register online at < www.iqpcevents.com/ ShowEvent.aspx?id = 43762&details = 82058 >.

OUSD(AT&L) BUSINESS MANAGERS' CONFERENCE

This year's Business Managers' Conference is sched-uled for May 20-23, 2008, at the Defense Acquisi-tion University, Fort Belvoir, Va. Sponsored by the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, in cooperation with the busi-ness, cost estimating, and financial management func-tional advisor, the annual conference is targeted toward senior DoD acquisition and comptroller executives as well as program executive office/program manager/systems command business managers and Service headquar-ters program and business staff. It offers two full days of high-level speakers, training opportunities, and exhibits, with valuable information and demonstrations of a vari-ety of tools for managing organizational challenges. The yearly conference is an excellent way to stay abreast of current acquisition and business initiatives and provides opportunities for wide-ranging discussions with key leaders. For more information on the conference, e-mail bmc@dau.mil.

2008 SESSION–AMERICAN SOCIETY OF MILITARY COMPTROLLERS PROFES-SIONAL DEVELOPMENT INSTITUTE

The 2008 session for the American Society of Mili-tary Comptrollers Professional Development In-stitute will be held at the Marriott World Center in Orlando, Fla., May 27-30, with a theme of "Aiming for a Bright Future." The National Professional Development Institute is a premier training event for resource managers in the Department of Defense and U.S. Coast Guard. Each year, more than 3,300 attendees converge for a four-day event, which includes a full day of Service activities, seven general sessions, more than 70 workshops, and many special events. Register online at < www.asmconline. org/development/pdi.shtml#1 >.

19TH ANNUAL ASSOCIATION OF PRO-POSAL MANAGEMENT PROFESSIONALS NATIONAL CONFERENCE AND EXHIBITS

The 19th Annual Association of Proposal Manage-ment Professionals (APMP) International Confer-ence and Exhibits will be held in Rancho Mirage, Calif., May 27-30, 2008. This year's conference theme will be "Global Positioning Strategies for Capture and Pro-posal Professionals." This theme includes two thrusts: the international or global nature of APMP and the relevance of the capture phase of business development in the pro-posal profession.

The conference program will present case studies, panel discussions, and tips and techniques proposal profes-sionals can take home after the conference and apply in the workplace. This year, presentations are from across the full spectrum of business development topics: market development and business strategy, capture development

and strategy, proposal development and strategy, and professional strategies. Register online at <www.apmp.org/ca-29.aspx>.

4TH ANNUAL INNOVATIONS IN E-LEARNING SYMPOSIUM

The George Mason University Instructional Technology Program and the Defense Acquisition University invite you to attend the 4th Annual Innovations in e-Learning Symposium to be held June 3-5, 2008, in the Johnson Center on the Fairfax Campus of George Mason University in Fairfax, Va. The topics for this year's symposium are Mobile Learning and Gaming, Web 2.0 and Cyberinfrastructure, and Innovation Design and Research Partnerships. This event is ideal for managers, learning officers, instructional and/or curriculum designers, learning consultants, instructors, researchers and training and development professionals from small- to large-size businesses, vocational schools, community colleges and universities, and government agencies and organizations. Register online at <http://innovationsinelearning.gmu.edu/index.html>.

NATIONAL CONTRACT MANAGEMENT ASSOCIATION 6TH ANNUAL LEADERSHIP SUMMIT

The 6th Annual Leadership Summit of the National Contract Management Association (NCMA) will be held June 20-21, 2008, at the Crowne Plaza Hotel, 2270 Hotel Circle North, San Diego, Calif. All NCMA chapter leaders and volunteers (experienced, new, and potential) are invited and encouraged to attend. Come meet your peers, learn from each other, and share experiences. Participants will benefit from substantive, career-enhancing presentations.

- Learn how to build and manage a successful chapter with case studies, best practices, and practical examples.
- Become a better chapter leader.
- Develop overall leadership skills.
- Connect with your peers and learn from each other.
- Train on fundamental chapter and national operations.

If you are in a leaderless or struggling chapter, scholarships are available to help you attend this important event. To apply for an NCMA attendance scholarship, e-mail chapterrelations@ncmahq.org. For more information or to register online, visit <www.ncmahq.org/meetings/LS08/>.

NAVY NEWSSTAND (JAN. 18, 2008)
SUPPLY CORPS LEADERSHIP TACKLES TOP NAVY ISSUES

Debbie Dortch

NORFOLK—All Navy supply corps admirals and captains gathered Jan. 15-17 in Norfolk to share insights from December's Navy Flag Officer and Senior Executive Service (NFOSES) Training Symposium and align the supply corps community with the Chief of Naval Operations' intentions to build the future force, maintain warfighting readiness, and develop and support sailors and Navy civilians.

Navy Rear Adm. Alan S. Thompson, SC, commander, Naval Supply Systems Command (NAVSUP) and chief of Supply Corps opened the symposium stating, "As a community, we need to ensure we are aligned with where the Chief of Naval Operations, Adm. [Gary] Roughead, is taking our Navy. We need to be powerful contributors to the success of this vision."

In addition to a focus on the CNO's Guidance and the Navy's Maritime Strategy, the agenda included updates on the fiscal environment, the evolution of the Navy Enterprise construct, Navy supply corps engagement in joint logistics at several combatant commands, and a wide-ranging update and discussion of community issues.

"The supply corps can continue to add value in Fleet Forces Command by providing a high-level of material support for our equipment and ensuring quality-of-life initiatives for our sailors and their family members remain in the forefront," Marine Brig. Gen. David G. Reist, assistant deputy commandant for installations and logistics, emphasized. "Shifting to a healthy menu afloat and ashore is one example of this. It's important, and we appreciate it."

NAVSUP's primary mission is to provide U.S. naval forces with quality supplies and services. NAVSUP oversees logistics programs in the areas of supply operations, conventional ordnance, contracting, resale, fuel, transportation, and security assistance. In addition, NAVSUP is responsible for quality of life issues for the nation's naval forces, including food service, postal services, Navy Exchanges, and movement of household goods.

Dortch is with Naval Supply Systems Command Office of Corporate Communications.

Acquisition & Logistics Excellence

U.S. ARMY SUSTAINMENT COMMAND (JAN. 8, 2008)
ARMY SUSTAINMENT COMMAND EMPLOYEE EARNS DISABILITY AWARD

Rhys E. Fullerlove

ROCK ISLAND ARSENAL. Ill.—**Bruce E. Beyer**, U.S. Army Sustainment Command, Rock Island Arsenal, Ill., was presented the Army's Outstanding Individual with Disability Award Dec. 4 at the Department of Defense Disability Awards Ceremony and Forum in Bethesda, Md.

Beyer is one of 16 DoD employees from various agencies honored at the ceremony. He earned the award for his contributions as a member of Army Sustainment Center's Logistics Enterprise Integration Team. Beyer played a key role in awarding and managing the Army's Logistics Civil Augmentation Program contract, under which contractors from the private sector are used to provide a broad range of field services to U.S. and allied forces during combat and training operations.

Beyer has used a wheelchair since 1982, when he fractured his neck in a bicycle accident. He was unable to continue his job as a tool and die maker, so he returned to college and earned a bachelor's degree in computer sciences from St. Ambrose University. He came to work at the arsenal in October 1988 as an entry-level production analyst.

Beyer is active in raising awareness of people with disabilities. He provides administrative and technical support to his church, and has represented the arsenal as a peer counselor for students in the Rock Island Milan School District.

Beyer was an instructor in the arsenal's Windmill Program, which trained managers in the challenges faced by disabled individuals in the workforce. He has also conducted seminars in assistive technology and advocacy for disabled individuals in Rock Island and Scott Counties.

AIR FORCE PRINT NEWS (DEC. 27, 2007)
AFMC TEAM WINS HAZARDOUS AIR FORCE COMPETITION

Rudy Purificato

BROOKS CITY-BASE, Texas—An Air Force Materiel Command team of bioenvironmental engineering and emergency management professionals won the Air Force's 2nd annual Chemical, Biological, Radiological, and Nuclear Challenge held Dec. 10-14 at Brooks City-Base, Texas.

Considered to be the Olympics for the two career fields, AFMC was one of eight Air Force major commands to participate in the week-long event with six realistic scenarios that tested the teams' capabilities to respond to chemical, biological, radiological, and nuclear warfare threats.

The AFMC team edged units from Air Combat Command, Air Mobility Command, Air Education and Training Command, Air Force Special Operations Command, Air Force Space Command, Pacific Air Forces, and U.S. Air Forces in Europe. An Air National Guard team also participated and captured the Team Spirit Award.

The challenge mirrors potential homeland security and war on terrorism threats. It was held at the Air Force School of Aerospace Medicine's Expeditionary Medical Support site at Brooks City-Base.

Each of the six scenarios lasted three hours, and all were different from last year's exercise, said Air Force Tech. Sgt. Shawn Petro, a bioenvironmental engineering instructor in charge of logistics for the exercise. One scenario was designed to test participants' capabilities to assess the health risk to an installation victimized by an unleashed chemical weapon.

"The vehicle-born improvised explosive device scenario was actually a [so-called] 'dirty bomb' that had detonated and caused casualties," Petro said.

There were also two head-to-head competitions where teams had to identify a chemical and biological sample within time limits. Teams also participated in a TV *Jeopardy* show-style quiz that tested their chemical, biological, radiological, and nuclear knowledge.

"What was different this year is that we included civil engineer emergency management members," Petro said. "We brought into the exercise the whole partnership with our emergency management responders. They help us identify hazards and are our base counterparts when responding to emergencies."

Purificato is with 311th Human Systems Wing.

Acquisition & Logistics Excellence

MAINTENANCE UNIT COMPLETES UPGRADE OF 100TH A-10

Bill Orndorff

HILL AIR FORCE BASE, Utah—An upgraded A-10C, which took off in early January for Moody Air Force Base, Ga., represents another production milestone for the 571st Aircraft Maintenance Squadron.

Aircraft 80-0172 is the 100th A-10 to go through the Precision Engagement Program, started in the 309th Aircraft Maintenance Group in July 2006. On average, the 571st technicians are upgrading each A-10 aircraft to the new A-10C configuration in less than 90 days.

"The 571st mechanics are successfully executing the A-10 Precision Engagement program," said Greg Hoffman 571st Aircraft Maintenance Squadron director. "While our overall modification time has been reduced, the increase in positive feedback from our warfighting customers has been our biggest success. Without giving them a quality aircraft to carry out their mission, we would have failed.

The program was a challenge from the start, but with the support of Team Hill, to include our Lockheed Martin prime contractor, we have been able to get better each day."

The upgrade to the 100th aircraft, first built in 1980, will extend its service life for at least another 20 years. The aircraft was in the Pope AFB, N.C., inventory before the modification and transfers to Moody AFB as part of the base realignment and closure recommendations.

Precision Engagement evolved by merging several smaller, funded programs, into one large modification. The combination saved money for development, testing, and installation previously done separately. The A-10C has a number of avionics and weapons system upgrades, designed to extend its service life until 2028.

The modification includes a totally redesigned main instrument panel, smart weapons capabilities, and aircraft DC power upgrades. The A-10C cockpit receives two 5-by-5-inch multifunction color displays, a hands-on stick and throttle system with a modified F-15E right throttle grip, and a modified F-16 control stick grip. Other cockpit items include an up-front controller, new armament heads up display control panel, and a redesigned main instrument panel.

Modified aircraft can now carry both the LITENING II and Sniper laser targeting pods, and have joint direct attack munitions and wind-corrected munitions dispenser capabilities. The direct current power will be doubled, and a more powerful computer will be added to the low-altitude safety and targeting enhancement system.

The A-10C has proven itself a formidable asset in the war on terrorism, Hoffman noted, as the Air National Guard's 175th

Andrew Selph and Air Force Capt. Jesse McCulloch discuss paperwork details that will send A-10 Aircraft 80-0172 to Moody Air Force Base, Ga. The aircraft is the 100th A-10 to receive the Precision Engagement modification, installed by the 571st Aircraft Maintenance Squadron.
Air Force photo by Bill Orndorff

Acquisition & Logistics Excellence

Fighter Wing from Baltimore, Md., deployed the modified aircraft to Iraq in September. Within hours of arrival, the new systems were put to the test by successfully destroying an insurgent safe house with a Global Positioning System-guided munitions system.

"You just can't get more proof that what you have done matters than to see the true end result of your efforts," Hoffman said.

Orndorff is with 309th Maintenance Wing.

NAVY NEWSSTAND (JAN. 23, 2008)
LEAN THINKING TO IMPROVE IKE'S EFFICIENCY, STREAMLINE PROCESSES

Mass Communication Specialist Seaman Zachary Martin, USN

Aboard the Nimitz class aircraft carrier *USS Dwight D. Eisenhower* (CVN 69) (Ike), manufacturing jobs and repetitive processes are an everyday occurrence. A new program is expected to cut waste and eliminate defects involved with those processes.

As part of the new Continuous Process Improvement (CPI) program, a business practice known as lean will become part of everyday jobs aboard Ike.

The concept of lean is deceptively simple: Eliminate repeated steps in a process, streamline supply chains, and produce 100 percent defect-free products with every job.

Developed and made famous by multi-billion-dollar companies like Toyota and Honda, the strategy also deals with reducing overproduction, human error, wasted inventory, transportation time, wait times, and effectively reducing costs across all processes.

Ensign Stephanie Chelone, current aircraft intermediate maintenance department IM2 division officer and soon-to-be head of CPI aboard Ike, said the lean process is something Ike's sailors can accomplish every day by lean thinking.

"Lean thinking is all about cutting the fat," Chelone said. "We look at ways to eliminate the eight forms of waste."

Those forms are transportation, excess inventory, motion, waiting, overproduction, overprocessing, defects, and underutilization of employees.

"Transportation is best described as the movement of essential tools or other aspects of a job. When there is too much, wasted time [it] becomes a huge factor," Chelone said. "I have guys in my shop who use spray paint, and they have to walk all the way across the hangar bay to get it. Then they have to walk all the way back to put it away. When you look at it, it's about 25 wasted minutes just for a can of paint. We fixed this by putting paint and other items in a storage locker in our spaces."

Motion is the physical movement of people between steps of their job. Henry Ford, of the Ford Motor Company, recognized the benefit of arranging workspaces in a logical order, and his ideas gave birth to the assembly line. Instead of walking across a huge warehouse several times to build a car, Ford arranged his workers in a logical line to cut wasted steps.

"Let's say it takes you 742 steps to do a job. Lean is designed to reduce those steps, which reduces time, which reduces cost," Chelone said.

Another problem—waiting—is something all of Ike's sailors can relate to, and the impact on work efficiency is larger than many people realize.

"So you wait for an hour in line for chow," Chelone said. "It may not seem like much, but multiply it by five days a week and several thousand people, and you begin to see the big picture of how waiting and doing nothing affects work."

Overproduction, too, causes great waste in both time and inventory. A printing job, for example, may be produced before an order is actually placed with the intent of "staying ahead of the game." If the order is for only 50 flyers, and the time and expense to create 5,000 were spent, then there's a problem.

Another part of Navy life is overprocessing. Basically, this is the idea that decisions require too many sign-offs or approvals, slowing down the production process.

Defects cause waste in massive proportion as well, Chelone said. Even a 99 percent acceptable rate is not high enough over the course of several thousand jobs.

Capt. Dee L. Mewbourne, Ike's commanding officer, recognizes this too, with his planned incremental availability goal of "Do it right the first time."

Doing it right the first time revolves around having the right people for the job. Underutilizing employees is essentially having five people for a two-person job, where

there may be another job requiring those extra personnel, Chelone explained.

"Essentially, the lean system comes down to deciding what steps, people, or movement in a process add value to the finished product, and removing those that don't," Chelone said.

"The value-added time is really only a very small percentage of the total time involved," she added.

Martin writes for USS Dwight D. Eisenhower *Public Affairs.*

NAVY NEWSSTAND (JAN. 24, 2008)
NAVY EMPLOYEE NAMED ENGINEER OF THE YEAR
Darrell Waller

PORT HUENEME, Calif.—Naval Facilities Engineering Command's Engineering Service Center (NAVFAC ESC) has selected its 2007 Engineer of the Year.

Douglas F. Burke, a materials engineer in the ESC's Waterfront Materials Division, was acknowledged for his outstanding leadership and service as an integral member of NAVFAC's team of life-cycle facilities experts and is widely regarded as the Navy's foremost expert in the field of concrete materials.

Burke initiated and has represented the Navy in the development of a novel methodology to predict the future performance of concrete structures. This innovative technique has garnered national support within the concrete industry.

"This revolutionary technique exemplifies NAVFAC's strategic plan to translate sustainability goals for construction and repair of facilities into quantifiable action throughout the Navy," said NAVFAC ESC Commanding Officer Capt. Gregory J. Zielinski. "More importantly, it will provide the military with an effective tool to accurately predict the service life of new and existing structures, saving millions of taxpayer dollars."

Burke has led the evaluation of numerous strategically critical facilities, including bridges, piers, and dry docks for the Navy. Early use of the innovative methodology aided in the development and validation of the 100-year performance life for the Navy's new floating modular hybrid pier. Application of the methodology will lower life-cycle costs of new construction and allow engineers to optimize the selection of remediation strategies for existing facilities.

In the future, NAVFAC will employ the methodology to meet sustainability goals and validate that new construction complies with the Navy's performance objectives.

Burke is a 1998 recipient of the George W. Goethals Medal, the highest honor presented by the Society of American Military Engineers, for his leadership in developing a new national standard for coated steel reinforcing.

Burke received his bachelor of science in civil engineering from Oregon State University and a master of arts from California State University, Northridge, in test and evaluation engineering. He is a registered professional engineer in California and Oregon and has authored numerous technical papers on concrete durability.

For more news from Naval Facilities Engineering Command, visit < www.news.navy.mil/local/navfachq/ >.

Waller writes for Naval Facilities Engineering Service Center Public Affairs.

ARMY NEWS SERVICE (JAN. 25, 2008)
PEO AMMO RECOGNIZES ANNISTON MUNITIONS CENTER SPARTAN MISSION, TOLBERT WINS AMC AWARD
Miranda Myrick

ANNISTON ARMY DEPOT, Ala.—The leadership of Anniston Munitions Center, a tenant activity at Anniston Army Depot, acknowledged the efforts of more than 200 people at its quarterly recognition ceremony Jan. 23.

Lt. Col. Garry McClendon, ANMC commander, hosted the ceremony at the depot's Physical Fitness Center the same day his organization hosted a visit by Brig. Gen. William Phillips, commanding general of the Joint Munitions and Lethality Life Cycle Management Command and the Program Executive Officer Ammunition.

Phillips presented ANMC with the Superior Unit Award, something he said very few organizations ever receive. "This is a really big deal," he said. "General [Benjamin] Griffin [commanding general of Army Materiel Command] wanted to make sure you were recognized."

McClendon said he likes to recognize the employees because they work hard to accomplish the mission in the safest way possible. "And it doesn't hurt to do this in

front of all these other folks so that they see what a great organization this is to work for," he added.

Unlike previous ANMC recognition ceremonies, McClendon acknowledged more than just his employees this time. Players in the Spartan missile motor burn operations, which occurred at Anniston June through November 2007, were also recognized for their role in the unique mission.

The last of the 22 Spartan rocket motors, which had been in depot storage for almost 32 years, was successfully destroyed on Nov. 10, 2007. Because these rocket motors had exceeded their shelf life and were no longer usable, there was a hazard for further deterioration.

The team was presented with a piece of metal from a burned Spartan, which was mounted to a plaque that will hang in the ANMC headquarters building.

"We need to make sure all of our missions are as safe as the one we just completed," said McClendon.

Phillips, who was on the installation to receive an ANMC operations update and tour the facilities, said safety is a matter important to everyone. "We are all safety officers," he said. "If you see a co-worker doing something unsafe, correct it."

The general told of the dangers that ammunition handlers face. He told of one soldier who loaded ammunition into a Bradley tank and was killed because he was not following proper safety procedures. And he had more stories like that one where people were injured or died because they weren't careful.

"What you do is dangerous," said Phillips. "Don't get complacent."

McClendon recognized others on his ANMC team for accomplishments in other areas such as retirement, Lean Six Sigma, Employee of the Month, leadership, and the Commander's Award for Excellence.

"No other depot does it any better than you do," Phillips told the crowd. "It's important we go through a recognition ceremony like this because of all your hard work on the ground to get the job done."

The chief of ANMC's maintenance division, **Clifton Tolbert**, was presented the Louis Dellamonica Award for Outstanding U.S. Army Materiel Command Personnel of the Year Award for 2006.

This award was one of only ten presented throughout the Army.

"He gives more than he gets back," said Phillips of the honoree.

The certificate of achievement, signed by Griffin, said Tolbert "serves as an inspiration to others, and his accomplishments reflect great credit upon himself, the U.S. Army Materiel Command, and the Department of the Army."

"I take ammo very seriously," said Tolbert. "The soldiers' lives depend on it."

Tolbert, who retired from the Army as a first sergeant, began working at ANMC in 1978 as a temporary preservation packager. His wife, Janice, and son, Duane, were at the ceremony to participate in the occasion.

He thanked his ANMC team for the high-level achievement. "This is our award, not just my award," he said.

Myrick is with Tank-Automotive and Armaments Command–Life Cycle Management Command (TACOM–LCMC).

ARMY NEWS SERVICE (JAN. 25, 2008)
CELEBRATING 65 YEARS OF SERVICE TO THE TACOM LIFE CYCLE MANAGEMENT COMMAND

Margaret Compton

The year 2007 marks 65 years that Acquisition Specialist **John Bruce** has been employed at the Detroit Arsenal, in Warren, Mich.

Except for a short time in 1946 when the command was headquartered in Detroit, Mich., Bruce spent most of his 65-year career at the Warren location and about six years at the missile plant in Sterling Heights, Mich.

Considering he had planned to work in California, after service in WWII, even Bruce is amazed that he spent his post-military career in Michigan, let alone 65 years on the job. From the time she picked him up at the train station in Detroit in 1946 as a favor to his uncle, Lt. Col. Robert Bruce, Jean, who later became Mrs. John Bruce, was the reason his career took a turn from California to Michigan. The couple, married for 42 years, has two daughters, and today, Bruce has three grandchildren and two great grandchildren as well. One daughter lives a few blocks away from Bruce and the other daughter lives in Rochester Hills, Mich.

Acquisition & Logistics Excellence

As a graduate of UCLA, Bruce majored in accounting so it was a natural fit when he came to work at the command and started in resource management in TACOM's building 1. Back then, there were no intern programs, so you pretty much received your training from a more experienced employee, Bruce said.

Starting at the bottom (Bruce literally started in the basement of building 1), he worked himself up from a GS-8 to a GS-15 in the course of his career. Today, building 1 no longer exists, but one of the memories Bruce has of being in that location was hearing the pellets from the shotguns of the hunters who were shooting quail in what were once cornfields, across the street from building 1.

Today, Bruce is working on the BRAC (Base Realignment and Closure) team, which he says is a little different experience because he gets to work with all the Services, not just the Army.

"It gives you a different perspective," Bruce explained. "You find so many similar problems exist across all Services," he says. "I really enjoy working with so many."

For most people, it is hard to imagine working as long as Bruce has. Most people are thinking and talking about retirement around the age of 50. Retirement is a fleeting thought with Bruce. What motivates him to do it every day?

"I like the challenge of getting up every morning and coming to work to do something new. I enjoy what I do, and I think if you aren't happy and always fighting the job, it's a hardship; and when you enjoy what you do it's a benefit."

Longevity runs in the Bruce family. He has a brother who is two years younger and has recently retired after 58 years in Los Angeles city government. Bruce celebrated his 90th birthday last year. He attributes his good health to a positive outlook.

"I think if you have good mental health, good physical health follows," he said. What does Bruce do in his spare time? He is a ham radio enthusiast and likes to talk with people all over the world through the radio.

Compton is with Tank-Automotive and Armaments Command–Life Cycle Management Command (TACOM–LCMC).

SCIENTIST DEMONSTRATES BENDABLE ELECTRONICS
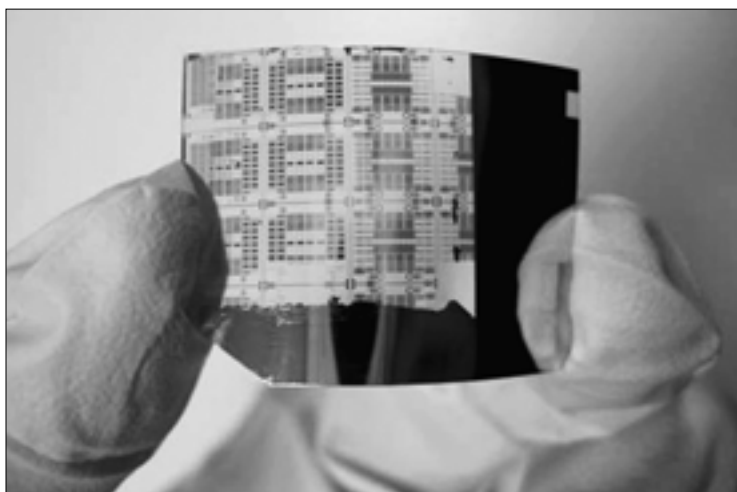*Molly Lachance*

ARLINGTON, Va.—Air Force Office of Scientific Research officials recently have provided research funding for fast, bendable electronics to attach to unevenly shaped objects like airplane bodies or engines.

A research team led by Dr. Zhenqiang Ma of the University of Wisconsin-Madison has developed super-flexible silicon chips that can withstand impact and severe vibration.

By adding pressure to the chips, Ma and Max Lagally have increased chip performance to speeds 50 times faster than previous efforts.

Ma is also working on flexible photodetectors, or optoelectronics, which are applicable for high-speed photography.

"When the optoelectronics are arranged in a hemispherical or spherical shape, the half space or the entire space of interest can be put under surveillance without a moving lens," Ma said.

The flexibility of super-thin silicon transistors, such as the one pictured, could lead to electronics attached to unevenly shaped objects like airplane bodies or engines. Air Force Office of Scientific Research officials recently have provided research funding for fast, bendable electronics to attach to unevenly shaped objects like airplane bodies or engines.   Courtesy photo

He said he relates the successes in his research to his progress with new forms of semiconductor material, particularly nanomembranes.

"We have developed a number of innovative methods to manipulate these flexible nanomembranes so that their electrical properties can be tailored at will," Ma said.

The Air Force could have a number of new uses for his research with flexible electronics and optoelectronics, Ma said. These uses include compact antennae attached to airplane bodies and missiles, flexible sensors that detect mechanical changes, and 360-degree air surveillance applications.

The research is timely and relevant for the Air Force and the Department of Defense, as well as for the semiconductor material and device component industries, said Dr. Gernot Pomrenke, an AFOSR program manager.

"The ability to synthesize and manipulate extremely thin films of solid-state materials enables wholly new approaches for improving performance and reducing the size, weight, and power in defense and commercial systems," Pomrenke said.

By funding research like this, AFOSR officials continue to expand the horizon of scientific knowledge through its leadership and management of the Air Force's basic research program.

Lachance writes for Air Force Office of Scientific Research Public Affairs.

ARMY NEWS SERVICE (FEB. 1, 2008)
INSTITUTE NAMES ARMY FIRE SUPPORT SYSTEM OUTSTANDING U.S. GOVERNMENT PROGRAM

Jess Smith

WASHINGTON D.C.—The Advanced Field Artillery Tactical Data System was named the Institute for Defense and Government Advancement 2008 Outstanding U.S. Government Program at its Network Centric Warfare Awards ceremony at the Ronald Reagan Building and International Trade Center Jan. 23.

"I am proud to say that our team has leaned forward and has taken on the challenges of network-centric warfare to include engaging with Future Combat System and Net-Enabled Command Capability to pre-position our program as an integral part of the Army's Future Force," product director Ted Hom said. "We are leveraging advancements

in technology and continue to provide state-of-the-art equipment to our warfighters."

The Network Centric Warfare Awards are awarded annually to honor, recognize, and promote initiatives in the U.S. Department of Defense, coalition governments, and defense industry that exemplify the principles of network-centric warfare and support information age transformation, according to IDGA.

The AFATDS product director reports to the U.S. Army Project Manager for Battle Command, an office within the U.S. Army Program Executive Office for Command, Control, and Communications–Tactical.

Deployed throughout the Army and Marine Corps, AFATDS is an automated fire support system using 21st century command, control, and communications technology to increase the accuracy of fires and reduce the timeline from the sensing of targets to the delivery of fires.

As the primary fire support system supporting Army battle command, AFATDS provides expert operators and commanders with situational awareness, battle management, target analysis, and target engagement tools. It provides fully automated support for planning, coordinating, and controlling mortars, field artillery cannons, rockets, guided missiles, close air support, attack helicopter and naval gunfire for close support, counter-fire, interdiction, suppression of enemy air defenses, and deep operations.

Integrated within the fires components of joint command centers for the U.S. Air Force and U.S. Navy, as well as the Army, AFATDS is known as a "multi-Service" system.

"The extraordinary information requirements required to perform fire support command and control and the sharing of this critical fires information throughout the tactical and operational network directly drive the need for a flexible, robust and networked solution," said Hom. "That's what AFATDS provides."

Over the past two years, the AFATDS system architecture and suite of software applications has evolved to support the Department of Defense's migration strategy to the Net-Enabled Command Capability (NECC) while simultaneously complementing the U.S. Army's move to consolidate battle command (BC) servers and services among its array of systems.

This makes AFATDS a cornerstone program to enable the tenets of "net-centric" warfare, according to Hom.

"The tenets of net-centric warfare are critical to the AFATDS mission due to the complexity of executing scalable precision munitions on the right target at the right time while reducing collateral damage," said Hom.

The new capabilities implemented within the AFATDS program stress service-oriented architecture, seamless networking, and information dominance. This addresses capabilities in the physical, information and cognitive domains with a common set of capabilities for both NECC and BC system-of-systems.

The Advanced Field Artillery Tactical Data System has been in use during combat operations since the beginning of Operations Iraqi Freedom and Enduring Freedom as the primary system to manage and execute joint fires (naval, air, cannon, missile, mortar, and attack aviation) in support of the land forces commander.

Smith is a contractor for the Army's Project Manager for Battle Command.

AMERICAN FORCES PRESS SERVICE (FEB. 12, 2008)
RESEARCH AGENCY CELEBRATES 50TH ANNIVERSARY LOOKING TO FUTURE

Donna Miles

WASHINGTON—Fifty years after President Dwight D. Eisenhower created the Defense Advanced Research Projects Agency in response to the Russians' surprise Sputnik launch, the agency continues to advance technologies and systems that give revolutionary advantages to the U.S. military.

Eisenhower's guidance to the new agency when it stood up in February 1958 was clear: Keep the U.S. military ahead of its enemies technologically and prevent any future technological surprise from another nation. That meant forging ahead with innovative, sometimes even radical, concepts that might be too risky for the private sector to take on alone.

Fifty years later, DARPA continues following that charge, pushing the envelope toward what Anthony J. Tether, its director since 2001, describes as "the far side" of science and technology development.

Speaking at DARPA's 25th Systems and Technology Symposium in Anaheim, Calif., in August, Tether contrasted DARPA's work with that of the Services, which tend to concentrate on "the near- and mid-side" and improving "concepts and systems that we know about."

DARPA focuses on new and sometimes radical concepts and systems, many considered higher risk because their feasibility isn't known, he told participants.

"We search for those ideas worldwide that may make a tremendous difference and whose time has come to bring them to the near side as fast as possible," Tether said. "DARPA bridges the gap between fundamental discoveries and new military capabilities, and has been doing so since our beginning."

In its earliest days, DARPA—which initially had no "Defense" in front of its name—focused on accelerating the development of U.S. space launch and satellite capabilities. The agency developed the Saturn V rocket that enabled the United States to launch the Apollo missions to the moon.

DARPA also developed the first surveillance satellites that gave U.S. presidents intelligence about Russian missile program activities. "DARPA was not only preventing surprise, but was now creating surprise for our adversaries," Tether said.

DARPA branched out to other fields, too. It began the information revolution by creating the ARPANET that led to today's Internet. The system began by interconnecting computers at four university research sites in the late 1960s. By 1972, it had grown to include 37 computers. Now, Tether pointed out, the Internet it led to is approaching one billion connections.

DARPA developed technologies that revolutionized warfare: stealth aircraft, advanced precision munitions, and the Predator and Global Hawk unmanned aerial vehicles used in Iraq and Afghanistan today.

But not all of DARPA's past accomplishments are as well known, Tether said. He cited the development of new materials such as gallium arsenide, used in high-speed circuits, and new metals such as beryllium that are stronger than steel but lighter than aluminum.

Other advances include solid-state photon detectors that led to today's night-vision capabilities and microwave and millimeter-wave monolithic integrated circuits, or MIMICS, that enable cell phones and miniature global positioning system receivers to work. DARPA's work in lithography

enabled a microchip smaller than a thumbnail to hold 100 billion transistors. The agency also developed the computer mouse, an effort to make computers more user-friendly.

Meanwhile, Tether said recent DARPA accomplishments are giving U.S. forces fundamentally new capabilities. He's a firm believer that the key to success in future military operations rests in the network, and has the agency busy developing several network-centric capabilities.

One that's already deployed, the Command Post of the Future, enabled computers to serve as virtual command posts that enable commanders and platoon leaders to conduct operations from wherever they happen to be.

Another "game changer" is the Network Centric Radio System, a technology that enables previously incompatible radios to communicate with each other. "An Army soldier can now talk to a Marine, or to an Air Force aircraft or a Navy ship," Tether said.

Yet another DARPA technology Tether said is making a difference is the WASP micro air vehicle that weighs less than a pound and can be launched with a simple hand-throw. The device has a camera that sends high-quality video to the warfighter, providing real-time information on locations important to them.

"Marines use WASP today," Tether said. "They call it their guardian angel. It watches over and protects them."

Tether ran down a laundry list of other technologies under development at DARPA he said could prove to be "future game changers" if they're successful. One aims to extract high-quality military jet fuel from U.S. crops. Another could lead to a machine capable of translating foreign language speech and text as well as, if not better than, an experienced linguist.

Other technologies DARPA is seeking to develop include an aircraft able to refuel and remain airborne autonomously for five years or even longer, and an autonomous ground vehicle able to remove forces from harm's way and save lives on the battlefield. Another is to create a prosthesis to replace an arm lost in combat that's so capable "the soldier could learn to play … the piano," Tether said.

One project seeks to develop a computer able to process more than a billion million instructions per second. Such a high-speed computer would be revolutionary, Tether said. "This new capability will dramatically reduce the time it takes to design, test, and bring an idea to reality, giving us a great strategic and tactical advantage over the rest of the world," he said.

Fifty years after DARPA's inception, Tether said, he's proud to report that the agency has stayed true to its original charter. It's remained "an organization willing to take a bet on an idea long before it is proven," he said. It's "a place for people with ideas too crazy, too far out, too risky, even considered by some as bad, that have turned out to be major game changers for the U.S."

Tether pointed to the strategic and tactical dominance the United States has achieved in many areas during the past 50 years. "If the technology was a game-changer, chances are that DARPA had a role," he said.

The threats the United States faces today are far different from those of 50 years ago, Tether said. Gone is the Soviet threat, replaced by new adversaries and threats such as those that launched the Sept. 11, 2001, terrorist attacks. "The urgency of maintaining technological surprise is as acute as ever," Tether said in a statement released for DARPA's 50th anniversary observance.

"In this time of uncertainty, DARPA's mission remains constant: anticipate all challenges and discover the technical means to conquer those challenges," he told attendees at the 25th Systems and Technology Symposium. DARPA continues its work aimed at "helping our nation prepare for an uncertain future, using the power of ideas to bridge the gap," he said.

Tether, the agency's longest-serving director, said in an anniversary statement he's honored to lead it into its sixth decade. "Everyone at DARPA feels a personal commitment to continuing to deliver revolutionary technologies in support of our men and women in uniform," he said.

Miles writes for American Forces Press Service.

ARMY NEWS SERVICE (FEB. 12, 2008)
SUGGESTERS CLAIM ARMY AWARD—A FIRST FOR TOBYHANNA

Jacqueline R. Boucher

TOBYHANNA ARMY DEPOT, Pa.—Three Tobyhanna electronics mechanics took top honors in the annual Army-wide suggestion competition after discovering a way to save about $150,000 a year.

Acquisition & Logistics Excellence

Tim Kime, David Voorhees, and Andy Martino were named the 2007 Department of the Army Civilian and Military Suggesters of the Year—a first for Tobyhanna Army Depot. The winners will attend an award ceremony, hosted by the Secretary of the Army, March 27 at the Pentagon.

"The suggesters' idea on the Zero Azimuth Position Sensors [ZAPS] highlights their innovative thinking and dedication to making the Army more efficient," said Col. Ron Alberto, depot commander. Tobyhanna employees submitted 261 suggestions last year; 82 were adopted. A monetary award of $3,939.99 was granted for the winning suggestion.

"The suggestion program gives employees an opportunity to present a better way to do business and to be recognized for their efforts," said Patricia Patelunas, Tobyhanna's suggestion program manager. "I think the suggesters should be very proud of their accomplishment."

Patelunas explained that a suggestion is an idea that benefits the Army or other U.S. government activity. Submissions must present a problem and proposed solution. Instead of discarding a $3,356 basic sight assembly scanner, Kime, Voorhees and Martino proposed, via the Suggestion Program, to reclassify the ZAPS from a component to a part, thereby authorizing them to repair the broken sensor.

Through the process of trial and error, the three men devised a plan to save time and money by fixing the scanners at the depot. They realized the heat generated by the laser caused the light transmitting diode to fail. Research showed that eight out of 10 times, only a $20 diode needed to be replaced to bring a broken scanner back online, but because of the ZAPS classification as a component, repairs were unauthorized.

"It really was a common sense approach," Kime said, noting that it seemed like a no-brainer to spend $20 to save $4,000. Electro-Optics/Night Vision Division works on an average of 225 scanners a year. The unit consists of 14 parts, including the sensor and a glass prism and lens.

Getting the reclassification accepted would solve the problem, according to Voorhees. He explained that if an item is classified a component, it doesn't get repaired; however, a part can be repaired. "A component is something you use and throw away," Voorhees said. "Renaming the ZAPS provided an avenue for us to make necessary repairs saving thousands of dollars for each item."

"I never expected the idea to go as far as it has," Martino said. "We were just doing our job—there was a problem and we resolved it." He explained that the hardest part was just figuring out what the problem was and then how to fix it. Martino was reassigned to the communications system directorate's satellite communications division before the suggestion was approved.

The ZAPS is used in the basic sight assembly scanner of the Bradley Fighting Vehicle. The scanner is a mirror assembly that moves quickly left and right. Once the zero azimuth position is found, the mirror is adjusted to move equally left and right from the center.

According to the mechanics, the ZAPS allows the technician to find the center of the moving mirror, letting the cross-hairs of the night vision system to line up. Without ZAPS, the system would sight slightly left or right of the target.

"They [Kime, Martino, and Voorhees] could have just as easily gone about doing business as usual, but decided to work together and submit their idea in hopes of improving the process," Patelunas said. "It shows that employees here really do care about the jobs they do.

"The suggestion program is an excellent avenue for all employees to present better ways of doing business and to improve the quality of life at the depot," she said.

Boucher works at Tobyhanna Army Depot.

AT&L Workforce—Key Leadership Changes

ACTING ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT & ACQUISITION

John S. Thackrah assumed the duties of acting assistant secretary of the Navy for research, development, and acquisition on Nov. 16, 2007. As the acting ASN(RD&A), Thackrah will continue to perform his regular duties as deputy assistant secretary of the Navy for management and budget. In this capacity, he is responsible for over $50 billion annually of research, development and acquisition activities and over 100,000 people.

Thackrah was sworn in as deputy assistant secretary for management and budget on April 18, 2005. In this position, he was responsible to the assistant secretary of the Navy for research, development and acquisition for all administrative matters, annual budget preparation, and human resource management. He also served as the chief of staff to the assistant secretary of the Navy.

The ASN(RD&A) organization is responsible for the development and acquisition of Navy and Marine Corps platforms and warfare systems. The organization consists of an immediate staff to the assistant secretary, deputy assistant secretaries, program executive officers, direct reporting program managers, and the Naval systems commands and their field activities. The PEOs and DRPMs are responsible for the development and acquisition of Naval systems. The Naval systems commands and their field activities are also responsible for systems acquisition and supporting those systems in the operating fleet.

NAVY NEWSSTAND (DEC. 3, 2007)
ASSUMPTION OF COMMAND FOR PROGRAM EXECUTIVE OFFICER, AIRCRAFT CARRIERS

Rear Adm. Michael McMahon assumed command as program executive officer, aircraft carriers during a ceremony held at the Washington Navy Yard Dec. 3. Based in Washington, D.C., PEO aircraft carriers is responsible for designing, delivering, and maintaining the nation's aircraft carrier force.

"I couldn't be more excited that Rear Adm. McMahon has joined the acquisition community; his background makes him uniquely qualified to guide the aircraft carrier program through its upcoming challenges," said John Thackrah, acting assistant secretary of the Navy for research, development and acquisition (RD&A), the ceremony's guest speaker.

"We have quite the undertaking ahead of us—the contract award for CVN 78, Gerald R. Ford, the first of the next generation of aircraft carriers; the delivery of CVN 77, George H.W. Bush; and the continued execution of CVN 70's Refueling Complex Overhaul as well as the continued planning for CVN 71s," he said.

During the ceremony McMahon read his orders, marking the beginning of his assignment as PEO Aircraft Carriers. McMahon's most recent assignment was supervisor of U.S. Navy Shipbuilding, Conversion and Repair, Newport News, Va., responsible for the U. S. Navy's aircraft carrier and submarine ship construction, refueling, and repair programs at Northrop Grumman Newport News.

"Thanks to you all for the support, and I look forward to supporting you moving carriers forward," said McMahon. "I've been either in or working in aircraft carriers for most of my 28 years of Navy service and I'm very glad to be here today to continue to serve."

U.S. ARMY CHEMICAL MATERIALS AGENCY PRESS RELEASE (JAN. 25, 2008)
CHEMICAL MATERIALS AGENCY ANNOUNCES NEW DIRECTOR

ABERDEEN PROVING GROUND, Md.—The U.S. Army Chemical Materials Agency is kicking off the new year with a major change in leadership. Conrad Whyne officially replaced Dale Ormond as the new director of CMA Jan. 25.

Ormond has served as acting CMA director since January 2007. Throughout this time, CMA has achieved many milestones—commencement of Newport, Ind., hydrolysate shipments to Port Arthur, Texas; reaching the Chemical Weapons Convention's 45 percent agent destruction milestone; and the elimination of binary chemical weapons in the United States.

"I am proud of the CMA workforce and their commitment to safe and efficient disposal over the past year," said Ormond. "Without the dedication of our government and contractor employees, my job—as well as daily CMA operations—would not have gone as smoothly. Whyne brings more than 20 years of experience and leadership to this position, and I am confident that he will succeed in leading CMA through many more crucial milestones."

As the incoming director of CMA, Whyne will ensure continued secure storage and safe destruction of chemical weapons materiel, manage the closure of the demilitarization facilities, oversee Chemical Stockpile Emergency

AT&L Workforce—Key Leadership Changes

Preparedness programs and plan for Base Realignment and Closure requirements.

Accepting his new position, Whyne said, "I am honored to lead the committed men and women of CMA. In my 24 years working for CMA, I have witnessed the unfailing dedication of these individuals to safely storing and ultimately eliminating our former chemical warfare program. I look forward to upholding CMA's remarkable safety and environmental standards."

ACTING ASSISTANT SECRETARY OF THE ARMY FOR ACQUISITION, LOGISTICS AND TECHNOLOGY

Dean G. Popps became the acting assistant secretary of the Army for acquisition, logistics and technology (ASA[ALT]) on Jan. 3, 2008. He also continues to serve as the principal deputy, a position to which he was appointed on July 24, 2004.

As the acting ASA(ALT), Popps serves as the Army acquisition executive, the senior procurement executive, the science advisor to the secretary of the Army, and the Army's senior research and development official. He also has principal responsibility for all Department of the Army matters related to logistics.

Popps leads the execution of the Army's acquisition function and the acquisition management system. His responsibilities include providing oversight for the life cycle management and sustainment of Army weapons systems and equipment from research and development through test and evaluation, acquisition, logistics, fielding, and disposition. Popps also oversees the elimination of chemical weapons program. In addition, he is responsible for appointing, managing, and evaluating program executive officers and managing the Army Acquisition Corps and the Army Acquisition Workforce.

DEPARTMENT OF DEFENSE NEWS RELEASE (JAN. 11, 2008)
GENERAL OFFICER ASSIGNMENTS

The Air Force chief of staff announces the assignments of the following general officers:

Brig. Gen. Peter F. Hoene, commander, 350th Electronic Systems Wing, Electronic Systems Center, Air Force Materiel Command, Hanscom Air Force Base, Mass., to director, command and control programs, Defense Information Systems Agency, Arlington, Va.

Brig. Gen Everett H. Thomas, vice commander, U.S. Air Force Warfare Center, Air Combat Command, Nellis Air Force Base, Nev., to commander, Nuclear Weapons Center, Air Force Materiel Command, Kirtland Air Force Base, N.M.

GAO PRESS RELEASE (FEB. 15, 2008)
DAVID M. WALKER, U.S. COMPTROLLER GENERAL, ANNOUNCES EARLY DEPARTURE TO HEAD NEW PUBLIC INTEREST FOUNDATION

WASHINGTON, D.C.—David M. Walker, comptroller general of the United States and head of the U.S. Government Accountability Office announced his intention to resign his position effective March 12, 2008, in order to accept the position of president and chief executive officer of the newly established Peter G. Peterson Foundation.

Walker has been comptroller general of the United States since November 1998. During his tenure, the GAO has undergone a major transformation during which the agency's role has expanded while its visibility, viability, and performance have improved significantly. In addition to leading this effort, Walker has worked to modernize the accountability profession both domestically and internationally. He has also been an outspoken advocate of the need for federal policymakers to address the fiscal and other key sustainability challenges and government transformation needs facing the United States.

The Peterson Foundation will be dedicated to engaging in various actions designed to educate and activate Americans, especially younger Americans, the business community, and the media, while also seeking and supporting sensible policy solutions to a range of sustainability and transformation challenges. Peterson has committed to contribute at least $1 billion to the foundation and related efforts over the next several years.

Walker noted that his decision was motivated by his desire to maximize his ability to make a real and lasting difference to address the fiscal, entitlement, health care, energy, education, and other major sustainability challenges facing the United States.

"As comptroller general of the United States and head of the GAO, there are real limitations on what I can do and say in connection with key public policy issues, especially issues that directly relate to GAO's client—the Congress," Walker continued. "My new position will provide me with the ability and resources to more aggressively address

AT&L Workforce—Key Leadership Changes

a range of current and emerging challenges facing our country, including advocating specific policy solutions and courses of action. This move will enable me to sharpen my messages and bring focus and attention to the fiscal and other key sustainability challenges that I and others have been discussing during the past several years.

"This was a very difficult decision for me," said Walker. "It is an honor and a privilege to serve as comptroller general of the United States and head of the GAO. GAO is comprised of several thousand highly educated and dedicated professionals who make a difference for the Congress and the country every day. I take comfort in knowing that we have already accomplished all but one of the key goals that I set out at the beginning of my term, and that GAO is better positioned for the future. My new position will help increase the probability that we can achieve the remaining key goal: getting Congress to address the nation's large and growing fiscal and other key sustainability challenges before a crisis hits.

"Furthermore, I am pleased that Gene Dodaro, GAO's Chief Operating Officer and one of the most capable career civil servants in the federal government, will serve as acting comptroller general upon my departure. In the final analysis, while I love both my job as comptroller general and the GAO, I love my country more, and I believe that leading this foundation represents a unique opportunity and will be good for my country," Walker concluded.

For more information, contact Chuck Young at GAO's Office of Public Affairs, 202-512-4800.

DEPARTMENT OF DEFENSE NEWS RELEASE (FEB. 13, 2008)
FLAG OFFICER ANNOUNCEMENTS

Secretary of Defense Robert M. Gates announced today that the president has made the following nominations:

Navy Reserve Rear Adm. Julius S. Caesar has been nominated for appointment to the grade of rear admiral (upper half). Caesar is currently serving as reserve deputy commander, Naval Installations Command, Washington, D.C.

Navy Reserve Rear Adm. Raymond P. English has been nominated for appointment to the grade of rear admiral (upper half). English is currently serving as deputy director of operations, U.S. Transportation Command, Scott Air Force Base, Ill.

DEPARTMENT OF DEFENSE NEWS RELEASE (FEB. 13, 2008)
FLAG OFFICER ANNOUNCEMENTS

Secretary of Defense Robert M. Gates announced today that the president has made the following nominations:

Navy Rear Adm. Timothy V. Flynn III has been nominated for appointment to the rank of rear admiral (upper half). Flynn is currently serving as program executive officer for enterprise information systems, Washington, D.C.

Navy Rear Adm. William H. Hilarides has been nominated for appointment to the rank of rear admiral. Hilarides is currently serving as program executive officer for submarines, Washington, D.C.

Navy Rear Adm. Victor C. See Jr. has been nominated for appointment to the rank of rear admiral (upper half). See is currently serving as program executive officer for space systems/ commander, space and naval warfare systems command space field activity/director, communications directorate, National Reconnaissance Office, Chantilly, Va.

Navy Rear Adm. Walter M. Skinner has been nominated for appointment to the rank of rear admiral (upper half). Skinner is currently serving as program executive officer for tactical aircraft programs, Patuxent River, Md.

DEPARTMENT OF DEFENSE NEWS RELEASE (FEB. 21, 2008)
GENERAL OFFICER ASSIGNMENTS

The Army chief of staff announces the assignment of the following general officers:

Maj. Gen. Yves J. Fontaine, deputy chief of staff, G-4, U.S. Army Europe and Seventh Army, Germany, to commanding general, 21st Theater Support Command, U.S. Army Europe and Seventh Army, Germany.

Brig. Gen. Scott G. West, commanding general, 21st Theater Support Command, U.S. Army Europe and Seventh Army, Germany, to commanding general, U.S. Army TACOM Life Cycle Management Command, Warren, Mich.

Acquisition & Logistics Excellence
An Internet Listing Tailored to the Professional Acquisition Workforce
S u r f i n g   t h e   N e t

Acquisition Central
http://acquisition.gov
Shared systems and tools to support the federal acquisition community and business partners.

Acquisition Community Connection (ACC)
http://acc.dau.mil
Policies, procedures, tools, references, publications, Web links, and lessons learned for risk management, contracting, system engineering, TOC.

Aging Systems Sustainment and Enabling Technologies (ASSET)
http://asset.okstate.edu/asset/index.htm
Government-academic-industry partnership. ASSET program-developed technologies and processes expand the DoD supply base, reduce time and cost of parts procurement, enhance military readiness.

Air Force (Acquisition)
www.safaq.hq.af.mil
Policy; career development and training opportunities; reducing TOC; library; links.

Air Force Institute of Technology
www.afit.edu
Graduate degree programs and certificates in engineering and management; Civilian Institution; Center for Systems Engineering; Centers of Excellence; distance learning.

Air Force Materiel Command (AFMC) Contracting Laboratory's FAR Site
http://farsite.hill.af.mil
FAR search tool; *Commerce Business Daily* announcements (CBDNet); *Federal Register*; electronic forms library.

Army Acquisition Support Center
http://asc.army.mil
News; policy; *Army AL&T* Magazine; programs; career information; events; training opportunities.

Army Training Requirements and Resources System
https://www.atrrs.army.mil
Army system of record for managing training requirements.

Assistant Secretary of the Army (Acquisition, Logistics & Technology)
https://webportal.saalt.army.mil
ACAT Listing; ASA(ALT) Bulletin; digital documents library; links to other Army acquisition sites.

Association for the Advancement of Cost Engineering International (AACE)
www.aacei.org
Planning and management of cost and schedules; online technical library; book-store; technical development; distance learning.

Association of Old Crows (AOC)
www.crows.org
News; conventions, courses; *Journal of Electronic Defense*.

Association of Procurement Technical Assistance Centers (APTAC)
www.aptac-us.org
PTACs nationwide assist businesses with government contracting issues.

Central Contractor Registry
http://www.ccr.gov/
Registration for businesses wishing to do business with the federal government under a FAR-based contract .

Committee for Purchase from People Who are Blind or Severely Disabled
www.abilityone.gov
Information and guidance to federal customers on the requirements of the Javits-Wagner-O'Day (JWOD) Act.

Defense Acquisition University (DAU) and Defense Systems Management College (DSMO)
www.dau.mil
DAU Course Catalog; *Defense AT&L* magazine and *Defense Acquisition Review Journal*; DAU/DSMC course schedules; educational resources.

DAU Alumni Association
www.dauaa.org
Acquisition tools and resources; links; career opportunities; member forums.

DAU Distance Learning Courses
www.dau.mil/registrar/enroll.asp
DAU online courses.

Defense Advanced Research Projects Agency (DARPA)
www.darpa.mil
News releases; current solicitations; *Doing Business with DARPA.*

Defense Business Transformation Agency (BTA)
www.acq.osd.mil/scst/index.htm
Policy; newsletters; Central Contractor Registration (CCR); assistance centers; DoD EC partners.

Defense Information Systems Agency (DISA)
www.disa.mil
Defense Information System Network; Defense Message System; Global Command and Control System.

Defense Modeling and Simulation Office (DMSO)
www.dmso.mil
DoD modeling and simulation master plan; document library; events; services.

Defense Technical Information Center (DTIC)
www.dtic.mil/
DTIC's scientific and technical information network (STINET) is one of DoD's largest available repositories of scientific, research, and engineering information. Hosts over 100 DoD Web sites.

Deputy Under Secretary of Defense for Acquisition, Technology and Logistics (DUSD(AT&L))
www.acq.osd.mil/at
Acquisition and technology organization, goals, initiatives, and upcoming events.

Director, Defense Procurement and Acquisition Policy (DPAP)
www.acq.osd.mil/dpap
Procurement and acquisition policy news and events; reference library; acquisition education and training policy, guidance.

DoD Defense Standardization Program
www.dsp.dla.mil
DoD standardization; points of contact; FAQs; military specifications and standards reform; newsletters; training; nongovernment standards; links.

DoD Enterprise Software Initiative (ESI)
www.esi.mil
Joint project to implement true software enterprise management process within DoD.

DoD Inspector General Publications
www.dodig.osd.mil/pubs/
Audit and evaluation reports; IG testimony; planned and ongoing audit projects of interest to the AT&L community.

DoD Office of Technology Transition
www.acq.osd.mil/ott
Information about and links to OTT's programs.

DoD Systems Engineering
www.acq.osd.mil/se
Policies, guides and information on SE and related topics, including developmental T&E and acquisition program support.

Earned Value Management
www.acq.osd.mil/pm
Implementation of EVM; latest policy changes; standards; international developments.

Electronic Industries Alliance (EIA)
www.eia.org
Government relations department; links to issues councils; market research assistance.

Federal Acquisition Institute (FAI)
www.fai.gov
Virtual campus for learning opportunities; information access and performance support.

Federal Acquisition Jumpstation
http://prod.nais.nasa.gov/pub/fedproc/home.htm
Procurement and acquisition servers by contracting activity; CBDNet; reference library.

Federal Aviation Administration (FAA)
www.asu.faa.gov
Online policy and guidance for all aspects of the acquisition process.

Federal Business Opportunities
www.fedbizopps.gov
Single government point-of-entry for federal government procurement opportunities over $25,000.

Federal R&D Project Summaries
www.osti.gov/fedrnd/about
Portal to information on federal research projects; search databases at different agencies.

Federal Research in Progress (FEDRIP)
http://grc.ntis.gov/fedrip.htm
Information on federally funded projects in the physical sciences, engineering, life sciences.

Fedworld Information
www.fedworld.gov
Central access point for searching, locating, ordering, and acquiring government and business information.

Government Accountability Office (GAO)
http://.gao.gov
GAO reports;policy and guidance; FAQs.

General Services Administration (GSA)
www.gsa.gov
Online shopping for commercial items to support government interests.

Government-Industry Data Exchange Program (GIDEP)
www.gidep.org
Federally funded co-op of government-industry participants, providing electronic forum to exchange technical information essential to research, design, development, production, and operational phases of the life cycle of systems, facilities, and equipment.

GOV.Research_Center
http://grc.ntis.gov
U.S. Dept. of Commerce, National Technical Information Service (NTIS), and National Information Services Corporation (NISC) joint venture single-point access to government information.

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Surfing the Net

Integrated Dual-Use Commercial Companies (IDCC)
www.idcc.org
Information for technology-rich commercial companies on doing business with the federal government.

International Society of Logistics
www.sole.org
Online desk references that link to logistics problem-solving advice; Certified Professional Logistician certification.

International Test & Evaluation Association (ITEA)
www.itea.org
Professional association to further development and application of T&E policy and techniques to assess effectiveness, reliability, and safety of new and existing systems and products.

Joint Capability Technology Demonstrations (JCTD)
www.acq.osd.mil/jctd
JCTD's accomplishments, articles, speeches, guidelines, and POCs.

U.S. Joint Forces Command
www.jfcom.mil
"Transformation laboratory" that develops and tests future concepts for warfighting.

Joint Fires Integration and Interoperability Team
https://jfiit.eglin.af.mil
USJFCOM lead agency to investigate, assess, and improve integration, interoperability, and operational effectiveness of Joint Fires and Combat Identification across the Joint warfighting spectrum. (Accessible from .gov and .mil domains only.)

Joint Interoperability Test Command (JITC)
http://jitc.fhu.disa.mil
Policies and procedures for interoperability certification; lessons learned; support.

Joint Spectrum Center (JSC)
www.jsc.mil
Operational spectrum management support to the Joint Staff and COCOMs; conducts R&D into spectrum-efficient technologies.

Library of Congress
www.loc.gov
Research services; Copyright Office; FAQs.

MANPRINT (Manpower and Personnel Integration)
www.manprint.army.mil
Points of contact for program managers; relevant regulations; policy letters from the Army Acquisition Executive; briefings on the MANPRINT program.

National Aeronautics and Space Administration (NASA)'s Commercial Technology Office (CTO)
http://technology.grc.nasa.gov
Promotes competitiveness of U.S. industry through commercial use of NASA technologies and expertise.

National Contract Management Association (NCMA)
www.ncmahq.org
Educational products catalog; publications; career center.

National Defense Industrial Association (NDIA)
www.ndia.org
Association news; events; government policy; *National Defense* magazine.

National Geospatial-Intelligence Agency
www.nima.mil
Imagery; maps and geodata; Freedom of Information Act resources; publications.

National Institute of Standards and Technology (NIST)
www.nist.gov
Information about NIST technology, measurements, and standards programs, products, and services.

National Technical Information Service (NTIS)
www.ntis.gov
Online service for purchasing technical reports, computer products, videotapes, audiocassettes.

Naval Sea Systems Command
www.navsea.navy.mil
TOC; documentation and policy; reduction plan; implementation timeline; TOC reporting templates; FAQs.

Navy Acquisition and Business Management
www.abm.rda.hq.navy.mil
Policy documents; training opportunities; guides on risk management, acquisition environmental issues, past performance; news and assistance for the Standardized Procurement System (SPS) community; notices of upcoming events.

Navy Acquisition, Research and Development Information Center
www.onr.navy.mil/sci_tech
News and announcements; publications and regulations; technical reports; doing business with the Navy.

Navy Best Manufacturing Practices Center of Excellence
www.bmpcoe.org
National resource to identify and share best manufacturing and business practices in use throughout industry, government, academia.

Naval Air Systems Command (NAVAIR)
www.navair.navy.mil
Provides advanced warfare technology through the efforts of a seamless, integrated, worldwide network of aviation technology experts.

Office of Force Transformation
www.oft.osd.mil
News on transformation policies, programs, and projects throughout DoD and the Services.

Open Systems Joint Task Force
www.acq.osd.mil/osjtf
Open systems education and training opportunities; studies and assessments; projects, initiatives and plans; library.

Parts Standardization and Management Committee (PSMC)
www.dscc.dla.mil/programs/psmc
Collaborative effort between government and industry for parts management and standardization through commonality of parts and processes.

Performance-based Logistics Toolkit
https://acc.dau.mil/pbltoolkit
Web-based 12-step process model for development, implementation, and management of PBL strategies.

Project Management Institute
www.pmi.org
Program management publications; information resources; professional practices; career certification.

Small Business Administration (SBA)
www.sba.gov
Communications network for small businesses.

DoD Office of Small Business Programs
www.acq.osd.mil/osbp

Program and process information; current solicitations; Help Desk information.

Software Program Managers Network
www.spmn.com
Supports project managers, software practitioners, and government contractors. Contains publications on highly effective software development best practices.

Space and Naval Warfare Systems Command (SPAWAR)
https://e-commerce.spawar.navy.mil
SPAWAR business opportunities; acquisition news; solicitations; small business information.

System of Systems Engineering Center of Excellence (SoSECE)
www.sosece.org
Advances the development, evolution, practice, and application of the system of systems engineering discipline across individual and enterprise-wide systems.

Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L))
www.acq.osd.mil
USD(AT&L) documents; streaming videos; links.

USD(AT&L) Knowledge Sharing System (formerly Defense Acquisition Deskbook)
http://akss.dau.mil
Automated acquisition reference tool covering mandatory and discretionary practices.

U.S. Coast Guard
www.uscg.mil
News and current events; services; points of contact; FAQs.

U.S. Department of Transportation Maritime Administration
www.marad.dot.gov
Information and guidance on the requirements for shipping cargo on U.S. flag vessels.

Links current at press time. To add a non-commercial defense acquisition/acquisition and logistics-related Web site to this list, or to update your current listing, please fax your request to *Defense AT&L*, 703-805-2917 or e-mail datl(at)dau.mil. Your description may be edited and/or shortened. DAU encourages the reciprocal linking of its home page to other interested agencies. Contact: webmaster(at)dau.mil.

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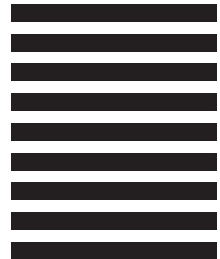If you prefer not to be part of these lists, use your home address.

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Defense AT&L

A Publication of the
Defense Acquisition University

Fold Here

Defense AT&L Writer's Guidelines in Brief

Purpose
Defense AT&L is a bi-monthly magazine published by DAU Press, Defense Acquisition University, for senior military personnel, civilians, defense contractors, and defense industry professionals in program management and the acquisition, technology, and logistics workforce. The magazine provides information on policies, trends, events, and current thinking regarding program management and the acquisition, technology, and logistics workforce.

Submission Procedures
Submit articles by e-mail to datl(at)dau.mil or on disk to: DAU Press, ATTN: Carol Scheina, 9820 Belvoir Rd., Suite 3, Fort Belvoir VA 22060-5565. Submissions must include the author's name, mailing address, office phone number, e-mail address, and fax number.

Receipt of your submission will be acknowledged in five working days. You will be notified of our publication decision in two to three weeks.

Deadlines

Issue	Author Deadline
July-August	1 October
March-April	1 December
May-June	1 February
July-August	1 April
September-October	1 June
November-December	1 August

If the magazine fills before the author deadline, submissions are considered for the following issue.

Audience
Defense AT&L readers are mainly acquisition professionals serving in career positions covered by the Defense Acquisition Workforce Improvement Act (DAWIA) or industry equivalent.

Style
Defense AT&L prints feature stories focusing on real people and events. The magazine also seeks articles that reflect your experiences and observations rather than pages of researched information.

The magazine does not print academic papers; fact sheets; technical papers; white papers; or articles with footnotes, endnotes, or references. Manuscripts meeting any of those criteria are more suited to DAU's journal, *Acquisition Review Journal (ARJ)*.

Defense AT&L does not reprint from other publications. Please do not submit manuscripts that have appeared in print elsewhere. *Defense AT&L* does not publish endorsements of products for sale.

Length
Articles should be 1,500 – 2,500 words.

Format
Submissions should be sent via e-mail as a Microsoft® Word attachment.

Graphics
Do not embed photographs or charts in the manuscript. Digital files of photos or graphics should be sent as e-mail attachments or mailed on zip disks or CDs (see address above). Each figure or chart must be saved as a separate file in the original software format in which it was created.

TIF or JPEG files must have a resolution of 300 pixels per inch; enhanced resolutions are not acceptable; images downloaded from the Web are not of adequate quality for reproduction. Detailed tables and charts are not accepted for publication because they will be illegible when reduced to fit at most one-third of a magazine page.

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