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ARMY AL&T

SEPTEMBER–OCTOBER 2001

Versatile

Agile

Transforming the Army

Survivable

Responsive

In This Issue:

FROM THE ARMY ACQUISITION EXECUTIVE

Seizing The Opportunity

The Army is undertaking one of the most ambitious transformations in its history. The challenges are formidable, but the timing is right. We live in a time of relative peace. Our Nation's economic strength has given us a period of prosperity. A decade of post-Cold War experience has provided us a strategic perspective, and American technological power gives us tremendous potential.

This edition of *Army AL&T* features several articles that highlight the acquisition, logistics, and technology community's many contributions toward building the future force. We are teaming with our Army counterparts to accomplish three goals simultaneously—extending the life of our legacy force systems through recapitalization and selective upgrades; fielding the interim force to fill the gap between our heavy and light forces; and maximizing advances in technology and organizational adaptations to revolutionize landpower capabilities for the force of the future, the objective force.

The Army has a plan to selectively upgrade and recapitalize legacy force equipment to combat the rapid aging of our weapon systems. We preserve readiness best and most cost-effectively when we retire or replace warfighting systems on a 20-year modernization cycle. As systems age, they break down with greater frequency and become more costly and difficult to maintain in peak warfighting condition. Today, 75 percent of major combat systems exceed engineered design half-life and will exceed design life by 2010. Operation and sustainment costs are up more than 30 percent, and aircraft safety-of-flight messages are up 200 percent since 1995. To combat these spiraling costs, the Army has identified 19 proven systems that will benefit from upgrades and enhancements. We must also selectively modernize those capabilities with systems like the Crusader howitzer and Comanche helicopter to cost-effectively maximize the capabilities of the legacy force and satisfy objective force requirements.

The fielding of the interim force fills the strategic gap between our heavy and light forces and is an essential step toward the objective force. The key component of the interim force is the Interim Brigade Combat Team (IBCT). The first two IBCTs are being organized at Fort Lewis, WA. In addition, Army Secretary Thomas E. White has announced the locations of our next four IBCTs at Forts Richardson and Wainwright in Alaska; Schofield Barracks, HI; and in the 28th Infantry Division (Mechanized) of the Pennsylvania Army National Guard. The equipment foundation of the IBCTs will be a family of Interim Armored Vehicles (IAVs) that will be capable of being transported by C-130-type aircraft. The IAVs will have enhanced characteristics for greater effectiveness in a variety of operational missions around the globe.

The Army's ultimate goal for transformation is the objective force. Operating as part of a joint, combined, and/or interagency team, it will be capable of conducting rapid and decisive offensive, defensive, stability and support operations, and be able to transition among any of these missions without a loss of momentum. It will be lethal and survivable for warfighting and force protection and responsive and deployable for rapid mission tailoring and for the projection

required for crisis response. In addition, the objective force will be versatile and agile for success across the full spectrum of operations and sustainable for extended regional engagement and sustained land combat. The objective force will provide for conventional overmatch and a greater degree of strategic responsiveness, mission versatility, and operational and tactical agility.

The Future Combat Systems (FCS), a "system-of-systems," is one of the essential components for the objective force. To accelerate development of key technologies, the Army partnered with the Defense Advanced Research Projects Agency in a collaborative effort. During the next 6 years, the Army will demonstrate and validate FCS concepts and exploit high-payoff enabling technologies including composite armor, active protection systems, multirole (direct and indirect fire) cannons, compact kinetic energy missiles, hybrid electric propulsion, human engineering, and advanced electro-optic and infrared sensors.

Equally essential to the objective force is the fielding of the Comanche helicopter beginning in 2006. Comanche is the central program of Army aviation and a prime example of existing modernization programs with significant value for objective force capability. Although Comanche will be fielded as part of the objective force, its digitization will be compatible with legacy force and interim force systems.

The Army Battle Command System (ABCS) is currently envisioned as the internetted network that will enable the command, control, communications, computers, and intelligence, surveillance, and reconnaissance (C4ISR) capabilities of the objective force. ABCS is the Army's component of the Global Command and Control System and is a complex system-of-systems that provides the mechanism to receive and transmit information among the joint forces. This capability will significantly advance the ability to expand situational awareness of the battlefield to every echelon of the force, thus dramatically improving the ability to increase the speed and effectiveness of tactical decisions.

The Army, in a relatively short period of time, has made great progress with its transformation. Tough decisions have been made to reprioritize resources in support of our new priorities. The Army has taken aggressive steps to accelerate essential science and technology efforts to identify revolutionary new technologies. Two brigades are being organized at Fort Lewis as a foundation for the new IBCTs, and four new ones have been identified. The Army awarded a contract for a family of IAVs to equip these units and provide invaluable new warfighting capabilities. Finally, and very important, the Army has made the needed decisions to maintain and extend the combat superiority and readiness of the current force until the future force is completely fielded. While there is much work to be done, the momentum is already irreversible.

Dr. Kenneth J. Oscar
Acting Army Acquisition Executive

INTERVIEW WITH GEN JOHN M. KEANE ARMY VICE CHIEF OF STAFF

Q. The Army Chief of Staff has articulated a vision for transforming the Army into a force that is responsive and dominant at every point on the spectrum of operations. What do you consider to be the three most important aspects of this momentous task?

A. There are three primary components to the Army vision: people, readiness, and transformation. Simply put, the Army vision is about remaining the most respected Army in the world and the most feared ground force to those who would threaten the interests of the United States. People are the most important because the Army *is* people. Our Army must continue to attract, train, motivate, and retain high-quality people to fill the ranks of this magnificent institution. Only then, through a position of strength, can we remain ready to meet today's challenges while undergoing an extraordinary transformation that touches every fabric of our Army.

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Readiness remains the Army's top operational priority, and we will never lose the faith and confidence of the American people to fight and win the Nation's wars. We are regarded as the pre-eminent land force in the world—a position we are committed to maintaining.

Transformation is truly about how we intend to change the way we fight this Army, and of course, how our doctrine, training, logistics, acquisition, and leader development will reflect this change. The tremendous growth and explosion of information technologies will provide us with unprecedented situational awareness that will serve as the catalyst for changing the way the Army fought for most of the 20th century. In the final analysis, our Army will become more strategically respon-

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sive and dominant across the full spectrum of operations.

Q. What is your primary role in the transformation effort?

A. First, the title that truly captures the duties of the Vice Chief is Chief Operating Officer of the Army. I am involved in futures, yet the TRADOC [Training and Doctrine Command] Commander is the futures architect. The Vice Chief has to run the daily operations of the Army—its resourcing, training, preparation, engagement, and deployments. Transformation is deeply embedded in each of these responsibilities, and it is my job to ensure that the Army Staff is synchronized in its support of our transformation efforts.

Q. Some critics have questioned whether the Army should be transforming itself rather than leaving that task to an outside body. What is your response to this?

A. I think it is very important to remember that the Army is not undergoing transformation in isolation. We are part of the joint team, and we have been working closely with the Department of Defense and our sister Services on this effort. We have kept the administration and Congress fully informed and, I might add, there is a great deal of support for where the Army is headed. There are always going to be pundits who say the Army should not be in charge of transforming itself, but one should remember that the Army has great depth of experience in this area. Prior to World War I, for example, we were a 210,000-man frontier Army—not a single division existed. As the war proceeded, the Army grew to its peak strength of nearly 4 million troops and organized a staggering 62 divisions, 43 of which were sent overseas. We entered the war with 57 military occupational specialties. In January 1919, we had 703. That is change, and our history is rich with many other extraordinary examples of transformation. Now, the Chief has embarked on another bold transformation—one that is going to fundamentally alter how we do business and position the Army for the likely threats and challenges of the 21st Century.

Q. One of the primary goals of the transformation is to reduce the "logistics footprint." What does this mean, and how will the Army achieve it?

A. By "reducing the logistics footprint," we mean eliminating or reducing unnecessary sustainment-oriented equipment, supplies, personnel (including contractors and civilians), and infrastructure within the combat zone while maintaining or improving the sustainment mission. We will achieve this goal through both a physical and cultural change. We must overcome an institutional culture to "take it all, just in case." Our Army, as a whole, must overcome the "iron-mountain" approach to supply and sustainment logistics. We no longer have the assets for this approach, nor can we, from a resource perspective, afford it. We must balance the competing demands on scarce strategic and tactical lift platforms. We must focus our energy on doing things smarter, faster, and with fewer resources.

Equally important is the need to reduce the demand for sustainment stocks by leveraging technology to cut back on fuel, water, repair parts, and ammunition requirements. These account for 90 percent of the daily requirements for a deployed heavy force. We believe we can make substantial reductions in these key stocks. We can reduce our demand for fuel by decreasing fuel consumption, but we can also leverage the use of alternative fuels. We can develop and employ hybrid systems, which can produce power without the need for generators. Additionally, we can incorporate advanced propulsion technologies into our Future Combat Systems. Technology exists today to convert vehicle exhaust to water, but the equipment is too large and bulky. We must continue to investigate this area to reduce our transportation requirements for water distribution.

We can reduce our demand for repair parts by leveraging both existing and future technologies. We should continue to insist that manufacturers design equipment that maximizes existing common repair parts. Fielding a mobile-parts hospital will give commanders the ability to manufacture their own parts near the combat zone. Advanced materials will improve reliability and reduce the mean-time-between-failure rate. Additionally, by developing "intelligent" vehicles that will tell an operator when a part is about to fail, logisticians can ensure the part is available prior to the actual failure. Ammunition requirements can be

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dramatically reduced through investment in smart and brilliant munitions. Munitions that can find, identify, and maneuver to destroy targets will significantly limit the number of rounds required per target.

Finally, our ability to reduce our footprint is dependent on our ability to provide focused logistics. We have set a stretch goal to reduce the logistics footprint by 50 percent. To that end, the ability to communicate what is needed and where is critical. A solid communications backbone combined with automated logistics systems will provide the logistician the key information required to support the warfighter. As such, we are evolving from a stovepiped, manual process to a Web-based, wireless system. We are currently engaged in a wholesale logistics modernization program. We are developing a seamless, integrated information and management system that will more fully integrate wholesale and retail supply operations. Emerging technologies and our application of them can be leveraged to reduce the logistics footprint to ensure flexibility and mobility for the combat commander.

Q. What are your thoughts relative to the Army's progress in merging some of the efforts of the acquisition and logistics communities?

A. We are making some progress in this area. Our acquisition and logistics communities are a big part of our development of an integrated business environment. The days of a stovepipe approach to doing business and supporting the soldier are gone. We have changed our acquisition and business strategies to emphasize system life-cycle management, from development to sustainment to disposal. Now, our acquisition and logistics experts work on integrated process teams to solve problems together and to make sure that what we buy we buy smart and that we consider our total ownership costs, not just the immediate contract costs. Increased logistics involvement in the development phase of the life cycle helps ensure the acquisition community includes such issues as supportability and maintenance in the acquisition strategy. Continued and early involvement of the acquisition community in long-term logistics sustainment issues results in buying replacement parts that modernize the system rather than just maintain it. At several of our commands, acquisition and logistics personnel are collocated, bringing a real multifunctional perspective to our business issues and to our total life-cycle emphasis. We have garnered savings and better products by integrating the efforts of our acquisition and logistics communities. We are operating in a multifunctional environment, and we continue striving to use and maximize the efforts of all our people and their expertise. This is the most efficient and effective way to do our business and ensure improved product affordability, sustainability, and readiness.

Though we have made significant strides in merging some of our efforts, we do not have processes that connect end-to-end. There is still some work to be done. We need laboratories to focus more on reliability and new concepts of support early and continuously throughout a program's life. We need life-cycle models that allow us to make design trades during concept and early development. These models will also allow assessment of life-cycle costs including training and people—not just capability. We need to bring on a new young workforce to challenge our old ways of doing business. We need to change our financial system to provide incentives for availability, not parts. We need to move to a "system-of-systems" focus and define the payoff for commonality. Finally, we need to come to judgment on how much depot/arsenal is needed and make it effective and productive. The key is the right mix of people, processes, and equipment.

Q. The science and technology and acquisition communities have been challenged to field the Future Combat Systems [FCS] during this decade. What special steps are necessary to achieve this accelerated schedule, and what are some of the key technology efforts and their potential payoff?

A. To achieve the planned Future Combat Systems [FCS] accelerated schedule, it is essential that the Army maintain continuous senior leadership involvement and focused competition among our industry teams. We intend to establish initial capabilities early, consistent with mature

technologies, and enhance those capabilities through parallel S&T development and insertion in subsequent block upgrades. Furthermore, we will make extensive use of Simulation and Modeling for Acquisition, Requirements and Training [SMART] throughout the FCS Program to help define requirements, conduct detailed design, perform system integration, demonstrate performance, and optimize testing. We will also execute some acquisition phases in parallel, instead of the normal sequential process, which is in accordance with the new Defense acquisition process to develop and field weapon systems.

I will highlight several of our key technology efforts beginning with our collaboration with the Defense Advanced Research Projects Agency [DARPA], which allows us to aggressively pursue innovative designs for FCS. This effort will define and validate design and operational concepts using modeling and simulation; fabricate and test an FCS demonstrator; and develop those enabling technologies selected for use in FCS. Additionally, we will pursue development of armor that weighs less than current armor but still provides the same protection and survivability. We have projects that will develop smaller-caliber armaments and ammunition capable of precision direct and indirect fire at long ranges. We will capitalize on the hybrid electric drive for fast acceleration, silent operation, and increased fuel efficiency in our vehicles. We have intense efforts to use robotics in unmanned ground vehicles and unmanned aerial vehicles for remote sensing, communications relay, weapon carriers for line-of-sight and non-line-of-sight fires, and logistic support vehicles. The Army is aggressively developing the fundamental technology for robotics to enable these systems, both on its own and in collaboration with DARPA.

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Q. The Army considers modeling and simulation important to innovation and cost savings. Can you share your vision for simulation in the Army?

A. We have to look at simulation technology as a major strategic capability for the United States. No other army has invested in this capability as much as we have. We did this for more than just saving money; the technology has saved lives and enabled the U.S. Army to be the best trained and best led fighting force in the world. Moreover, modeling and simulation are essential to transformation. These tools are a powerful way for our leadership to visualize the future and assess the needs of the objective force. I also believe we must exploit simulation in developing the weapon systems for the objective force. Simulation gives our program managers and contractors the ability to optimize these systems for the wide spectrum of operations that we can expect and are enumerated in the new Field Manual 1, *The Army*. First at bat is the Future Combat Systems, but we need to ensure that all systems in development are integrated into the objective force. Modeling and simulation will provide the underpinnings to accomplish this integration.

Q. What is your view on the role of robotics in the Army, and when might we see robotics fielded with our soldiers?

A. The Army has great interest in using unmanned systems to keep soldiers out of harm's way, free them from tedious and routine operations that can be performed by machines, and reduce the commander's logistics burden. In fact, we have used teleoperated, remotely controlled unmanned ground vehicles in Bosnia and Kosovo for mine clearing. We are also currently using imagery from unmanned aerial vehicles [UAVs], including the Army's Hunter UAV and the Air Force's Predator, for reconnaissance and surveillance in support of Kosovo operations. In the future, we see an expanding role for robotic systems as they become more autonomous and less dependent on direct human control, reducing the burden on our soldiers. The Army vision for the Future Combat Systems and the objective force incorporates unmanned systems as a key element for both ground and air operations. The Army is currently developing the fundamental technology to develop these systems, both on its own and in collaboration with the Defense Advanced Research Projects Agency.

The result of introducing these systems into the force will be an increasingly higher proportion of unmanned to manned systems. It is too soon to know how many of our systems will be unmanned, but it is safe to say that the number of robotic systems in the force will undoubtedly increase as the technology matures and the Army gains experience with them.

THE ARMY'S PERSONNEL TRANSFORMATION

LTG Timothy J. Maude

Introduction

Within the past 18 months, Army personnel and human resource (HR) leaders worldwide reached consensus on a broadly stated concept of support for the personnel system of the future. The vision for personnel transformation is to create a personnel system that is simple, accurate, and accessible. The new concept of personnel support operates in a knowledge-based environment where everyone is responsible for knowing more than ever before. Thus, information must be readily accessible, regardless of the source.

In this environment, the personnel community will provide simple Web-enabled applications to the customer, as well as ready, relevant information to the commander, while integrating the complex processes in the "back end"—or sanctuary—away from the customer. This concept of personnel and human resource support calls for Web-enabling the initial and interim forces along a path that matches the Army transformation and envisions a fully Web-based objective force. Key to achieving the future vision of Army personnel support is a single, integrated (multicomponent) HR database, referred to as the Integrated Total Army Personnel Database (ITAPDB). Also vitally important to the success of this concept is the redesign of more than 1,170 personnel tasks and functions required to support soldiers, commanders, and family members.

Cold-War mentality and a paper-laden Army characterize our current practices. We must determine what makes sense for both commanders and soldiers across the Active and Reserve components and re-engineer our business practices accordingly. Compatible with both the Defense Integrated Military Human Resources System and current logistics modernization initiatives, this new concept of personnel support includes the full collaboration of the U.S. Army Reserve and the Army National Guard. We will ensure that what is required of commanders and soldiers is simple (in the battlespace, or "front end") while personnel managers integrate the complex (in the sanctuary).

Systems Architecture

Our ability to deliver this vision of Army human resource support is dependent on a thin client-server system that integrates existing legacy systems, migrates current data to a central database, and makes maximum use of Web-enabled applications. The HR architecture will include three basic parts: the database, software applications, and hardware, supported by three vital enablers—public key infrastructure (PKI), bandwidth, and the World Wide Web—to ensure secure, quick, and ready access.

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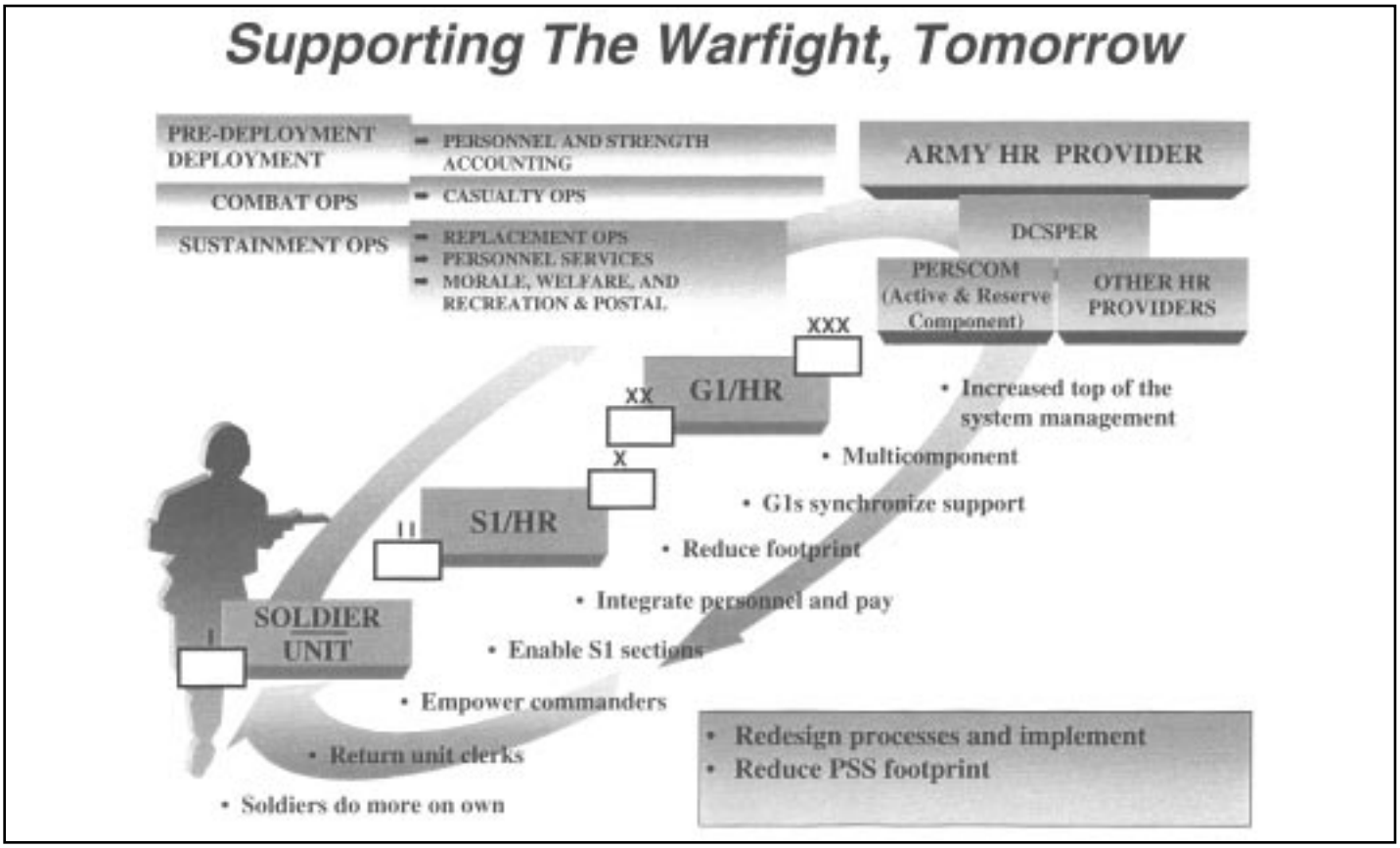
The U.S. Total Army Personnel Command (PERSCOM) is well on its way to developing a virtual ITAPDB, or corporate personnel database, and demonstrated a proof of concept in November 2000. Though full funding for the ITAPDB remains uncertain, we continue to move forward, confident that this mission-critical requirement will compete successfully with other Army priorities. PERSCOM plans to have a fully functional ITAPDB in place in October 2002, a milestone critical to supporting the initial brigades of the interim force. When fully functional, the ITAPDB will provide the Army and DOD a corporate Army database that reaches all components, provides commanders and staff officers at all levels a single view of Army personnel readiness, and meets requirements for customized personnel information.

We must take advantage of existing Web-enabled technology and use commercial-off-the-shelf products whenever possible. Our vision demands software that will allow soldiers to access their official files from any location, allow commanders to access soldier information from any location, and allow personnel managers to see the same picture at the bottom, middle, and top of the system from their location. Accurate information, anytime, anywhere, and to anyone who needs it is essential.



The future Army is where the business world is today. Commanders and personnel leaders require personal digital assistants to manage and operate. Quality hardened laptops should be the device of choice in a field environment, with desktop stations in the office. Our equipment must be like our software—reliable, relevant, and off-the-shelf. To provide this level of personnel support, there must be a long-range plan that provides for hardware as well as software upgrades.

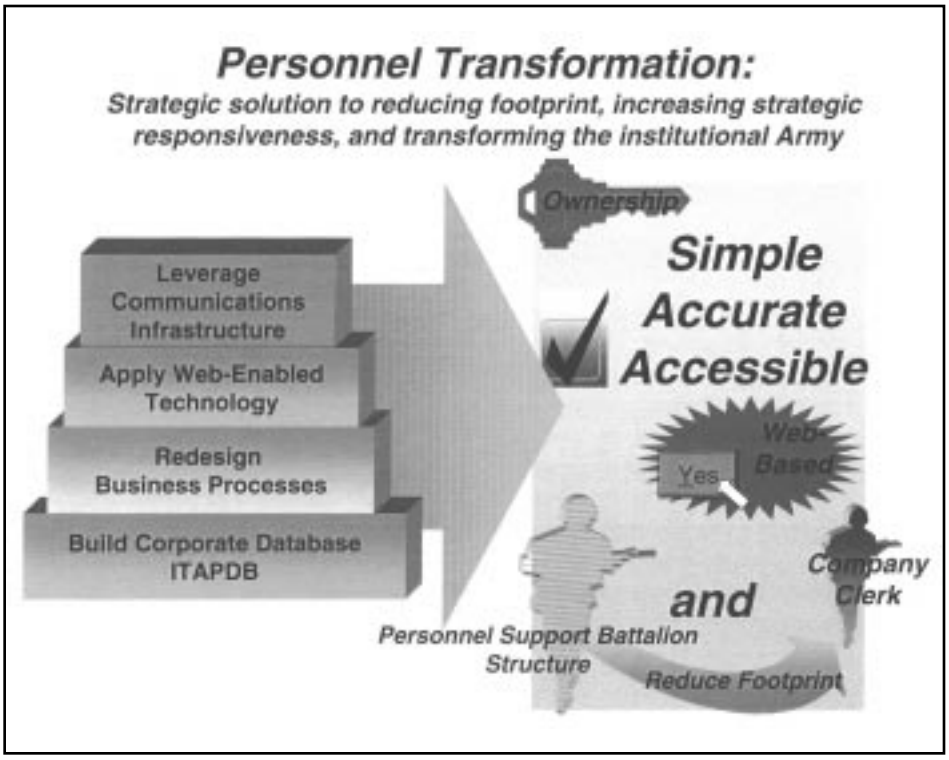
Important Components

There are three important components to ensure that we have access to the necessary information: security, bandwidth, and the World Wide Web. Without these three "access enablers," our secure, routine, and ready-access vision will not work. Relative to security, DOD has mandated PKI protection of critical Service information architecture and has spearheaded development of a common access card (CAC). Even if this were not so, Army human resource information systems designed to support the objective force would ultimately require PKI protection. Without it, we cannot use the digital signature. PKI protection encompasses information assurance measures taken to ensure viability of vital Web-based applications and warranty system access. Using the CAC as the Army PKI token, the objective system will ensure only authorized users gain database access, while protecting highly sensitive personnel support applications such as casualty reports, evaluations, promotions, and separation actions.

Very little needs to be said about the World Wide Web. It has permeated nearly every aspect of American life over the last 10 years. However, the future personnel Service support (PSS) concept does not ignore the current constraint imposed by bandwidth. Personnel planners remain convinced that personnel support to tactical commanders and institutional components of the Army will compete well with other claimants for limited bandwidth. Taking care of soldiers remains among any commander's top priorities. Every effort is being made to highlight human resource bandwidth requirements in the formulation of global combat Service support Army requirement-generation processes.

Relevant Support

Once we redesign our business processes and apply Web-enabled technologies, we can begin to provide relevant and timely information to the commander and better service to the soldier. We will be able to perform the necessary personnel accounting and casualty management in the battlespace. All other support will be performed through "reachback" to the intermediate staging base and CONUS. The battalion S1 will be able to submit accurate and complete casualty reports, evaluations, and awards to the Department of the Army. Commanders will be able to design their own management



reports and have the same access to quality information as the Army Deputy Chief of Staff for Personnel (DCSPER). Using the World Wide Web, soldiers will be able to view their official military files similar to the way people view their personal bank accounts. We will accomplish all of this with reduced soldier presence in the battlespace, while simultaneously providing more responsive support. In a virtual support architecture, a few experienced personnel leaders at the right echelons of command, who have the right access to data, information, and knowledge, are all that will be required to support the warfighting commander and the force provider.

Redesign Efforts

While we design the systems architecture, we must also re-engineer our business processes. These redesign efforts are hard work and require closely coordinated efforts among the functional, systems, and field experts. Similar to the way that industry successfully tracks millions of packages globally using current Web technology, we must re-engineer labor-intensive processes such as strength accounting to make them as simple and reliable as overnight delivery service. On the heels of such innovation, we must also have a structure plan that contains the personnel manpower requirements at each level. We must review the skills and specialties of enlisted, officer, and civilian personnel to determine what the personnel expert of the future must know and be capable of doing.

We must take into consideration extensive contracting efforts at the Army Training and Doctrine Command to include their outsourcing efforts and the best use of our civilian workforce. We must re-examine our structure and determine whether we can resource the company clerk—putting back a capability where the responsibility lies. (The company commander—not the battalion personnel and administration center—is responsible for his or her people.) We will determine what additional skills and expertise are required by those who operate in the knowledge-based personnel community of 2015. Certainly, there will be little transactional business, greater demands for information, and a need for personnel experts who thoroughly understand and can competently advise commanders on personnel programs and policies, and their impact.

Costs

Our vision requires start-up dollars to develop a quality, integrated, and multicomponent personnel database; re-engineer business processes; and apply Web-enabled applications. Every day that we choose not to invest in the future, we are paying for existing legacy systems that are costly, antiquated, and difficult to maintain. Our vision will require us to make hard choices about current investments to fund our start-up efforts in this dollar-constrained environment. Our strategy requires us to produce the documented concept and systems architecture so that the Army human resource system will be recognized and can compete as a fully resourced Army modernization program just like any other weapons system platform.

Conclusion

Responsive, deployable-agile, versatile, lethal-survivable, and sustainable are the essential force characteristics of the objective force. The Web-based personnel support concept we have described supports each of the characteristics of the objective force. The future personnel support concept lessens the burden of PSS organizations and manpower on strategic lift and sustainment requirements. Concurrently, the new design and concept of support will not only simplify the current complex delivery systems of support and improve access to information for commanders and soldiers, but will also offer quantum improvements in the overall quality of human resource support to soldiers and families. We have a singularly unique opportunity in peacetime to revolutionize personnel support to commanders and service to soldiers. We must get it right.

LTG TIMOTHY J. MAUDE is the Army Deputy Chief of Staff for Personnel. He has a B.A. degree in management from Golden Gate University and an M.A. degree in public administration from Ball State University.

ENABLING THE OBJECTIVE FORCE

Dr. A. Michael Andrews II, Dennis R. Schmidt,
and Dr. Thomas Killion

"As technology allows, we will begin to erase the distinctions between heavy and light forces"
—The Army Vision

Introduction

On June 13, 2001, the Secretary of the Army and the Army Chief of Staff issued the following joint statement to the Senate Armed Services Committee: "The Army must transform itself into a force for the 21st Century, strategically responsive and dominant at every point on the spectrum of military operations, and be prepared to meet a growing spectrum of requirements including threats to our homeland." The transformed Army will dominate across the full spectrum of operations and have the agility and versatility required for rapid transition along that spectrum—from humanitarian assistance to major theater war—without loss of momentum.

The goal of the Army's science and technology (S&T) community is to provide technical solutions for the Army's transformation into a 21st century force. The objective force will fulfill the capabilities stated in the Army vision, and it will be strategically responsive, versatile, agile, lethal, survivable, and sustainable. Figure 1 illustrates objective force environments across a full spectrum of missions.

The pace of implementing the objective force may well be determined by technology's ability to provide materiel solutions that provide combat overmatch in lighter-weight forces that can enable future battle concepts. The Army's S&T investments are, in fact, key to accelerating these concepts. The S&T community will enable Army transformation efforts by focusing on investments to increase the number of leap-ahead technology options essential for the objective force.

The primary challenge is to develop and mature technologies that will eliminate current distinctions between heavy- and light-force capabilities. Heavy forces must become lighter, and light forces must become more lethal and mobile. This objective force must also be more survivable, with overmatching agility, while simultaneously reducing logistics demands. In its transformation, the Army is striving to move from platform-centric to network-centric warfare. Key to this transition are multifunctional weapon systems integrated with multitiered command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities to provide a robust "system-of-

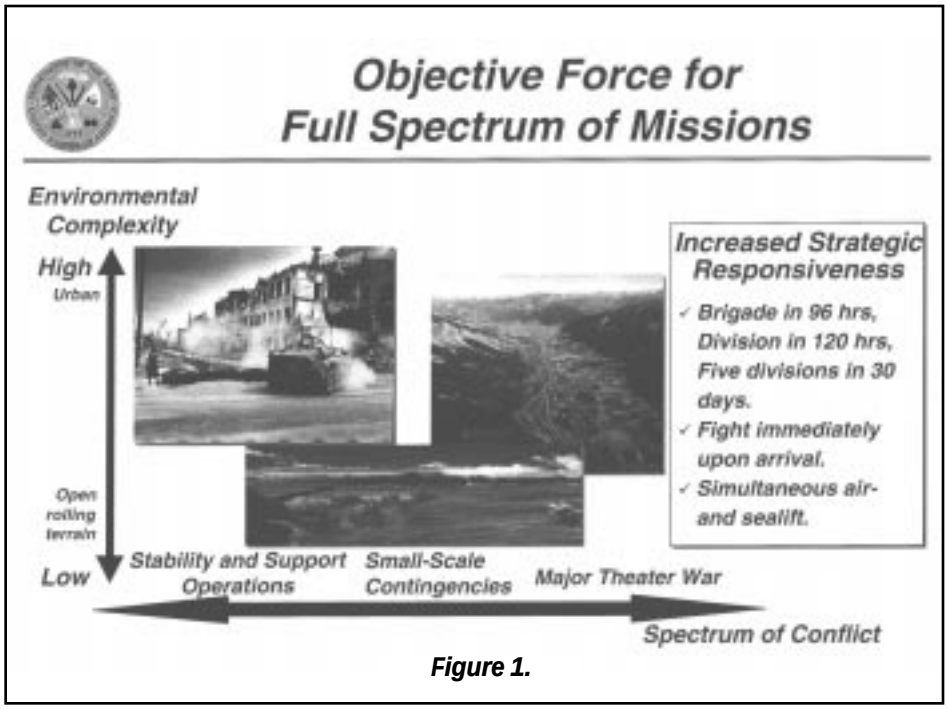


Figure 1.

systems." As always, the soldier is the fundamental "building block" of objective force capabilities.

Technology Areas

Major objective force technology areas are depicted in Figure 2 in bands roughly proportional to levels of investment. These technology areas are discussed below.

Future Combat Systems (FCS). FCS is the main thrust of S&T initiatives and represents about one-third of all S&T funding. In the Army's quest for true innovation, it has partnered with the Defense Advanced Research Projects Agency (DARPA) to explore innovative concepts for a future system-of-systems capability. Four FCS design/concept contracts were awarded in May 2000. Design teams are working closely with the Army Training and Doctrine Command and Army laboratories and centers to harmonize concept and technology developments. Emerging technology concepts include organic overhead sensors, ground and air robotics, and integrated networked communications, sensors, and fires. FCS is not a single system or platform. It will be an ensemble of fighting capabilities that meet weight and volume constraints required for transport on a C–130 or similar aircraft. Achieving FCS goals will enable a true paradigm shift, perhaps as significant as development of the machine gun, tank, and helicopter.

Basic Research. This technology area includes investments in the exploration of fundamental phenomena that have significant potential to enhance future land-warfare capabilities. Research areas include armor materials by design, nanoscience, biomimetics, compact power, smart structures, miniature and multifunctional sensors, and soldier performance.

C4ISR. This area includes investment in research and technology to enable comprehensive situational awareness for the objective force. Some C4ISR technologies are advanced sensors and sensor processing; intelligence and electronic warfare systems and techniques; militarized and special-purpose electronics; countermine technologies; and command, control, communications, and computers (C4) system technologies.

Lethality. This area includes investment in lethality technologies to enhance the light forces, such as the Line-of-Sight Anti-Tank system and the Precision Guided Mortar Munition. Also included are investments in technologies to provide lethality options for the objective force, such as the electromagnetic gun and tactical high-energy laser.

Medical. This area includes research and technology investments to protect and treat warfighters, ensure worldwide deployability, increase warfighter availability, and reduce casualties and loss of life.

Future Warrior. This area addresses investment in technologies to support the future infantry soldier. It includes enhanced ballistic protection, clothing and equipment, dismounted warrior C4, compact power and power management, sustenance and nutritional enhancements, soldier weapons, and warrior technology integration.

Rotorcraft. This investment area provides for research and technology to enhance the performance and effectiveness of future rotorcraft, including rotors and structures, propulsion and drive systems, avionics and weapons, and human-systems integration (e.g., crew station) technologies.

Logistics Reduction. This area includes investment in technologies to enhance deployability and reduce logistics demand. Some examples are precision roll-on/roll-off air delivery technologies for airfields and pavements to support force projection; the 21st century truck; and robotics to support resupply and reduce demand for food, fuel, and water.

Survivability. These technologies enable organizations, platforms, and soldiers to avoid detection, apprehension, hit, penetration, and kill. Survivability technologies also provide force protection for combat forces in the field and at installations.

Personnel Technologies. This area includes investment in advanced training tools and methods to enhance warfighter and commander abilities and performance, advanced human engineering concepts to ensure human-system physical compatibility, and cognitive engineering concepts to avoid information overload and optimize task allocation to enhance warfighting effectiveness.

Advanced Simulation. This area includes investment in simulation tools to provide increasingly realistic environments and systems to support acquisition, requirements, and training. These include technologies for networked simulations, embedded training, constructive simulations, virtual

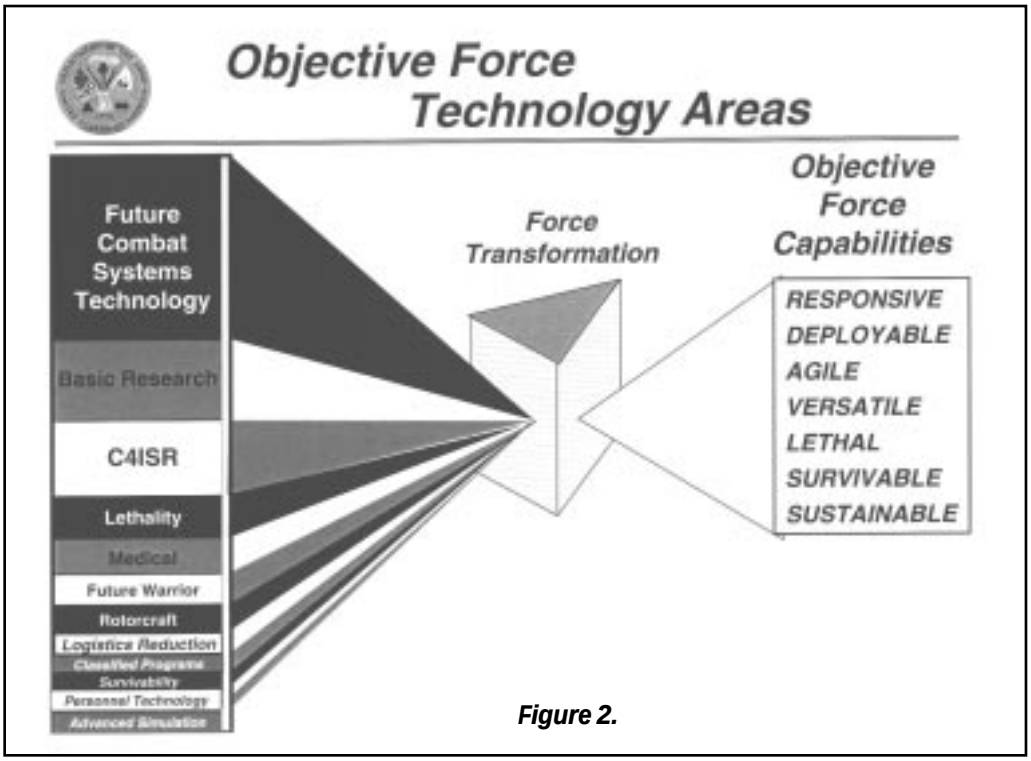


Figure 2.

environments, and range systems for live use.

Emerging Opportunities

Emerging technology concepts, including ground and air robotics and integrated systems, are described in the following paragraphs.

Unmanned Ground Vehicles. The Army S&T community is aggressively pursuing the development of robotic ground systems. The goal is to achieve increasing levels of autonomy to reduce the dependence on man-in-the-loop operations. For the near term, we are conducting a robotic follower demonstration. In the midterm, we are maturing higher-risk, semiautonomous systems through improved perception and control technology that will expand the envelope of mission capabilities. For the far term, we are collaborating with DARPA to explore advanced technology options that will increase mobility and enhance onboard intelligence to enable near-autonomous operations.

Unmanned Rotorcraft. We are speeding the development of new technology concepts for rotary-wing unmanned aerial vehicles that can hover and operate at very low altitudes (environments relevant to land-force operations). These technologies have the potential to permit the FCS and its associated dismounted elements to operate in complex terrain by exploiting organic, non-line-of-sight fire capabilities through remote sensing and communications relays. Additionally, the S&T community is exploring innovative options for unmanned combat-armed rotorcraft to enhance manned attack helicopter capabilities.

Institute For Creative Technologies. We are exploring state-of-the-art simulation technologies at the Army's Institute for Creative Technologies at the University of Southern California. These technologies leverage the creativity of the entertainment and game industries to create compelling immersive environments for training our soldiers. This training will increase the likelihood that soldiers sent into harm's way will accomplish their mission and safely return home.

Collaborative Technology Alliances. We recently established new partnerships with industry, universities, and other government agencies to harvest the fruits of fundamental research in five areas: advanced sensors, communications and networks, power and energy, advanced decision architectures, and robotics.

Objective Force Warrior. This is an integrated soldier system-of-systems approach to provide leap-ahead capabilities, with dramatic weight and power reduction, for the dismounted soldier. The goal is to attain seamless connectivity with other warfighters, weapon systems, and robotic platforms to achieve synergistic overmatch for full-spectrum operations.

Institute For Soldier Nanotechnologies. We plan to establish a university-affiliated research center to exploit the breakthrough potential of nano-engineered materials to provide leap-ahead objective force warrior capabilities. Nanoscience seeks to manipulate matter at the atomic scale, offering the potential for revolutionary materials with radically enhanced performance such as ballistic protection at a fraction of current weights and novel signature management techniques.

High-Energy Lasers. The Army S&T community is increasing investments to accelerate high-energy, solid-state laser technology options for potential application on the tactical battlefield. This effort seeks to identify the most promising solutions to ensure speed-of-light engagement and laser-weapon lethality.

Task Force

The Objective Force Task Force (OFTF) was established by the Army to facilitate the initial fielding of objective force capabilities by the end of this decade. LTG John Riggs was recently appointed as the OFTF Director. Under his leadership, the OFTF will integrate and synchronize all aspects of doctrine, training, leader development, organization, materiel and soldier related to the objective force.

Summary

The Army must have a diverse S&T portfolio that is responsive to current and future warfighter needs. The S&T community seeks technological solutions that can be demonstrated in the near term, explores the feasibility of new concepts for the midterm, and explores the imaginable for an uncertain far-term future.

Since the Army vision was announced in October 1999, the Army S&T effort has been reshaped and refocused to speed the development of those critical technologies essential to transform the Army into the objective force. The Army S&T community has accepted the technical challenges of transformation and has energized its resources to meet them.

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UNIT SET FIELDING

Donald L. Damstetter and Tracey L. Goldstein

Introduction

Among the key goals of the Army's transformation effort is development of a new strategy that will allow field units to comprehensively receive and be trained on all new systems at once. This strategy, called Unit Set Fielding (USF), is a disciplined "system-of-systems" approach to synchronize fielding of new and recapitalized systems along with unit enablers like training devices and installation support and sustainment capabilities. Its purpose is to maximize unit operational readiness by fielding a cohesive package of capabilities, while minimizing disruptions caused by uncoordinated fielding of individual systems.

For a unit to realize the full benefit of new weapons, sensors, digital command and control systems, and corresponding training aids, devices, simulators, and simulations (TADSS), equipment must be fielded as a unit set. The facilities where the equipment will be operated and maintained and where soldiers will be trained to use it must be in place when the set is delivered to the unit. The Army has long needed a process that packages these required items together and identifies windows for fielding them by unit sets. USF is that process.

Process

The Army will implement the USF process in a cycle that begins 5 to 7 years prior to the beginning of a unit's designated fielding window and ends approximately 2 years after the window closes. A USF cycle includes five phases: preparation, reorganization, fielding, training, and validation.

Preparation is a critical phase of USF, and the integration of doctrine, training, leader development, organization, materiel and soldier (DTLOMS) must begin early. This phase must ensure all resource requirements are identified, programmed, and funded. The preparation phase addresses actions that will occur as far out as 7 years or as close as 6 months before a unit enters its USF window. Program, project, and product managers (PMs); major commands (MACOMs); the Corps of Engineers; and installation managers ensure that requirements for installation facilities, ranges, information infrastructure, training simulators, or other changes are identified and submitted for military construction funding. Requirements are then submitted to Headquarters, Department of the Army (HQDA) and MACOMs for inclusion in the Program Objective Memorandum (POM). Successful fielding of multiple systems requires more than just a mere synchronization of schedules. It requires a more encompassing process. As such, the Army developed the Unit Set Fielding Schedule (USFS). The USFS defines the USF windows and will drive synchronized planning and execution of activities required to field interrelated and interdependent systems including training devices. It requires integration across all areas of DTLOMS and the POM process.

Reorganization is the phase that begins about 6 months before the USF window and concludes at E-date—the effective date that a unit must complete its reorganization. This phase entails transition from the unit's current Modified Table of Organization and Equipment (MTOE) to a new MTOE. During this phase, facilities are completed; training devices, training support infrastructure, and tactics, techniques, and procedures are in place; personnel are assigned; and equipment turn-ins are completed.

Fielding is the phase in which the USF window occurs, and includes equipping and new equipment training (NET). The PM for each system will conduct NET. Completion of NET for all systems in the unit set closes the window, and the unit will be taken off C5 status. (Units categorized as C5 are exempt from reporting readiness levels.)

Training is the phase where the unit is responsible for conducting collective and sustainment training. This training will start after completion of NET and will normally be completed within 18 months after the unit's E-date.

Validation is the phase that completes the cycle and validates the unit's operational readiness. The gaining MACOM is responsible for ensuring validation of the operational readiness of the unit to execute its assigned mission. Validation will be the final step of the training phase and completes the USF cycle.

Under traditional fielding, units receive multiple, separate, and unsynchronized individual system packages. Traditional fielding processes rarely provide a complete and fully integrated operational capability and are disruptive to unit training and readiness. Battlefield digitization has complicated the problem because an increasing number of digitized and modernized systems are being fielded along with successive software upgrades;

furthermore, digital systems are inherently designed in a system-of-systems environment. As a result, fielding a disparate array of digital systems does not provide added value or required capabilities. As the Army moves forward with modernization and transformation efforts, it must change its fielding process so that fieldings are sequenced according to operational priorities and the Army's Transformation Campaign Plan. The Army must ensure synchronization of requirements generation, materiel development and acquisition, manpower and personnel, funding, testing, training, fielding, sustainment, and support facilities in the system-of-systems context. Crucial to managing and fielding unit sets of equipment is ensuring that all the available components for a required operational capability, to include the associated training base and installation infrastructure, are fully integrated as a unit set prior to fielding.

Impact

The USF concept may have a significant impact on the acquisition community and how it manages its programs. This includes integrating an array of functional capabilities that were previously managed as separate distinct actions and did not influence the fielding of the PM's system. Individual components or systems may provide significant standalone improvements in unit capability, but they do not achieve their full operational capability until they are integrated with the other systems comprising the unit-configured set. System integration plays a key role in prioritization of program adjustments at both technical and programmatic levels.

The key to USF is ensuring that all set components including warfighting equipment, digital hardware and software, support facilities, TADSS, personnel, and associated support items are integrated during the fielding process. Hardware and software must be identified and interoperability certified to establish a configuration baseline prior to fielding. That baseline must be maintained and sustained after fielding.

The USF process also raises questions regarding the balance of system requirements, funding, and integration requirements. For example, what if a tank is ready to be fielded but the communication software is not? Should the Army hold the tank until the software is ready? How does a delay in fielding impact contractual obligations, future deliveries, and additional fieldings? Are there any second-order impacts? If a particular system does not pass its initial operational test and evaluation (IOTE), will the entire package be delayed until that system is ready? Will the system have to wait until the next available USF window, which could be years? At what point should the Army draw the line and field the system? Who has the authority to make the determination? Should the Army identify pacing items that would be salient focal points under USF? If the Army adopts pacing items, are we then reverting to traditional fielding? Failure to meet a weapon systems schedule or a slip in production may result in delaying the fielding of the entire system as part of the system-of-systems approach. These types of questions are still emerging, and their resolution will impact PMs. For example, PMs may find themselves sacrificing quantity to resource items such as TADSS. Pressure on a program may be heightened, and the PM may lose some flexibility.

The USF approach may also impact the complexity, cost, and schedule of IOTE. In the past, individual weapon systems have undergone separate and distinct IOTEs. One unknown today is whether the USF approach will require a system-of-systems IOTE to ensure the synchronization and integration goals are met for operational readiness. The Army has already seen that this type of approach can result in large, complex, and expensive IOTEs for system-of-systems programs where the success or failure of a single system influences the outcome of others. One such instance is the Force XXI Battle Command Brigade and Below (FBCB2) Limited User Test (LUT). An attempt was made to test numerous systems simultaneously. When failures occurred, it was difficult to isolate the cause and hence identify corrective action, thereby increasing associated costs.

Conclusion

Meeting the goals of USF will require a greater degree of communication and coordination among the PM, Army installations, training centers, and HQDA. Handled properly, USF should provide the soldier in the field with greater capabilities.

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THE ROLE OF GROUND COMBAT SYSTEMS IN THE ARMY'S TRANSFORMATION

MG Joseph Yakovac and MG John Caldwell

Introduction

On Oct. 12, 1999, Army Chief of Staff GEN Eric K. Shinseki unveiled the Army's vision of transformation to a lighter, more deployable "objective" force:

"*We must provide early entry forces that can operate jointly, without access to fixed forward bases, but we still need the power to slug it out and win decisively. ... Our intent is to transform the Army into a more lethal and effective force equipped with internetted communications and intelligence systems [the objective force]. Once equipped with the Future Combat Systems [FCS], these brigades will be able to deploy anywhere in the world within 96 hours, a division in 120 hours, and five divisions in 30 days.*"

The Army's fundamental purpose—fighting and winning the Nation's wars—will remain unchanged. The Army's transformation to the objective force does not release it from its commitment to the national military strategy. As the Army embarks on the road to transformation, its leaders must remember that potential adversaries will not take a hiatus as the Army transitions to the objective force.

Balancing the seemingly conflicting missions of remaining currently capable while preparing for the future is the responsibility of various combined resources headquartered at Army facilities in Warren, MI. The Tank-automotive and Armaments Command (TACOM) and its sister organizations—the Tank Automotive Research, Development and Engineering Center (TARDEC); the Program Executive Office for Ground Combat and Support Systems (PEO, GCSS); and the remotely located Armament Research, Development and Engineering Center (ARDEC) (Picatinny Arsenal, NJ)—tightly integrate these missions. This complex management task is accomplished through the use of innovative teaming concepts and flexible organizational structures administered by skilled and experienced military, civilian, and contractor employees.

Legacy Force

The force structure in place today is referred to as the legacy force. The legacy force was the strategic hedge that provided our warfighting readiness in support of the national command authorities and warfighting commanders-in-chief. The Army must modernize, sustain, and recapitalize the legacy force to guarantee maintenance of our critical warfighting readiness, and TACOM is critical to that mission. Improving reliability and reducing support costs is the first leg of a management model that embraces all components of the ground fleet. Soldiers' survivability must be maintained as the Army transitions to a lighter, more mobile force. Next, limited mobility and lethality upgrades must be included to maintain overmatch capabilities. Finally, selective component modernization must be made to combat obsolescence and increase the ability to quickly field retrofit capability upgrades.

Integrated Management

The Abrams tank contributes significantly to maintaining today's battlespace dominance by overmatching potential adversaries. The overmatching capability of the Abrams will be protected. Similar efforts must also be performed on other programs managed in either Warren or Picatinny Arsenal. The M1A1 Abrams Integrated Management (AIM) recapitalization effort ensures warfighting readiness of the tank force throughout the transformation period. AIM slows the escalation of annual operations and support costs and reduces the Army's logistics footprint. AIM is a contractor and Army depot partnership that rebuilds older M1A1 tanks to a nearly new condition. This unique depot-contractor partnership greatly enhances the Army's ability to both sustain the existing fleet and field the interim and objective forces. The partnership preserves the industrial base capability that will be required for the objective force. At the same time, the partnership ensures that the proven capabilities of the Army's depots will remain viable by continuously upgrading their skill sets as the Army becomes an information-based force. AIM product output will incorporate battlefield situational awareness to ensure adequate overmatch capability as the legacy force transforms into the counter attack corps.

Common Engine

The Abrams-Crusader Common Engine Program provides significant improvement in engine reliability, supportability, and maintainability without sacrificing performance. As an added benefit, engine commonality among Abrams, Crusader, and Wolverine will reduce the support burden in the field. Each component of the legacy force has a similar program of cost-effective upgrades and teamed contractor and depot efforts to ensure that the Army will continue to maintain land-power dominance throughout objective force development and deployment. Using this common management model across the fleet allows the Army to maintain product quality and communication compatibility. The field soldier remains certain that neither system management (the program executive officer or TACOM's Deputy for Systems Acquisition (DSA)) nor facility location (the contractor's facility or an Army depot) will negatively impact hardware, communications, or software capability.

Overmatching land power has always been a key element in the execution of our national military strategy. The

nature of warfare will change during the 21st century as the division among strategic, operational, and tactical levels of war blurs. America's 21st century Army will integrate emerging information technologies with sound doctrine, reinvented organizations, and quality people to make tomorrow's smaller force more lethal, more survivable, more versatile, and more deployable.

Crusader

Two current programs are incorporating this multipronged approach to maintain force capability—the Crusader Self-Propelled Howitzer (SPH) and the Joint Lightweight 155mm Howitzer (JLW-155). For the heavier counter attack corps, the Crusader (scheduled for fielding in 2008) is not just a weapons platform—it is a "system of systems." The Crusader consists of a 40-ton, fully automated SPH, a companion 40-ton resupply vehicle-tracked, and a 20-ton resupply vehicle-wheeled. Crusader supports all three axes of the transformation roadmap by pushing state-of-the-art technology development for the objective force and filling a critical fire support void for the legacy and interim forces.

Lessons learned from the integration and development of Crusader's software and electronics operating system, robotics, and crew cockpit directly support and reduce the risk associated with the FCS evolution. Crusader will include a real-time common operating environment that separates systems software and electronics with a "middleware." This separation allows either software or electronics to be upgraded without significantly impacting the other. This operating system significantly reduces life-cycle costs and eases the upgrade process.

Additionally, Crusader's crew cockpit is a self-contained, state-of-the-art environment. By melding information technology, ergonomics, and manpower and personnel integration into a fully integrated system, the cockpit system takes advantage of efficiently processed information concerning vehicle status and the combat situation. This information processing, combined with robotic controls, frees the crew from the burden of physically firing the system—the Crusader commander and crew are tacticians rather than technicians. Crusader is the future of field artillery and is charting the path for the FCS.

JLW Howitzer

The JLW-155 (2005 fielding) will provide close and deep fires supporting the maneuver forces of both the Army and the Marine Corps. The JLW-155 consists of the fully integrated towed XM777 LW 155mm Howitzer and a digital fire control (TAD—Towed Artillery Digitization). Using the same software and automated information processing technology as the Crusader, the Army will use the JLW-155 as the single direct support cannon for both the interim force and the objective force. This will make it the first system of its kind fielded for the objective force. The XM777 Howitzer will provide the Army's transition forces with dramatically enhanced strategic deployment and tactical mobility over existing hardware.

Brigade Combat Team

The Brigade Combat Team (BCT) will allow the Army to field a credible conventional capability. The BCT force mix of 10 variants includes artillery, anti-tank, infantry, reconnaissance, engineer, and medical vehicles. These initial brigades are a glimpse of the Army of the future—of an agile, adaptive, and versatile force. The BCT will provide key developmental insights into the doctrine, training, organization, and leader development of the objective force. Units will be able to mass the effects of weapons through better organization of flexible, tailored task forces.

While the BCT multivariant force mix will be the first organizational unit to exploit this capability, the objective force must provide the Army with a significant combat overmatch against all foreseeable enemies. The FCS is envisioned as a system of assets with integrated and interlinked capabilities. Whether in the air or on the ground, whether manned or unmanned, the FCS will be overwhelmingly lethal, possess totally interlinked communications capabilities, and will be difficult to detect across all spectra. It must provide for rapid unit deployment and successful offensive, defensive, and stable and support operations. At the same time, it must use smaller combat formations capable of very high operational tempo while requiring a significantly lower logistical support structure. It must enable a brigade-sized force to be deployed in 96 hours or less. Advanced technology will maximize the benefits of maneuver by increasing the tempo of operations and by improving the ability to function day or night and under adverse weather conditions.

Conclusion

With its boots firmly planted in the realities of today's world, the Army is planning for the future. The information age is upon us, and the force is changing to meet the challenges of this new era. The technology that fuels the information explosion must be harnessed. Transforming the premier Cold War, industrial-age Army to the premier 21st century information-age force will require extensive training and major changes in tactics, organizations, doctrine, equipment, force mixes, and methods of command and control. The future force must be fully mobile, completely air-deployable, and equally adept in complex urban and open terrain. Integrative technologies and enhanced situational awareness will have a profound effect that will allow both the commander and the individual soldier to visualize the current state of friendly and enemy forces, weather, and terrain. The PEO, GCSS; TARDEC; ARDEC; and TACOM are using teamwork, program management, technology development, and integration experience to lead the way to make the daunting challenge of the Chief of Staff's vision a reality.

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AMC'S ROLE IN THE ARMY'S TRANSFORMATION

MG James R. Snider and John J. Pucci

Introduction

Since Army Chief of Staff GEN Eric K. Shinseki unveiled the Army vision in October 1999, the Army acquisition community has adjusted strategies to make that vision possible. The challenges involved in implementing the Army vision are numerous. Deploying a brigade within 96 hours, with five divisions on the ground within 30 days, requires not only a fresh look at lift capabilities and reduced weight and fuel usage, but also a revised strategy on what materiel should be transported and how. Warfighting agility requires state-of-the-art command and control, sensors, mobility, and training. Lethality and survivability requirements compel the Army to acquire novel solutions to age-old problems. Sustaining this force while reducing the logistics burden also calls for new approaches.

Perhaps the greatest challenge in implementing the Army vision is to make timely changes without sacrificing near-term warfighting capabilities. The strategy for achieving this is portrayed by the three axes of transformation: recapitalization and modernization of legacy systems, fielding of an interim force, and development and fielding of the objective force. As the Army's research, development, acquisition, and logistics command, the Army Materiel Command (AMC) is directly involved in all three of these. In fact, AMC involvement in the transformation is so extensive that only a broad overview of the AMC role is possible in this article.

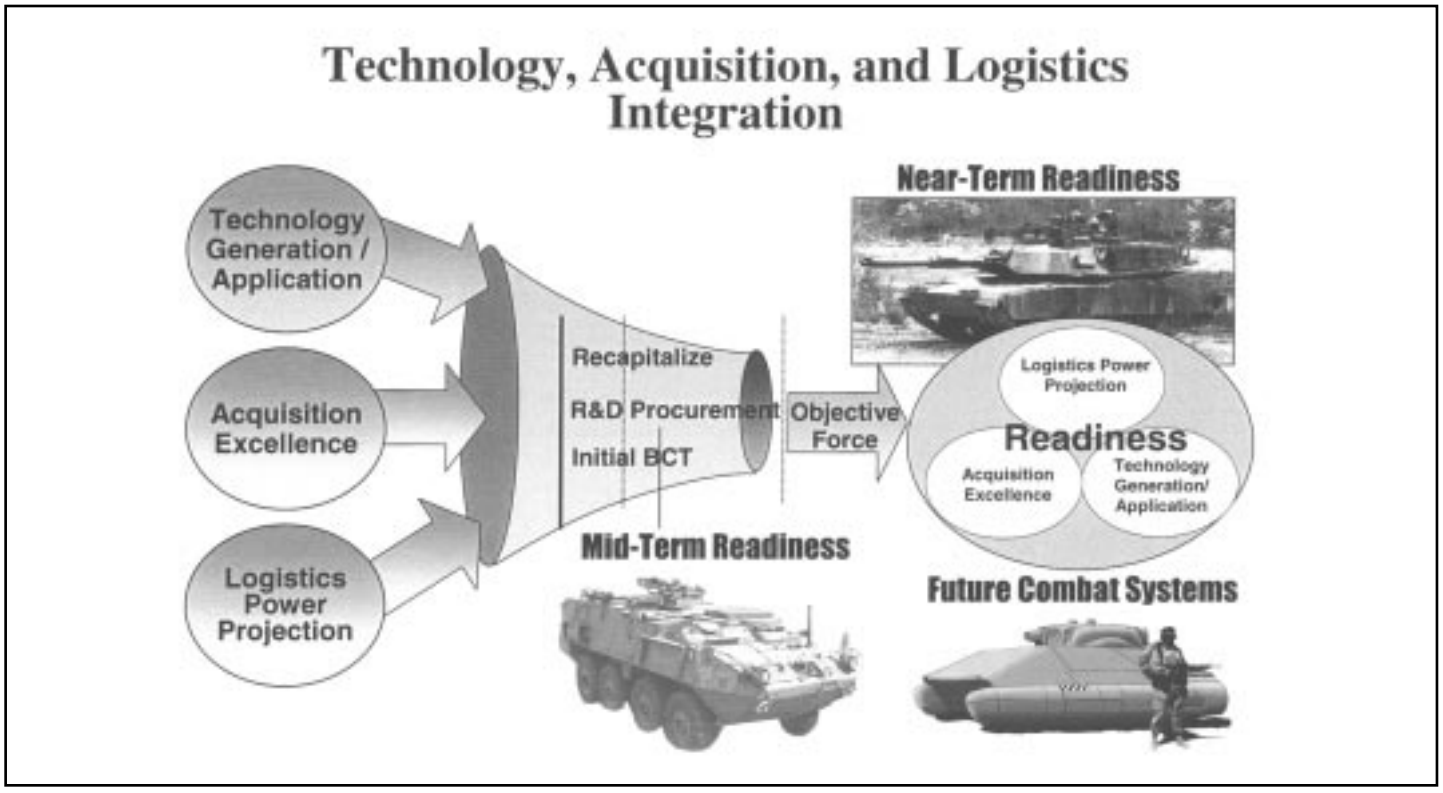
Deploying a brigade within 96 hours, with five divisions on the ground within 30 days, requires not only a fresh look at lift capabilities and reduced weight and fuel usage, but also a revised strategy on what materiel should be transported and how.

Recapitalization

Implementing the objective force will require time and resources, with initial objective force assets being fielded around FY08. Interim brigade combat teams (IBCTs) are being created to bridge the gap for small-scale contingencies and to maintain force readiness; however, it is important to stress that legacy systems will be part of the Army mix until at least 2030.

A major issue with these legacy systems is the rate at which they are aging. With readiness of legacy systems decreasing and maintenance costs increasing, a recapitalization strategy for rebuild and selective upgrade of systems was developed. Rebuild is defined as "the selected upgrade of currently fielded systems to ensure operational readiness and a zero-time/zero-mile (i.e., "like-new") system." Under this recapitalization strategy, 21 systems were validated and prioritized for recapitalization, with selected capability upgrades applied to 14 of these systems. In conjunction with program executive offices (PEOs), AMC took the lead in establishing procedures for executing recapitalization programs for these systems.

Recapitalization depends on three factors: the technical data to support the "zero-time standard" for each system, the ability of the



standard to meet system requirements, and the ability to stock and support components that are upgraded to the new standard. AMC will ensure that all 21 systems initially selected have established depot-industry partnerships. Lessons learned from these partnerships will support recapitalization decisions on more than 200 Army systems, as well as guide improvements to the stockage determination and the National Maintenance Program's ability to position components to support recapitalization.

Interim Force

The interim force is designed as a bridge from current systems to the objective force. The strategy for building this force calls for leveraging today's leading technology to procure systems that fill an immediate warfighting requirement for rapid deployability and a decisive close-combat capability. The centerpiece of these systems is the Interim Armored Vehicle, which will be fielded in IBCTs. The first IBCT, stood up at Fort Lewis, WA, is training on loaner vehicles. Five more IBCTs will be fielded later, with the first of these also to be located at Fort Lewis.

Although program management of IBCTs transferred from AMC to the PEO, Ground Combat and Support Systems in December 2000, AMC still maintains a pivotal role in the success of the interim force. From funding requirements to maintenance issues, AMC is involved in all aspects of IBCT fielding and sustainment. AMC's key IBCT responsibilities include assisting with the equipping of the IBCTs, identifying and exploiting technology advances, working maintenance and sustainment for both garrison and deployed forces, and providing ammunition through the Operations Support Command.

AMC's role in equipping the initial IBCTs (the two originally stood up at Fort Lewis with loaner vehicles) includes resolving modified table of organization and equipment shortages with the Army Forces Command, the Defense Logistics Agency, and other organizations. AMC will also support unit set fielding for follow-on IBCTs.

Developing and tracking technology advances requires addressing potential future integration issues with objective force systems. This is especially true of command and control technologies. It is important that components fielded in IBCTs be capable of working seamlessly with systems such as Comanche, Future Combat Systems (FCS), and Warfighter Information Network-Terrestrial. This brigade-level technology insertion and the IBCT maintenance and supply issues represent new ways for the Army to do business. An important aspect of fielding the first two IBCTs at Fort Lewis is the need to track and apply lessons learned to subsequent IBCTs and the objective force. Much of what is learned from the IBCTs will help determine the success of the objective force.

Objective Force

The culmination of Army transformation efforts is the objective

force. Objective force systems will incorporate technologies such as networked sensors, robotics, command and control on-the-move, advanced survivability and lethality systems, and embedded training to provide unprecedented levels of situational awareness, agility, and combat overmatch. The role of the objective force will be to reach a crisis locale in time to avoid escalation and, once there, be prepared to provide the appropriate response to any hostile action. The first objective force units will be equipped in the FY08-10 timeframe.

To meet this ambitious schedule, the Army must re-evaluate its science and technology (S&T) investment approach. Managing more than 70 percent of these investments, AMC is at the vanguard of these changes. The S&T community must identify technologies crucial to the objective force, ensure proper funding and oversight, and mature these technologies in time to be integrated into objective force systems.

In addition to rethinking technology efforts, new Army organizations such as the Objective Force Task Force (OFTF), the Office of the Program Manager (PM) for FCS, and various integrated process teams (IPTs), have been established to manage efforts, coordinate partnerships, and focus development on the FCS and other objective force programs. Through its subordinate commands; research, development and engineering centers (RDECs); and laboratories; AMC provides a unique resource in support of these new organizations. The experience base within these organizations that develop advanced technology solutions is unsurpassed.

To ensure focused efforts in support of the objective force, AMC established the Technology Integration Board (TIB). The TIB is comprised of technical directors from the RDECs, the Director of the Army Research Laboratory, and the AMC Deputy Chief of Staff for Research, Development and Acquisition (DCSRDA). The TIB reviews progress on critical objective force technology efforts and ensures that AMC meets its technical commitments for the objective force.

Perhaps the greatest challenge in implementing the Army vision is to make timely changes without sacrificing near-term warfighting capabilities. The strategy for achieving this is portrayed by the three axes of transformation: recapitalization and modernization of legacy systems, fielding of an interim force, and development and fielding of the objective force.

Without question, the FCS is the objective force development effort that has generated the most activity. Providing a system with lethality and survivability capabilities that meet or exceed those of an Abrams Main Battle Tank, while still being C-130 transportable, challenges many S&T areas. By combining this with a network-centric approach to warfighting, reduced logistics footprint, and the introduction of robotic vehicles into the battlespace, you have effectively engaged the entire Army S&T community.

To provide the FCS acquisition community with an AMC focal point to facilitate technology maturation and transfer, the FCS IPT was established. Working with the OFTF and the PM, FCS, this IPT will coordinate AMC efforts and help combine the broad knowledge base of the FCS contractors with the specialized knowledge available through RDEC subject matter experts.

Two key efforts of the FCS IPT are the AMC technical library (TL) and the overarching Cooperative Research and Development Agreement (CRADA). The TL is a Web-based information system that provides contractor access to a comprehensive database of AMC S&T programs. The overarching CRADA is an innovative business arrangement that will streamline technology transfer. The combination TL and overarching CRADA will facilitate government and contractor teaming within the new FCS acquisition management paradigm.

Conclusion

This article provides an overview of AMC's role in the Army transformation effort. From currently fielded systems to concepts put on a blackboard for the first time today, AMC is focused on providing the best warfighting force in the world. With transformation efforts scheduled through 2032, AMC will continue to modernize aging systems, support interim forces, and provide technology solutions that best meet objective force requirements.

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AVIATION'S CONTRIBUTION TO THE TRANSFORMATION EFFORT

MG Joseph L. Bergantz

Introduction

Army aviation materiel developers; the Program Executive Officer, Aviation; and program and project managers are supporting Commanding General of the U.S. Army Aviation Center MG Tony Jones as he leads aviation efforts to help transform the Army into a lighter, more lethal force. Army leaders have consistently backed the requirement for our four priority platforms—the RAH-66 Comanche, the AH-64D Apache Longbow, the UH-60M BLACK HAWK, and the CH-47F Improved Cargo Helicopter. Along with recapitalization efforts, near-term improvements to these airframes will further enhance aviation's role in the transformed Army. The five primary goals for these platforms are as follows:

- Produce and field Comanche by 2006;
- Enhance recapitalization, reliability, and safety for the Apache, Chinook, and BLACK HAWK fleets;
- Convert 300 CH-47Ds to the F model;
- Transition the utility fleet to the UH-60M Program; and
- Enhance the survivability of the force in the combat environment.

A commitment to these goals is essential if Army aviation is going to be relevant in the next quarter century and beyond.

Comanche

As indicated by lessons learned from the most recent division capstone exercise, the future of how Army aviation will contribute on the joint and combined arms battlefield depends on data being transferred in real time. Clearly, future aviation in the form of Comanche will lead the fight as a "system-of-systems." Comanche will be flown by aviators trained to manage a rapidly changing landscape, collecting and distributing data in real time with onboard mission equipment. The result will be an unmatched warfighting capability.

When fielded, the Comanche will synchronize joint and Army sensors and weapons with situational understanding. This will allow combat leaders to *See First, Understand First, Act First, and Finish Decisively* ... while reducing the risk of fratricide. The technology evolving with the Army's Future Combat Systems (FCS) will provide Comanche with enablers to control a wide range of nonorganic threats including robotic guns, loitering attack munitions, and precision attack missiles. Moreover, Comanche will interface with un-manned aerial vehicles, unattended internetted sensors, hyperspectral imagery, and cue joint/combined command and control (C2).

When fielded, the Comanche will synchronize joint and Army sensors and weapons with situational understanding.

Below are a few of the key capabilities Comanche brings to the objective force:

- Contains multirole (reconnaissance and attack) capability in one system;
- Incorporates fully integrated sensors, communications, weapon systems;
- Operates in an expanded weather spectrum/operational mission profile;
- Integrates combined arms officers with cognitive decision-aiding technology well-forward in the air-ground fight;
- Meets corps and division mission requirements in joint/combined arms environment;
- Links the joint fight to the combined arms commander;
- Takes advantage of new fire support relationships and priorities;
- Ensures information overmatch for the objective force;

• Reduces logistical footprint; and
• Meets objective force requirements for deployability, agility, survivability, versatility, lethality, sustainability, and responsiveness.

To face today's needs, Comanche has transitioned from being the "battlefield quarterback" to being the first of the objective force systems.

Comanche development and technology initiatives are wise investments for the U.S. Army. The maturation of several Comanche systems and technologies will lead the objective force through the transformation by providing a robust technological baseline for the newer technologies required by the FCS. Onboard diagnostics, lightweight armor and high-reliability components, automatic target detection and classification, and high-fidelity fusible and networked sensors are just a few examples of technologies that will be leveraged across the Army. Comanche's fire control radar and integrated communications and navigation are now being adapted to other programs. Concurrently, Army aviation is providing horizontal technology integration (HTI) for legacy systems, saving millions of dollars in total ownership costs.

To face today's needs, Comanche has transitioned from being the "battlefield quarterback" to being the first of the objective force systems. As such, it is the Army's leader for battlefield information and weapons synergy, which will be exported to the joint and combined arms team and beyond. For a detailed brief on the Comanche, please contact CW4 Steven Sanders or Patrick Sheahan at **steven.sanders@comanche.redstone.army.mil** or **psheahan@elmco.com**. These individuals are available to brief U.S. Army units worldwide.

Apache

As the Army transformation continues to be defined and refined for the objective force, the Apache attack helicopter remains a legacy system as well as a cornerstone for developing the interim force. The current multiyear I and II procurements consist of 501 AH-64Ds, resulting in 240 AH-64As being retained in the heavy attack fleet. As the RAH-66 Comanche is fielded, Apaches will gradually be retired. The AH-64As will be the first Apaches retired. However, the AH-64D Longbow will continue to be Army aviation's heavy attack helicopter for years to come. Therefore, our task is to ensure that the Apache is ready and capable of providing combat overmatch.

Several initiatives will guarantee that as we transform to the objective force and the Comanche comes online, the Apache will remain the offensive centerpiece of the legacy force. The Longbow Program is funded to provide necessary reliability and sustainment fixes that address operations and support (O&S) and safety issues for all 741 Apaches. A plan is also being finalized that will focus recapitalization efforts at the depot level for repairable components installed on the Apache fleet. This focused recapitalization will result in the overhaul of selected components to meet the National Maintenance Work Requirement Standard being established. The intent is for Apache to meet a 10-year half-life by 2010.

As the Army transformation continues to be defined and refined for the objective force, the Apache attack helicopter remains a legacy system as well as a cornerstone for developing the interim force.

The Apache Modernized Target Acquisition Designation Sight and Pilot Night Vision Sensor (MTADS/PNVS) initiative will provide significant performance and reliability upgrades while replacing obsolete parts. This program will effectively reduce O&S costs and improve reliability and safety over the current TADS/PNVS. The MTADS/PNVS program also includes a defined HTI effort with the Comanche electro-optical system. This HTI effort will further reduce the logistical footprint of the attack battalion. Focused recapitalization will also result in effective and continued sustainment of the fielded Apache fleet.

Enhancements

Combat capability and survivability enhancements to the AH-64D will be applied during the second multiyear contract. These enhancements include a digital map, high-frequency radio, full joint variable message format digital communication capability, the suite of integrated infrared countermeasures (SIIRCM), and the suite of integrated radio frequency countermeasures (SIRFC). These enhancements will provide the Longbow with significantly improved capability, survivability, and technological overmatch.

The AN/ALQ-212 Advanced Threat Infrared Countermeasures (ATIRCM) system, along with the AN/AAR-57 Common Missile Warning System (CMWS) (an essential element of ATIRCM), provides aircraft platform survivability against an ever-increasing worldwide proliferation of advanced infrared (IR) guided missiles. These systems provide automatic passive missile detection, threat

declaration, crew warning, software reprogramming, false alarm suppression, and cues to other onboard systems such as countermeasure dispensers. The ATIRCM adds active, directional countermeasures via a laser, an arc lamp, and an improved countermeasures dispenser.

ATIRCM and CMWS are the principal components of the Army's larger SIIRCM, which should include Advanced Infrared Countermeasures Munitions, a new-development set of IR flare decoys, and passive IR signature reduction features. The suite also features engine exhaust/heat suppression and IR-absorbing features. Additionally, the ATIRCM and CMWS can be integrated with the SIRFC to provide overall IR and radio frequency self-protection.

The AN/ALQ-211 SIRFC protects against radar-guided anti-aircraft artillery, surface-to-air missiles, and airborne-intercept for all Army aviation including AH-64 and Special Operations Aircraft (SOA) (MH-60/47), and UH-60 and CH-47 aircraft. The SIRFC provides situational awareness, sensor fusion, resource management, target identification, and target location and cueing. The SIRFC also provides pre-emptive and terminal mode electronic countermeasures against fire control radars and semiactive missiles for both air-to-air and surface-to-air hostile weapons. These threats include pulse radar, pulse doppler, and continuous wave radars that operate in a wide operational frequency range. SIRFC consists of an Advanced Threat Radar Warning Receiver and an Advanced Threat Radar Jammer. Both are designed to counter today's anti-aircraft threats and adapt to advancing threat technology. They are vital to the Army's investment of both aircraft and aircrew and provide the protection necessary to achieve our objective.

Training devices of sufficient quantity and quality are fully funded to support our fielded units and the schoolhouses. We have successfully fielded the initial L-6 (Airframe/Powertrain Maintenance Trainer), L-7 (Multiplex, Avionics, Visionics, Weapons and Electrical Systems Trainer), and Longbow Crew Trainers (aircrew training devices). Additionally, we are preparing to upgrade the AH-64A Combat Mission Simulator. These training systems will support both the AH-64A and AH-64D. The Longbow collective training system is also funded.

All these initiatives are included in the FY01-07 Program Objective Memorandum (POM), and will be achieved through either the AH-64D remanufacture line or forced retrofit in the field. Our Apache fielding plan is on schedule, and we have successfully deployed 3 of the planned 19 AH-64D battalions.

The Army transformation effort for the cargo helicopter includes three domains. The first and most immediate domain is providing the field commander with greater mission flexibility. An example of a major response to this challenge is the new CH-47 extended-range fuel system that enables the Chinook to extend its ferry range by 360 percent. It can also simultaneously refuel ground or other air vehicles in the forward areas allowing these vehicles more time near the red zone.

The second domain is improving weapon system readiness without expanding the logistics infrastructure. Examples include the CH-47 maintenance tracking and recap initiatives. These involve tracking maintenance and supply actions at selected field locations to identify both non-value-added maintenance actions and component failure trends. Data are used to revise maintenance practices as well as to focus corrective measures on those areas not currently being overhauled to like-new condition but rather have been only addressed as functional discrepancies. Mechanics will now spend less time per flight hour performing traditional inspections, and components received from the depot will last longer.

The last domain is the remanufacture and selected upgrade of CH-47Ds to the F configuration. The basic airframe will be stripped to repair any corrosion, and new wiring and plumbing will be installed. The airframe structure will also be tuned to reduce fatigue-inducing resonant vibrations. Additionally, the cockpit will be modernized to provide digital interoperability with other battlefield weapon systems and corresponding C2 nets. This will not only enhance connectivity, but also provide greater operational situation awareness.

Conclusion

Modernizing Army aircrew equipment is included in Army aviation's transformation to the objective force. In concert with the Aviation Electronic System's and Aircrew Integrated System's Air Warrior Program, the Program Executive Office for Aviation is working to ensure that our aircrews survive across the spectrum of warfare. The Air Warrior Program provides each crewmember with enhanced over-water, cold-weather, chemical, and biological protection and begins fielding the "Block 1" version in the FY04 timeframe. This fully integrated, modular, and flexible approach to aviation life support equipment will ensure that warfighters and commanders rapidly adapt to any environment, terrain, or threat and provide the objective force with increased mission support.

The Army aviation community is enthusiastic about the changes associated with the Army's transformation strategy, and the PEO, Aviation is well positioned to support these changes and the goals of the objective force. Our funded programs in place today will improve the way we plan and deploy Army aviation on the future battlefield.

MG JOSEPH L. BERGANTZ is the Program Executive Officer, Aviation. He is a graduate of the U.S. Military Academy and he has master's degrees in aerospace engineering from Georgia Tech and engineering management from the University of Missouri at Rolla.

Transforming The Army . . .

NEXT-GENERATION SENSORS FOR THE OBJECTIVE FORCE

Douglas K. Wiltsie

Introduction

As the Army transforms itself into a faster and more versatile force, sensors will play a paramount role. Since their introduction during the Vietnam conflict, imaging sensors have grown significantly in their importance. This trend will continue. Even if future conflicts are fought in urban environments rather than in open areas, next-generation systems must allow objective forces to detect, locate, identify, and engage the enemy first.

Operation Desert Storm reinforced the importance of a comprehensive and effective night vision program. However, the meaning of night vision is no longer related simply to night operations. It has evolved into a day or night, all-weather, and all-terrain capability for any environment. For example, Future Combat Systems (FCS) will employ multiple sensors to develop an information awareness hemisphere for future soldiers, serving as eyes, ears, and sense of touch for the FCS unit. Futuristic unmanned ground vehicles (UGVs), unmanned aerial vehicles (UAVs), and unattended ground sensors (UGSs) will host multiple integrated sensors for target detection, location, and identification. Significant focus is also being placed on military operations on urbanized terrain, which has become the preferred tactical environment for low-technology adversaries, as demonstrated in Somalia and Chechnya. To respond effectively, next-generation sensors must operate in urban settings where thermal and reflective environments can be highly dynamic and where limited line of sight can diminish current technology advantages. Our goal, therefore, will be to provide a proper mix of next-generation systems appropriate for any environment, urban or rural.

To meet these challenges, a variety of high-performance multispectral sensors, uncooled forward looking infrared (FLIR) sensors, short wavelength infrared (SWIR) systems, and multi-function lasers (MFLs) are being developed for next-generation systems. These newer technologies can also be used to improve range performance, reduce weight, or improve battery life on legacy and interim systems. The Office of the Project Manager, Night Vision/ Reconnaissance, Surveillance and Target Acquisition (PM, NV/RSTA) at Fort Belvoir, VA, and its technology partner, the U.S. Army Communications-Electronics Command's Night Vision Electronic Sensors Directorate, are joined in a mutual quest for technology transitions that meet future warfighter needs.

Technology Breakthroughs

Uncooled FLIR Technology. Small, uncooled thermal sensors offer the Army low- to medium-performance alternatives that are cost effective, lightweight, and low powered (uncooled FLIRs are specifically either ferroelectric or microbolometer devices). These sensors are currently applied in rifle sights and drivers' viewers, but futuristic applications include the Enhanced Night Vision Goggle (ENVG) and the families of unattended ground imaging sensors. Applying new technologies to multiple products will reduce costs and capitalize on economies of scale in manufacturing. One attractive characteristic of uncooled technology is the elimination of the need for a mechanical scanner and cryogenic cooler, two components with relatively low reliability. Even though early versions of these systems may still require thermoelectric coolers, they will draw significantly less power.

Manportable MFLs. To reduce the number and type of manportable lasers, the Army is considering two technologies now available that provide MFL capability in a single system. Laser diodes or a monoblock laser (a laser rod that integrates the reflectors and wave-shifting materials into a single structure, thus eliminating the need for stand-alone parts) can provide a universal laser system capable of ranging, illuminating, aiming, and serving as the combat identification and Multiple Integrated Laser Engagement System (MILES) transmitter, all in one efficient, cost-effective system.

SWIR Technology. SWIR technology, operating in the 1.0-2.0 micron range, offers an extremely long-range target acquisition and surveillance capability at a relatively inexpensive unit cost. Potential systems will use a laser target illuminator coupled with a SWIR detector-based imager to capture imagery at extended battlefield ranges.

Image Intensifier (I2) Technology. I2 technology, which has long been the backbone of the U.S. Army's "own-the-night" strategy, is continuously updated to increase performance of legacy, interim, and objective forces at both ends of the operational spectrum. Improvements in image tube sensitivity provide better visual clarity in overcast starlight, which is one of the most challenging operational environments. For high light conditions, a gated

power supply is improving the resolution by a factor of three. Gated tubes turn on and off very rapidly. This eliminates degradation commonly associated with conditions at dusk or dawn and those associated with urban nocturnal light pollution.

Current And Future Systems

Thermal Sights. The Thermal Weapon Sight (TWS) will be the first rifle sight to benefit from the insertion of uncooled technology. It will replace earlier TWS systems using second generation scanning focal plane arrays (FPAs). With the development of the uncooled focal plane, a very light (2-pound) TWS will soon augment the Army's inventory of medium-weight and heavyweight TWS systems. Uncooled FPAs will not be limited to the light TWS. Focal planes that are 240 by 320 pixels perform well enough to meet either the light- or medium-system range requirements. However, to fully meet medium-range requirements, larger telescope optics are necessary. For the heavy TWS, a larger 480 by 640 pixel array is being developed to meet long-range requirements. The potential to reduce a heavy TWS system's weight by 30 percent and reduce power consumption by 70 percent is realistic and achievable.

Drivers' Viewers. Thermal drivers' viewers were the first systems fielded using uncooled thermal technology. The Army's Driver Vision Enhancer (DVE) is in production for a multitude of U.S. vehicles. Improvements occurring in uncooled detectors will increase DVE performance in two ways: higher detector sensitivity will help drivers locate "hard-to-find" targets, and larger detector arrays will significantly improve system resolution. By adding an I2 camera, the Army increases the driver's ability to operate in all battle conditions.

Future Goggle Technology For Dismounted Troops. For dismounted soldiers, PM, NV/RSTA is developing the ENVG, which will eventually replace PVS-7 and PVS-14 NVGs. The ENVG will employ an uncooled thermal detector and the latest I2 tubes available, providing fused sensor imagery in a single system. I2 and FLIR images are overlaid in front of the human eye. The brain unconsciously fuses the images into a single clear image, giving the operator a significantly improved detection capability. Sensor fusion was chosen over image fusion because current display and detector technology cannot provide the same level of resolution now achievable with a direct-view system.

The current dismounted infantryman must now carry several laser devices. This is part of their proverbial "100 pounds of light stuff." Therefore, the first MFL will be configured in a single multipurpose dismounted version for range finding, illuminating, aiming, and serving as the combat identification and MILES transmitter. The MFL will be mounted on either an individual or crew-served weapon. The MFL supports the Land Warrior or operates as a stand-alone system. Integrating these features into a single device will reduce a soldier's "carry weight" from 4 pounds to 1 pound and reduce the size from 100 cubic inches to 14 cubic inches.

FCS Sensors. The FCS sensors must provide sufficient information to create a hemisphere of situational awareness around them. To meet this goal, FCS will use a high-performance, vehicle-mounted Target Acquisition Sensor Suite to perform a rapid wide-area search and to acquire targets at long range. A less expensive family of disposable systems will also be developed for detecting targets at shorter ranges. These latter devices are ideal for inexpensive unmanned sensors such as small UAVs and UGVs, which wait, watch, and listen to provide essential situational awareness for the battlefield commander.

High-Performance Sensors. High-performance sensors will work in coordination with the unmanned sensors to provide an omniscient information hemisphere surrounding the FCS platform in a blanket of situational awareness. To meet the FCS' first unit equipped (FUE) 2010 requirement, the design for these sensors must leverage sensor improvements being developed for the Future Scout Cavalry System. The primary sensor will be the second generation FLIR. However, high-performance sensors will also incorporate a day TV; moving target indicator radar; laser illuminator, rangefinder, and designator; SWIR camera, and aided target recognition algorithm to improve cueing. It will allow our soldiers to operate undetected and to identify the enemy over a large (180-360 degree) field of regard.

The Army is drafting the specifications for third generation FLIR, but funding is not yet available. If funded, third generation FLIRs would not be available for production until 2012; thus, not meeting the 2010 objective force FUE. However, third generation FLIRs could be incorporated later as a product improvement.

Network Sensor Capability. Network sensors for the objective force will be a combination of UGSs, UAVs, and UGVs, which will form the FCS perimeter of eyes, ears, and touch. The UGSs will use a seismic, acoustic, and low-performance thermal camera to detect, classify, and transmit an image to the control station. The sensors on the UAV and the UGV will depend on the mission requirement and the need for high or low performance, but could use a FLIR, day TV, or rangefinder sensor or the SWIR illumination system.

Conclusion

New imaging sensors are a lynchpin in the Army's transformation strategy and an enabling technology to meet objective force mission needs. U.S. sensor dominance will translate to information dominance on the digital battlefield. Initiatives described here, as well as parallel programs such as the Comanche and Apache helicopters and payloads for the Tactical UAV, will play a vital role in the Army's transformation. The path ahead must not only focus on performance but also on methods to make future devices cost effective. Using horizontal technology integration and omnibus contracting will ensure that the Army not only maintains its technological advantage but also obtains these devices at the best price.

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Moving Forward Together . . .

SMART 2001 CONFEREES EMPHASIZE COLLABORATION

Sandra R. Marks

Space shuttle Endeavour launch

Introduction

More than 700 members of the acquisition, requirements, and operational communities convened in Orlando, FL, April 16-19, 2001, for the 4th Annual Simulation and Modeling for Acquisition, Requirements and Training (SMART) Conference. Sponsored by the U.S. Army Model and Simulation Executive Council (AMSEC), the conference provided an opportunity for the Army leadership and other government and industry representatives to showcase the potential benefits of SMART, update attendees on the status of implementing SMART, and foster collaboration throughout the modeling and simulation (M&S) community. The theme was "Facing The Digital Frontier Together." Various M&S tools and technologies used or under development by the Army, NASA, industry, and academia were demonstrated to stimulate greater cooperation.

This year's conference featured 4 discussion panels, 6 breakout sessions, more than 60 conference exhibits, state-of-the-art technology demonstrations, a tour of M&S facilities at the Kennedy Space Center (KSC), and a viewing of a shuttle launch. Conference highlights follow.

Tutorials

A new feature added to this year's gathering was the presentation of tutorials on the afternoon prior to the formal start of the conference. The purpose was to address topics not specifically covered during the formal proceedings. Tutorial topics were *SMART and DOD Acquisition Issues; Measuring and Enabling Cultural Shifts; Advanced Concepts, Simulation Support Plans and SMART*; *What SMART Means for Acquisition; Incorporating SMART Into Military Training;* and *SMART Case Study.*

LTC Marion Van Fosson (standing) moderates the FCS Panel. Other panel members left to right are Ellen Purdy, Dr. Scott Fish, and Donna K. Vargas.

Panels

AMSEC Panel. Members were LTG Paul J. Kern, Military Deputy (MILDEP) to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT); Walter W. Hollis, Deputy Under Secretary of the Army for Operations Research; LTG Larry R. Ellis, Army Deputy Chief of Staff for Operations and Plans; and Dr. Craig E. College, Assistant Deputy Chief of Staff for Programs, Office of the Army Chief of Staff.

Kern directed his comments to how SMART is enabling the Army's transformation. Specifically, Kern said that M&S will help us develop the objective force more quickly by making collaboration easier and exploration of alternative designs possible. He added that M&S allows for design trade-offs, increases the opportunity for testing, and allows the Army to build more virtual prototypes. Kern also noted that M&S challenges all of us to do things differently and better. (Refer to the brief sidebar article below for additional comments on SMART by LTG Kern.)

Hollis focused on simulation and the test community. There are many new opportunities for simulation, specifically with respect to live-fire testing and vulnerability, he said. Hollis added that computer use, new capabilities, and networking have awakened the interests of many and made simulation a major endeavor.

Keynote speaker
LTG William P. Tangney

Speaking from the operator's perspective, Ellis emphasized that the current Army structure lacks strategic responsiveness and is not well-suited for full-spectrum operations. He said the Army must change how it operates and trains, how it designs its force, and how it acquires new equipment. M&S can help us do this, he added. Simulations and simulators are critical force enablers and will be even more critical in fielding the Future Combat Systems (FCS), he stressed. Ellis noted that the Army must plan now for simulations and simulators for the objective force, concluding that SMART is the vehicle to make it happen.

College outlined the Army's current research effort and called for integrating technology prowess into business processes and other Army activities. He also noted that M&S will more than likely need to be addressed within today's constrained budget.

Army Panel. Members were LTG Charles S. Mahan Jr., Army Deputy Chief of Staff For Logistics; LTG Peter M. Cuviello, Army Director of Information Systems for Command, Control, Communications and Computers; MG James Snider, U.S. Army Materiel Command Deputy Chief of Staff for

Kern On SMART

When LTG Paul J. Kern, MILDEP to the ASAALT and Director, Army Acquisition Corps, was first briefed on the DOD concept of simulation based acquisition, he not only endorsed the concept, he took ownership for the Army. Kern has since been instrumental in helping to institutionalize the SMART concept. During an informal interview with a few individuals from the media at the SMART 2001 Conference in Orlando, FL, Kern discussed some of the key aspects of SMART today. On the subject of training, Kern said that one of the challenges has always been finding the time to have our soldiers adequately prepared to use a new piece of equipment. Engineers developing networks of equipment intensify that challenge today. Kern noted that the Army must get soldiers involved early in the development process to help them understand this new concept of networked systems and to get engineers to understand the soldiers' view of the environment in which they're going to operate.

On the importance of SMART in the objective force, Kern noted the multitude of platforms to be developed. The use of simulation is going to allow us to link those platforms and evaluate how they are going to work as a team in the field before they're ever built. He added that we are able to do a lot more training through simulation.

On NASA's role in SMART, Kern stated that NASA's use of simulation in harsh environments to teach people to do complicated tasks matches the Army's view of development training cycles. It just makes good sense, he added, to get together with NASA and leverage one another's work.

Kern concluded the interview with a challenge—to bridge the generation gap. He emphasized the importance of ensuring that the engineering, training, and operational expertise of veteran Army employees is passed on to newer employees.

Inside the Space Station Processing Facility

Research, Development and Acquisition; and BG Nick Grant, Special Assistant to the Army Deputy Chief of Staff for Intelligence.

Mahan opened this panel by noting that SMART's role in logistics transformation is vital. He called on the logistics and SMART communities to develop more realistic tools that enhance strategic responsiveness, meet deployment timelines, reduce the combat zone footprint, and reduce logistics costs without sacrificing warfighting capability.

Cuviello examined transforming the SMART process with information technologies. He discussed the virtual work environment, which he says will provide a shared work environment, build a collaborative environment to reduce developmental test costs, and reduce software development cycle time.

Snyder described his simulation experiences with the National Test Facility Strategic Defense Initiative Simulation, the Comanche, and force-on-force evaluations.

Grant presented an overview of Army intelligence, surveillance, and reconnaissance and outlined its strong link to the SMART world. SMART, Grant said, is the methodology that keeps us on the path to meet Army transformation goals on time.

FCS Panel. Members were LTC Marion Van Fosson, FCS Program Manager; Ellen Purdy, Manager for Test, Analysis, Modeling and Simulation, FCS Program Management Office; Dr. Scott Fish, Program Manager, Defense Advanced Research Projects Agency (DARPA) Tactical Technology Office; and Donna K. Vargas, Director of Operations, U.S. Army Training and Doctrine Command (TRADOC) Analysis Center, White Sands Missile Range, NM.

Van Fosson indicated that FCS could be viewed as the prototype for future Army systems and acquisition strategies. He noted also that FCS developers could apply SMART concepts to achieve FCS objectives, and that M&S can be a major contributor in defining FCS concepts. He concluded that FCS will have implications for the objective force by enabling a wide range of military operations.

The FCS Program, Purdy said, is an opportunity for the Army to apply the SMART concept at the outset. Applying the tenets of the SMART concept, specifically M&S, is one of the strategies that will allow the program to mature from a concept to first unit equipped before the end of the decade.

Fish gave an overview of the Unmanned Ground Combat Vehicle and Perception for Off-Road Robotics (PerceptOR) Programs, two jointly funded DARPA-Army efforts supporting FCS technology related to robotics. Both programs, Fish said, generate critical data to support model development related to unmanned ground vehicle use by the military.

Vargas discussed the use of legacy systems in FCS development. Two models, Janus and CASTFOREM, are currently accepted for Army force-on-force studies. Vargas compared the models' routine use for analysis and their application in the FCS concept development phase.

Industry Panel. Members were Jim Malicki, Product and Analysis Solution Leader, IBM Virtual Product Innovation; Scott Curtis, Principal Investigator and Manager, Strategic Technology Initiative, Lockheed Martin Space Systems Co.; and Dave Koshiba, Program Manager, Boeing Phantom Works Lean and Efficient Define and Produce Programs.

Malicki discussed IBM's concept of "e-business," a new approach to products and services that emphasizes innovation—cycle time, speed, globalization, enhanced productivity, and knowledge sharing across the extended enterprise—intended to help differentiate IBM from its competitors.

Curtis discussed various M&S tools currently used by Lockheed Martin Corp. to achieve program cost and schedule savings. These include applications such as virtual pathfinders, visual work instructions, engineering collaborations, virtual testing, and immersive environments.

Koshiba described Boeing's "lean and efficient" processes and tools, which enable affordability-based decisions and reduce both design and build-cycle times and costs. Physical prototypes, said Koshiba, are becoming rare and manufacturing prototypes are being reduced or eliminated altogether.

Keynote Address

LTG William P. Tangney, Deputy Commander in Chief, U.S. Special Operations Command (USSOCOM), provided a keynote address on his command's approach to M&S.

SOCOM's approach is particularly challenging because of its warfighting responsibilities, which include counterproliferation of weapons of mass destruction, combating terrorism, and unconventional warfare. Tangney noted that the M&S goal of all the Services is to have full, jointly distributed, collaborative systems that provide a mission planning and rehearsing capability linked to simulators, one in which soldiers, sailors, and airmen alike can rehearse courses of action and mission profiles.

Tangney concluded that SOCOM is at the point where it can truly do a joint, collaborative, distributed exercise that allows rehearsal of a combat operation or a training exercise regardless of the specific objective, and do it in real time in a virtual, constructive environment.

Guest speaker Michael Schrage

Invited Speakers

BG Stephen M. Seay, Commanding General, U.S. Army Simulation, Training and Instrumentation Command (STRICOM). Seay spoke on STRICOM's role in the Army transformation, focusing on the command's enduring support across all three SMART domains: research, development, and acquisition (RDA); advanced concepts and requirements (ACR); and training, exercises, and military operations (TEMO).

In particular, Seay outlined some STRICOM science and technology initiatives including live simulation technology, advanced distributed simulation technology, medical simulation technology, and intelligent agents to make soldiers in the field more effective. He added that the training devices and simulations supporting these initiatives are a real step forward.

LTG Joseph M. Cosumano Jr., then *Director, Objective Force Task Force.* The Army's transformation to an objective force is a very significant challenge for both the M&S and acquisition communities, according to Cosumano, but one that is mandated by the unpredictability of future military operations. The Objective Force Task Force, which is comprised of Army military and civilian personnel from the Army Secretariat, oversees activities geared toward achieving the objective force. Cosumano stressed that today's Army can't maintain overmatch capability with the current structure and equipment. Heavy forces do not deploy quickly, light forces lack staying power, asymmetrical warfare is a real threat, and there are significant resource challenges to get obsolescent equipment up to a half-life. Developing doctrine and materiel solutions specifically oriented to FCS is the key.

The State Of SMART

SMART is becoming more than just a cornerstone of how the Army transformation is going to occur, said W.H. (Dell) Lunceford Jr., Director, Army Model and Simulation Office, in his progress report on the SMART concept. SMART, he added, is more than the application of M&S; it's a wide range of information technologies such as integrated digital environments. Lunceford also stressed that although more and more people are using simulation to solve problems, we have not yet reached a point where SMART is institutionalized as a fundamental way to do business. Lunceford discussed key advancements made since the SMART 2000 Conference:

• The SMART Execution Plan has been approved. The plan lays the groundwork for how the Army will institutionalize SMART as the means of modernizing and contributing to the Army transformation.

• Based on a recommendation to move the SMART mission out of the RDA domain and give it wider applicability, the four AMSEC co-chairs assumed sponsorship of SMART, and AMSO was designated the executive agent to foster the SMART process and take ownership of the SMART mission and concept.

• The Army Materiel Command's Research, Development and Engineering Center (RDEC) Federation has made significant progress during the past year. The Army is starting to institutionalize the culture of sharing and interacting with other Services and with its own organizations.

• In the M&S standards arena, high level architecture is moving forward and the Army continues to strongly support it and the concept of linking simulations in federated environments as a way of sharing expertise.

• The Army continues to build a standard set of simulations. However, they're very large, complex, time consuming, and are often beyond the scope of a single program manager. On the positive side, Lunceford said that several simulations such as AWARS, Combat XXI, and OneSAF are starting to be used across domain environments such as the training, analysis, and RDA communities.

• The Army has established a career field for simulation (FA57), and interest in establishing professional certification for simulation careerists is gaining momentum.

Recipients of AMSEC Certificates of Excellence (left to right) are Brenda Klafter, Myron Holinko, LTC Jeffrey Applegate, MAJ James Illingworth, and Ellen M. Purdy. A photo of Frank Joseph Henry was not available.

In conclusion, Lunceford said the SMART Conference will continue to serve as the focal point for SMART initiatives and for building the SMART culture.

SMART 2001 Dinner

Michael Schrage, a widely published journalist and management expert and author of *Serious Play: How The World's Best Companies Simulate To Innovate*, was this year's dinner speaker. *Serious Play* explores the high-tech ways that the commercial sector is using virtual prototyping to change the way it does business. Schrage said that models, prototypes, and simulations are becoming the common denominators that enable collaboration within the Army. The classic, Western belief that M&S is used to get a better understanding of a problem to be solved is only partially true. Rather, Schrage said, M&S provides a better understanding of ourselves and the trade-offs we may need to consider. New economics are forcing us to re-evaluate traditional practices such as specification-driven prototypes. Instead, Schrage says, models can drive the specifications. SMART, he concluded, is an important first step in rediscovering the core values that preserve the dignity and integrity of individuals and institutions. (See book review on Page 56 of this magazine.)

At the conclusion of the dinner, AMSEC Certificates of Excellence were awarded to the following individuals for advancing the SMART concept:

Brenda Klafter, Office of the Project Manager, Signals Warfare, was cited for her support to the Airborne Common Sensor Program and her efforts in developing a realistic synthetic environment that will allow program concepts to be assessed virtually.

Myron Holinko, U.S. Army Communications-Electronics Command (CECOM), was recognized for introducing numerous SMART initiatives into CECOM technology programs, and for organizing the SMART 2000 Seminar at Fort Monmouth, NJ.

LTC Jeffrey Applegate and *MAJ James Illingworth,* TRADOC Analysis Center-Monterey, were credited for their support to the Dismounted Simulation and Acquisition System. Their efforts led to development of an individual and collective virtual training tool, as well as a mechanism for feedback on the Land Warrior System.

Frank Joseph Henry, National Simulation Center, was cited for supporting the Digital Battlestaff Sustainment Trainer. His work culminated in the success of the Synthetic Training Environment for the Joint Contingency Force Advanced Warfighting Experiment.

Ellen M. Purdy, Office of the PM, FCS, won praise for her extraordinary contributions toward the development and implementation of the SMART concept. She was responsible for all aspects of promulgating SMART throughout the Army.

Breakout Sessions

Six breakout sessions were held to generate more detailed discussions on the SMART concept and its impact on the Army transformation. The following topics were addressed: *Standards, Building A Business Model for SMART, Virtual Concepting, Immersive Planning and Training,* and *M&S Technology and Tools.*

KSC And Shuttle Launch

Two of the most memorable highlights of this year's SMART Conference were a behind-the-scenes tour of KSC and the launch of the space shuttle Endeavour. The KSC tour included stops at the Apollo Saturn V Center and the Space Station Processing Facility, the latter at which actual hardware for space station missions is built and assembled. Part of the group also toured M&S facilities and heard NASA Administrator Daniel S. Goldin address the significance of Endeavour's mission to the International Space Station.

Following a trouble-free countdown under a brilliant Florida sunshine, Endeavour was launched from KSC at 2:41 p.m. amid a roll of thunder and riding a pillar of flame. Observers watched from approximately 6 miles away as Endeavour lifted off Pad A at Launch Complex 36, gained altitude, separated from its solid-rocket boosters, and climbed into Earth's orbit for one of its most complex space station missions to date.

SANDRA R. MARKS, an employee of Science Applications International Corp. (SAIC), provides contract support to the staff of Army AL&T magazine. She has a B.S. in journalism from the University of Maryland, College Park.

New Approaches Cited . . .

DOD 2001 PROCUREMENT CONFERENCE

Suellen D. Jeffress

In May 2001, Acting Deputy Assistant Secretary of the Army for Procurement Edward G. Elgart sponsored the DOD 2001 Procurement Conference in Orlando, FL. More than 500 senior Defense and industry procurement leaders attended the biannual conference.

Keynote speaker Dr. Kenneth J. Oscar, Acting Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT), set the conference tone. Oscar's goal is to replace current 1,500- to 3,000-page contracts between contractors and the government with business agreements of 5-20 pages. These agreements, which would inspire and energize workers, would also be written in plain English.

Such business agreements will be written in performance-output terms, describing the solution to a problem, not the problem itself. For example, they would describe the number of photocopies required, not the type of copy machine to be used. Industry's strength is using its commercial expertise to solve problems. The government's responsibility is to provide clear descriptions of problems and the required performance output.

Oscar called on contracting professionals to be innovative by becoming business advisors much like chefs using their creativity rather than sticking to a rigid cookbook format. He discussed award-term contracting, which encourages teaming. As part of the business agreement, the contractor agrees to a productivity or quality curve that rewards the contractor's behavior. An example is rewarding the contractor's progress along this curve with future options for additional work under the agreement.

Oscar also wants to see a reduction in the Army's logistics tail for maintenance. It currently takes 110 railroad cars of supplies daily to support a division. Direct vendor delivery may be a solution to this problem.

Under Secretary of Defense for Acquisition, Technology and Logistics E.C. "Pete" Aldridge

In his address, Under Secretary of Defense for Acquisition, Technology and Logistics E.C. "Pete" Aldridge indicated that the change in terms from "Acquisition Reform" to "Acquisition and Logistics Excellence" reflects DOD's shift from reforming to implementing and optimizing innovations. A highlight of the conference was an outline of Aldridge's five acquisition goals, which are described below.

• Enhance the credibility of the acquisition process. Include Service secretaries as members of the Defense Acquisition Board. Stabilize system procurements by using spiral development and realistic pricing, and require program managers to include reserve dollars in their program budgets. Reduce acquisition and logistics cycle times, and do not expect contractors to co-fund system development unless there is a commercial application. Issue more performance-based contracts and make better use of "e-business" (electronic media) for conducting acquisitions.

• Revitalize the acquisition workforce because of the potential large number of retirements during the next 5 years. Work more efficiently

using e-business. Extend military tours of duty, and develop a strategy to educate and train acquisition workforce personnel and provide continuing education to encourage retention.

• Improve the health of the industrial base. Recognize industry's need for profit, and encourage further investment to meet Defense requirements. Focus on eliminating commercial barriers and encouraging shared savings incentive initiatives so that contractors can recoup part of the savings. Make government profit policies and contracts similar to those in the private sector. Encourage looking to small businesses for quality products.

• Rationalize weapon systems development against national strategies coming out of the Office of the Secretary of Defense. Assess the infrastructure to determine which military facilities are needed (a base realignment and closure committee may be required to meet this goal).

• Leverage technology and strategies for the future. Increase research and development budgets, use of advanced concept technology demonstrations, use of non-Defense technology, and enhanced technology transfer to weapon systems.

Later in the day, Deidre A. Lee, Director of Defense Procurement, Office of the Secretary of Defense, enthusiastically outlined her focus areas. With the high number of pending retirements, there is an opportunity to hire young and enthusiastic people who will bring innovative and creative ideas to the workforce. She is developing a Web site where DOD-wide 1102-series procurement and contracting vacancies can be posted, providing an opportunity for careerists to have rotational assignments on her staff. She is also working with the Defense Acquisition University to update training to incorporate new initiatives.

Acting Assistant Secretary of the Army for Acquisition, Logistics and Technology Dr. Kenneth J. Oscar

Lee would also like to see changes in contract incentives. For example, when using weighted guidelines, contractors raise their profit with additional facilities management and obtain more money for finance when extending the length of a contract (under weighted guidelines cost of capital). Currently, profit is constrained by weighted guidelines and the associated prescribed profits. For example, the Standard and Poor's 500 has an average profit rate of 11.8 percent, but with weighted guidelines, profit rates are constrained to 6 percent. However, long-term contracts may become the most critical future incentive.

She added that performance-based contracts provide more objective criteria and higher customer satisfaction. Contractors have more rewards with payments of 90 percent of price under performance-based contracts versus 75 percent of costs using the standard progress payments. The key to success is to tie the award fee to the key performance parameters.

Lee stated that there is more to be done in the area of market research, and she wants to confer with industry to gather lessons learned from the private sector.

Elgart concluded the conference by highlighting his top three focus areas and providing tips for career success. His number one priority is customer satisfaction. As such, careerists should think of DOD as an enterprise and use various Service agencies' contracts to meet the customer's needs. This is particularly critical as a result of dwindling manpower resources.

Second, application of metrics to the contracting field is critical for focusing on the continuous reduction of acquisition cycle time.

Third, continuous training of the workforce provides currency and enhances everyone's ability to accomplish the mission.

Elgart's tips for success include the following: Learn to operate as a team member and effectively communicate internally and externally to get the job done; always volunteer, look for opportunities, and never say "no" to a project; and take advantage of career-broadening opportunities, particularly those that provide better understanding of the customer's perspective and mission.

SUELLEN D. JEFFRESS is the Acting Director for Acquisition Excellence in the Office of the Deputy Assistant Secretary of the Army for Procurement. She has a B.A. from Grove City College in Pennsylvania and an M.B.A. in procurement and contracting from The George Washington University. In addition, she attended the Industrial College of the Armed Forces and the Harvard University Program for Senior Executive Fellows.

SECRETARY OF THE ARMY AWARDS PRESENTED FOR CONTRACTING EXCELLENCE

The annual Secretary of the Army Awards for Excellence in Contracting ceremony was held May 22, 2001, as part of the DOD 2001 Procurement Conference and Principal Assistant Responsible for Contracting (PARC) Workshop in Orlando, FL. Dr. Kenneth J. Oscar, Acting Assistant Secretary of the Army for Acquisition, Logistics and Technology, presented the awards. Edward G. Elgart, Acting Deputy Assistant Secretary of the Army for Procurement (DASA(P)), and MAJ Jeannette Jones of the Army Acquisition Career Management Office, presided over the ceremony.

The Secretary of the Army Awards for Excellence in Contracting are presented annually to commend exemplary contracting organizations and individuals. This Armywide award honors excellence and leadership in a variety of contracting activities. Specifically, the award distinguishes contracting organizations and individuals that excel in customer satisfaction, productivity, process improvement, and quality enhancement. Hard work and dedication have placed these winners in an elite class.

Nominating Process

This year, 81 nominations were received. A letter requesting nominations is usually issued at the end of the current fiscal year, and the ceremony is held the following spring. Nomination packages should be endorsed by the nominee's major command (MACOM) PARC, the program executive officer, or another appropriate official. There is no limit on the number of nominations that may be submitted. However, when more than one nomination is submitted by a MACOM, the PARC will rank order the nominations in a specific category before submitting them to the Department of the Army. An evaluation board, consisting of senior-level contracting personnel, convenes, reviews, and evaluates all selection packages and reconvenes for the final award determination.

The DASA(P) Career Management Office was instrumental in getting an online nomination program in place this past year, which allowed the commands to electronically submit their packages. Nominations can now be submitted online at **https://apps.rdaisa. army.mil/saaec/awards.htm**.

Awards

This year, recipients represented five commands: the U.S. Army Forces Command (FORSCOM); the U.S. Army Space and Missile Defense Command (SMDC); the U.S. Army Tank-automotive and Armaments Command (TACOM); the U.S. Army Contracting Command, Europe (USACCE); and the U.S. Army Communications-Electronics Command (CECOM). A list of the FY00 award recipients follows.

Unit/Team Awards

• *Unit/Team Award For Installation-Level Contracting Center*
Recipient: Army Atlanta Contracting Center, Atlanta, GA (FORSCOM)
• *Unit/Team Award For Installation-Level Contracting Satellite*
Recipient: Directorate of Contracting, Fort Campbell, KY (FORSCOM)
• *Unit/Team Award For Systems Contracting*
Recipient: The Single Channel Ground and Airborne Radio System (SINCGARS) Contracting Team, CECOM Acquisition Center (various locations)
• *Unit/Team Award For Specialized Contracting*
Recipient: Clause Integrated Process Team, TACOM (IPT Clause)

Outstanding Contracting Officers

• *Outstanding Contracting Officer (Civilian) At Installation-Level Center*
Recipient: Dixie Lee Hall, Army Atlanta Contracting Center (FORSCOM)
• *Outstanding Contracting Officer (Military) At Installation-Level Center*
Recipient: MAJ James Blanco, USACCE
• *Outstanding Contracting Officer (Civilian) At Installation-Level Satellite*
Recipient: Edwin Koschemann, USACCE, Regional Contracting Office, Grafenwoehr
• *Outstanding Contracting Officer (Military) At Installation-Level Satellite*
Recipient: MAJ Regina Hamilton, Directorate of Contracting, Fort Campbell, KY (FORSCOM)
• *Outstanding Contracting Officer (Civilian) In Systems Contracting*
Recipient: John A. Regenhardt, TACOM
• *Outstanding Contracting Officer (Civilian) In Specialized Contracting*
Recipient: Charles Jack Robertson, CECOM
• *Outstanding Contingency Contracting Officer (Military)*
Recipient: MAJ Debra D. Daniels, USACCE
• *Outstanding Contingency Contracting Officer (Civilian)*
Recipient: Patricia A. Neal, USACCE

Secretary Of The Army Professionalism In Contracting Award

• *Secretary Of The Army Professionalism In Contracting Award (Military)*
Recipient: LTC(P) Edwin H. Martin, SMDC
• *Secretary Of The Army Professionalism In Contracting Award (Civilian)*
Recipient: Edward G. Elgart, then Director, CECOM Acquisition Center

Secretary Of The Army Award For Exceptional Support Of The Javits-Wagner-O'Day (JWOD) Act Program

The JWOD Program is one of the most important programs that the Army uses to help blind and severely disabled people. This award recognizes commands, installations, or activities that successfully initiate significant additions of products or services to the Procurement List of the Committee for Purchase from People Who Are Blind or Severely Handicapped.

Recipient: Sarah Corley, Directorate of Contracting, Fort Hood, TX (FORSCOM)

The Department of the Army and the Office of the Deputy Assistant Secretary of the Army for Procurement were delighted to recognize the performance of outstanding contracting professionals and organizations and encourage all commands to continue to support this prestigious recognition of Army contracting personnel. Nominations for FY01 awards may be submitted from October through December 2001.

The preceding article was written by Edna Taylor-Capers, a Procurement Analyst in the Office of the DASA(P).

NON-LETHAL CAPABILITIES OF THE FUTURE

MAJ(P) Arthur J. Aragon Jr.

Background

It is 2014. A U.S. contingency force patrols the buffer zone between two warring factions while peace negotiations continue. This buffer zone is one of many that divides two ethnic groups that have recently unleashed a war on each other, destabilizing the region. Each side of the buffer zone is marked, and warning devices extend nearly 2 kilometers out. After several weeks of quiet, an event sparks a large crowd to form in a nearby town. Suddenly, the crowd begins moving toward the buffer zone. Unmanned aerial vehicles (UAVs) and robotic sensors forward real-time video and information to the U.S. command node near the buffer zone. The crowd is visibly armed with rocks and sticks and ignores all posted and remote voice warnings. A pickup truck, loaded with yet more demonstrators, accompanies the crowd. The contingency force responds quickly. When the crowd is about 1,500 meters out, the U.S. forces send out additional voice warnings from the UAVs over wireless public address systems. The crowd ignores the warnings. U.S. Forces lob several non-lethal mortar rounds just in front of the advancing crowd. The rounds burst overhead, delivering their payload at about 1,000 meters from the buffer zone. The area just in front of the crowd is covered with what appears to be fine gravel. The crowd hesitates, a few individuals turn back, but most, seeing no evident threat, proceed as the voice warnings continue. The U.S. contingent points a small antenna from its primary robotic combat system at the moving vehicle; the vehicle suddenly stops and cannot be restarted. The occupants get out, some continue, others turn back. The remaining crowd, on reaching the area covered by the non-lethal mortar rounds, steps on microencapsulated malodorants that break open emitting an awful smell. As the crowd moves over the "gravel," many demonstrators stop, some continue, and dozens turn back! Special sensors set at 1,000 meters send data back to the command that indicate that among the handful of remaining demonstrators, there are likely a few concealed small arms. The U.S. commander wants to try to keep any potential violent aggressors from getting within small-arms range. A reaction force aims a metal tube at the handful that continue. Intense aversive sounds and pulsing lights are directed against the crowd. Still more demonstrators turn away. The reaction force fires an invisible burst of energy that hits the remainder of the individuals like a punch. The few individuals that remain now dissipate. The crowd has been dispersed, no one is seriously injured, and no demonstrator reached within small-arms range of the buffer zone.

Current Methods

The above vignette is just one of a countless number of potential situations for our future Army. In fact, much of the scenario could play out today. However, today's non-lethal response would be considerably less capable. Currently, beyond the warning devices described, and even with sophisticated sensors, our forces could not reach beyond 100 meters to start impacting the crowd or its vehicles with non-lethal capabilities. The fact that we can now reach out several meters farther than a riot baton says a lot for the achievements in non-lethal capabilities over the past 5 to 6 years. We have rubber-ball ammunition and barriers that have been effectively used in the past couple of years. However, whether it is rubber balls impacting against humans or barriers that must directly contact vehicles to impede their movement, close range and contact are required to deliver today's non-lethal effects.

Future Technologies

Non-lethal capability may one day simply be a selector switch on

the individual armament of the soldier or be provided by dialing up the desired effect (from distract to destroy) on a munition. Until then, the Army, along with the other Services, is exploring various technologies to provide non-lethal capability for the coming years. Non-lethal capabilities for the Army's objective force will need to range farther, be less potentially lethal, and give the user a "kit bag" of capabilities well beyond today's rubber balls and barriers. Some of the potential technologies were mentioned in the scenario above and include aversive acoustics, directed energy countermateriel weapons, and non-lethal fires.

The Army, in conjunction with DOD's Joint Non-Lethal Weapons Directorate, is looking at various non-lethal capabilities for the near future. The Army is also seeking funds to develop non-lethal capabilities specifically for its objective force and Future Combat Systems (FCS). Engineers and scientists, working with users and materiel developers, are investigating capabilities beyond present close-range rubber balls. The non-lethal mortar described in the vignette above is an example with near-term potential. A related part of this program is the development of a mortar round that can disperse non-lethal payloads without the container itself being a dangerous falling object. Parachutes and frangible casings are technologies under consideration by developers to achieve this capability.

The microencapsulated malodorant described in the scenario above as the mortar payload is one of many types of non-lethal payloads being considered among the Services to try and optimize non-lethal payloads with delivery systems. This is a technologically challenging area because each type of payload affects each prospective munition and delivery system differently. One way to possibly address this is through microencapsulation. Microencapsulation is a means of packaging malodorants or other products in very small balls or beads with various levels of protection and consistency. This makes storage, shipping, and weaponization potentially more feasible.

Another potential technology described is aversive acoustics. Aversive acoustics are directed sound waves that are so annoying they will cause most people to want to leave the area where the sound is directed. Think of dozens of fingernails scratching against dozens of chalkboards! Combined with other sensory deprivation devices such as bright flashing lights, this could cause even the most ardent demonstrators to waver in their mission. A big advantage to such technology is that it provides a "deep magazine" and minimal logistics! You have unlimited rounds as long as you have vehicle power, and you don't have to worry about ammunition storage.

Vehicle Stoppage

The scenario above also describes disabling a vehicle from a distance. Vehicle stoppage and countermateriel weapons remain high-priority missions of force protection for commanders throughout the world. Current methods of vehicle stoppage require physical contact with a barrier, tire shredders, Jersey barriers, etc. They usually also require hand emplacement or close proximity of an operator. Future countermateriel capabilities will likely be directed energy weapons that optimally disable materiel from hundreds of meters without causing permanent damage. They could be remotely operated, reusable, and adjusted to affect different targets from vehicles to command and communication nodes.

One of the non-lethal capabilities not addressed in the scenario above, but one that has drawn much interest, is non-lethal fires. This approach incorporates long-range delivered munitions and submunitions to incapacitate vehicles, computer equipment, and other infrastructure without destroying them. However, these munitions could be "rheostatic" or tunable, and with the flip of a switch on the muntion itself or on the fire control system, you set the previously non-lethal weapon to destroy. This offers not only flexible response but also reduces the logistical burden of having to carry, store, and maintain many different types of rounds.

Conclusion

Many mature, relatively low-cost non-lethal capabilities are now or soon will be available. Some are deployed and have been successfully used in actual operations. In addition to participating in the Joint Non-Lethal Weapons Program (JNLWP), each Service also has its own Service-unique non-lethal requirements (i.e., FCS non-lethal for the Army and non-lethal vessel denial for the Navy). JNLWP participants recognize that future non-lethal science and technology investments are required to reach beyond today's rubber balls and physical barriers. Future non-lethal capabilities will need to be more flexible, have a longer standoff range, and offer potential long-term cost savings as compared with current capabilities. Until that day when we can simply "set phasers to stun," the Army and the other Services will continue to press technology for non-lethal solutions.

MAJ(P) ARTHUR J. ARAGON JR. is the Deputy Systems Manager for the Army's Non-Lethal Technology Integration Cell. He has an M.S. in systems acquisition management from the Naval Postgraduate School.

ACQUISITION CAREER RECORD BRIEF (ACRB)

Bruce E. Dahm

General Information

The ACRB is the single most important document for acquisition professionals. It is the official record of all training, work experience, education, awards, acquisition status, current position, and personal information for Acquisition and Technology Workforce (A&TWF) members, including all Army Acquisition Corps (AAC) members. Non-A&TWF civilians can use their ACRB to document their experience and training in acquisition disciplines as well.

Purpose

The ACRB is a "snapshot" of a civilian's acquisition history and is designed to mirror the format and content of the military Officer Record Brief (ORB). The similarity in format between ACRBs and ORBs facilitates comparison of military and civilian career records, which is central to determining the "best-qualified" individuals for senior-level acquisition positions. The ACRB is used in Individual Development Plan (IDP) preparation to manage and document the careers of acquisition workforce members. It is also submitted as part of the application package for the Competitive Development Group (CDG) Program, the civilian program manager boards, the acquisition certification process, and AAC membership.

Sources Of Data

The ACRB is the database "build" generated by the Career Acquisition Personnel & Position Management Information System (CAPPMIS). CAPPMIS interfaces with the Defense Civilian Personnel Data System (DCPDS), the Total Army Personnel Database (TAPDB), and other databases.

Establishing An ACRB

To initiate an ACRB, you must first contact your regional Acquisition Career Manager (ACM) to establish a record. The first time you access your ACRB online at **https://rda.rdaisa.army.mil/cappmis/acrb**, you are required to designate a password, which is known only to you. Individuals can view and print their current ACRB from this Web site. If you forget your password, you must e-mail a request to reset it.

To update your ACRB, you must submit a request either through the U.S. Total Army Personnel Command (PERSCOM) ACM for AAC members (GS-14/-15 or equivalent personnel demonstration broadband level) or through regional ACMs for workforce members (up to grade GS-13 or equivalent personnel demonstration broadband level).

Follow the ACRB instructions at **https://rda.rdaisa.army.mil/cappmis/acrb**. The first step in updating your ACRB is to print out a current or blank ACRB. Next, line through the incorrect data and write

The ACRB is the single most important document for an acquisition professional. It is a mandatory record of your training, work experience, education, awards, acquisition status, and current position information.

in new data or complete the blank ACRB. Be sure to sign the block at the bottom left side, which certifies the accuracy of the updated information. Finally, fax or mail your updates to your ACM—contact information is located online at **http://dacm.rdaisa.army.mil**. (Go to **Your Acquisition Management Team** then **Regional Directors/Acquisition Career Managers**.)

Content

The top line of the ACRB form indicates the Internet address of the instructions (**https://rda.rdaisa.army.mil/cappmis/acrb**), the system date that the ACRB was printed, your pay plan or grade, series or area of concentration, social security number, and name. The ACRB is divided into 10 sections. Because each section captures data used to obtain a snapshot of your career, it must contain current information. Below is a brief description of each ACRB section.

Section I (Current Position Data). This section includes position title, category, AAC certification level required, command, personnel office, acquisition position type, and acquisition position list number.

Section II (Security). This section includes clearance type, investigation type, and date of investigation.

Section III (Acquisition Corps Data). This section includes service computation date, AAC membership status, AAC accession date, CDG year group, AAC career field, months of acquisition experience, critical acquisition position, AAC certification level required, AAC reserve status, date entered present position, and 5-year review date.

Section IV (Personal). This section includes component code, home mailing address and phone number, work phone number (commercial and DSN), fax number, and e-mail address (e-mail is updated in your automated IDP).

Section V (Preference). This section includes geographical, functional, and command preferences, capturing up to three selections for each preference.

Section VI (Acquisition/Leader Training). This section includes acquisition training (course title as it appears in the Mandatory Training Course Table in the Defense Acquisition University (DAU) Catalog) and leadership training (course title as it appears in the Leader Training Table in the DAU Catalog). The course completion date should be filled out clearly with the month, day, and year (MM/DD/YYYY).

Section VII (Education). This section includes the name of the college or university, degree received (associate's, bachelor's, or master's), discipline, year graduated, highest degree attained, and Acquisition Corps qualification credit hours.

Section VIII (Awards). This section includes award type and date received (the last 10 awards can be displayed). An 11th line is reserved for awards you may have received that are no longer shown. Special awards can be noted in this blank.

Section IX (Assignment History). This section captures start date of each assignment, number of months served in each assignment, organization, location, command, duty title, series, grade, acquisition position code, and supervisory status (supervisory or nonsupervisory position).

Section X (Certifications/Licenses). This section includes certifications, career fields, career levels, and dates certified.

Continuous Learning

The ACRB is a useful tool in documenting education relative to your acquisition career. As such, the continuous learning (CL) section includes end date and points. The end date is calculated from the date at which you met the acquisition requirements of your current position (e.g., acquisition career field and certification level). CL points are the running total of points awarded. Supervisors must approve all CL activities and points as indicated on the IDP. (Note: 80 points are required for each 2-year cycle.) All CL credits must be reported through your automated IDP; no direct ACRB updates can be made. Thus, it is very important that you maintain a current and accurate ACRB.

Summary

The ACRB is the single most important document for an acquisition professional. It is a mandatory record of your training, work experience, education, awards, acquisition status, and current position information. This automated historical document is required for all competitive boards and is the official document of record for certifications. The ACRB is augmented by a detailed work history document such as a resume. You may view your ACRB online at **https://rda.rdaisa.army.mil/cappmis/idp/idpprod/login.cfm?app=acrb**; however, to establish or update your ACRB, you must contact your ACM.

BRUCE E. DAHM is an Acquisition Career Manager in the Acquisition Management Branch at PERSCOM. He is attending Park University to obtain his undergraduate degree in management. Dahm is Level III certified in program management and acquisition logistics and Level II certified in information technology.

BUILDING THE JOINT SIMULATION SYSTEM (JSIMS)

Laura Knight, Gayla Crabtree, and Dr. Stuart Olson

Introduction

The operational tempo (OPTEMPO) and the growing complexity of military operations demand more robust simulation training systems. Thus, DOD is taking major strides to field the Joint Simulation System (JSIMS) to answer the warfighter's need for better training by providing valid computer-simulated environments for use by commanders-in-chief (CINCs), their components, other joint organizations, and the individual Services.

As noted in the *Secretary of Defense Annual Report to the President and the Congress, April 1997*, the primary purpose of JSIMS is to support training and education of ready forces by providing realistic joint training across all phases of military operations for all types of missions. A distributed, constructive wargaming simulation, JSIMS is designed to create a single, seamlessly integrated joint synthetic battlespace (JSB). JSIMS will provide command, control, communications, computers, and intelligence (C4I) training in a simulated, full-range military operations environment using joint and combined force capabilities.

Initially, JSIMS will support joint, Service, and agency training. Eventually, it will include doctrine development and validation, mission rehearsal, joint experimentation, and professional military educational objectives. Above all, it is an "alliance," a formal agreement establishing an association of groups to advance common interests.

Program Manager (PM)

The PM, JSIMS reports directly to the Army Acquisition Executive, and is supported by an Alliance Executive Office staffed by DOD civilians, military officers, and contractors. The Alliance Executive, a Senior Executive Service billet staffed by the Navy, performs JSIMS development and system integration management that includes coordination of design and development of the architecture, the system common components, and the warfare domains' integration.

The JSIMS Memorandum Of Agreement (MOA) establishes policy, assigns responsibilities, and establishes a management and administrative structure for oversight, coordination, and communication of JSIMS issues across the program. This agreement results in the JSIMS organization known as the alliance.

Partners

JSIMS partners include the Office of the Secretary of Defense (OSD), the joint staff, each of the Services, Defense agencies, and the U.S. Joint Forces Command (USJFCOM) Joint Warfighting Center (JWFC). The MOA designates executive agents (EAs) and development agents and their respective roles and responsibilities. EAs provide resources and functional management for development of their respective domains and act as Service or agency points of contact for requirements. EAs include the Army, the Navy, the Marine Corps, the Air Force, the USJFCOM, the Defense Intelligence Agency, the Defense Information Systems Agency, the U.S. Transportation Command, and the U.S. Special Operations Command. The USJFCOM JWFC serves as the JSIMS Program user advocate by representing the CINCs and integrating the requirements of the CINCs, Services, and Defense agencies in the development of JSIMS.

Management

On Dec. 16, 1999, JSIMS was designated an acquisition category (ACAT) ID Program (after achieving Milestone II in October 1998 as an ACAT II Program). With this designation, JSIMS integrated product teams (IPTs) were reorganized under an overarching IPT (OIPT). The Assistant Secretary of Defense for Command, Control, Communications, and Intelligence chairs the JSIMS OIPT with appropriate participation by OSD and Army acquisition representatives from each of the JSIMS EAs.

Tenets

Three key tenets of JSIMS listed in the Operational Requirements Document, V3.0, of June 23, 1999, are tailorability, composability, and efficiency. JSIMS tailorability refers to the objects and architecture enabling it to create the realistic environment for the unique requirements of each user. Composability encompasses the technical aspects that allow the "construction" of JSIMS to meet user needs. In other words, tailorability aims for the operational flexibility while composability addresses system management and interfaces. The third tenet, efficiency, refers to the responsiveness in presenting an environment useful to the user. An example of efficiency is the need for JSIMS to reduce the number of personnel required to operate and control the simulation.

Development

JSIMS is currently in full-scale development and has a March 2002 target date for V1.0 release. The application of JSIMS in a major training event in March 2003 will demonstrate JSIMS' initial operating capability. The development methodology consists of an overlapping sequence of events containing elements of requirements definition, design, development, integration, and test. These events occur over a 2-year period and culminate in release of a new version. Each version overlaps the previous version by 6 months and allows for a concurrent, iterative development approach incorporating user feedback and new technologies as they become available. Therefore, subsequent version releases are planned in 18-month intervals following the March 2002 initial or V1.0 release.

Architecture

The JSIMS architecture includes planes, tanks, ships, and intelligence sensors that interoperate in a JSB. This synthetic operational environment must be coherent between the levels of war, synchronized between types of events, and realistic in the context of the specific joint training scenario.

JSIMS uses high level architecture (HLA), the DOD standard for modeling and simulation interoperability. HLA provides the flexibility not only for development by the partners within JSIMS, but also for JSIMS to interact with other simulations as required. HLA also provides the means by which JSIMS can interface with C4I systems. Additionally, HLA provides JSIMS the following:

- A standard mechanism to record alliance-wide decisions on how domain objects and their relationships are characterized,
- A software integration framework for major components of JSIMS,
- A standard means to extend JSIMS through the addition of non-JSIMS developed federates, and
- Cost reduction by using existing government and commercially developed HLA tools.

Component Classes

The JSIMS system/subsystem design description defines four JSIMS component classes as follows:

- *Domain Federate*. This simulates combat environments such as land, water, air, and space;
- *Support Federate*. This provides functions other than those included in a domain federate, such as the technical control federate that is used to perform technical management of the federation;
- *Library*. This directly links into one or more other components but is not a federate (e.g., synthetic natural environment models or the HLA runtime infrastructure); and
- *Application*. This stands alone and is not a federate (e.g., scenario-generation tool).

Each component class has one development agent responsible for its construction. The primary responsibility of these development agents is to build the "model" that provides the objects and functionality for their specific areas.

Extensibility And Security

Use of HLA makes JSIMS extensible by the user community with minimal assistance from JSIMS developers. Users can also extend JSIMS by adding federates and extending the federation object model by adding new object or interaction classes or new attributes to existing object classes.

JSIMS must support exercises running two enclaves at different security levels (e.g., secret and sensitive compartmented information).

Interoperability

The training audience does not interact with any component of JSIMS directly. Furthermore, the training audience uses only those systems they have available during live operations (i.e., C4I systems). Each C4I system, with a single development agent responsible for JSIMS interface, connects to JSIMS in one of three ways to accomplish interoperability: as a federate; via an adapter federate acting as its surrogate in the federation; and, in rare cases, via a direct, point-to-point connection with a single domain federate.

Integration Events

To mitigate integration risks and ensure that each development agent stays on schedule, JSIMS integration consists of mini events that gradually increase in size and functional capability as the system matures. These events are characterized as prototype, federate, and federation integration events.

Each federation integration event adds new federates and applications, increases the operational capability of each domain federate, and/or increases the technical capabilities of each federate and other applications.

Developmental Tests

Below is a description of the types of developmental tests:

- Technical verification tests are conducted to ensure that JSIMS components meet specific technical requirements for operating in the JSIMS federation and ensure that federates are HLA compliant.
- Functional verification tests ensure that all functionality described in an object set is operating as designed.
- Load tests measure the ability of the JSIMS federation to operate at real time and identify bottlenecks that require software optimization.
- The systems test ensures that JSIMS requirements and key performance parameters are met to culminate in a version-release milestone.

OT&E And System Validation

The operational test and evaluation (OT&E) agent for JSIMS is the Air Force OT&E Center (AFOTEC). While traditionally the operational test activity for an ACAT ID program is the same Service as the PM, AFOTEC's involvement maintains previous program agreements with the intent of achieving a truly multi-Service program.

JSIMS multi-Service OT&E will be conducted in conjunction with a CINC/Joint Task Force training exercise with a live training audience and will involve multiple sites.

Conclusion

JSIMS is the largest modeling and simulation program ever undertaken by DOD. Continual support by the Joint Chiefs of Staff, the Services, numerous Defense agencies, and OSD attests to its important role in meeting future military readiness requirements.

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ARMY TUITION ASSISTANCE PROGRAM

Anne Galway

Introduction

The Army Tuition Assistance Program (ATAP) began modestly in the early 1990s and continues today as a dynamic and flexible funding vehicle for tuition assistance. The ATAP was established to assist acquisition workforce members in attaining their business credit hours and undergraduate and master's degrees.

Initially slated to expire in FY00, the program was extended through FY05. Since its inception, the program has remained consistently popular, reaching its peak in FY01 when new requirements in certain career fields prompted a significant increase in tuition assistance requests. This increase resulted in depletion of ATAP funding by the end of the third quarter. As such, efforts are now underway to re-evaluate the method of distributing ATAP funds. All current and prospective ATAP participants are encouraged to become familiar with ATAP policies and procedures, particularly in view of newly announced requirements.

Eligibility

To be eligible for the ATAP, an applicant must be a member of the acquisition workforce and currently occupy a recognized acquisition position. To be considered for master's degree funding, an applicant must be Corps Eligible, Level III certified, or an Army Acquisition Corps (AAC) member.

Requirements

It is important to note that yearly funding caps have been established for all ATAP participants. Participants seeking undergraduate degrees are limited to a $5,000 yearly funding cap, and participants seeking master's degrees are limited to a $7,500 yearly funding cap. Additionally, final course grades must be submitted within 60 days of course completion. Failure to submit grades could result in the loss of an individual's ability to obtain future ATAP funding. An approved *Request, Authorization, Agreement, Certification of Training and Reimbursement* (DD Form 1556) must be submitted to the National Capital Region Customer Support Office (NCR CSO) 30 days prior to course start for fund cites. Finally, any requested curriculum or funding changes must be coordinated through the NCR CSO.

Participant Selection

Beginning in FY02, ATAP applicants will no longer be accepted into the program on a first-come, first-served basis. Instead, an ATAP Competitive Selection Board comprised of AAC members from various regions will select participants. Board members will be chosen by the Director of the Acquisition Career Management Office (ACMO) and will develop a Relative Standing List (RSL) for all applicants. Selections from the RSL will continue to be made until all ATAP funds are allocated. Once the board selects a workforce member for the ATAP, that individual is considered a participant for the entire degree program. Participants do not need to reapply each semester. If an applicant is not selected, he or she is free to reapply to the next board.

Applying

The ATAP Competitive Selection Board will meet three times annually—in October, February, and June—for school start dates in January, June, and September, respectively. A call for applications will be solicited via an open announcement on the AAC home page at **http://dacm.rdaisa.army.mil** and in *Army AL&T* magazine. Additionally, Acquisition Career Managers (ACMs) and the NCR CSO ATAP Coordinator may be contacted for ATAP application information. The application form, which is also on the AAC home page (click on **Forms**), is due no later than 30 days prior to the convening of the board for which the applicant wishes to be considered.

It is essential for applicants to plan early. It takes time to meet with prospective colleges, plan a curriculum, be accepted by the college of choice, and coordinate other documentation.

Applications must be mailed or hand delivered; faxed or electronically submitted applications will not be accepted. The following documentation is required with all applications:

- Individual Development Plan (IDP) with entire curriculum individually entered and approved,
- Acquisition Career Record Brief (ACRB),
- Senior Rater Potential Evaluation (SRPE) (GS-13s and above or equivalent personnel demonstration broadband level),
- Acceptance letter from college or university, and
- Institution's Web site address for accreditation information.

Other Information

Why is it necessary to list an entire curriculum when class offerings are unknown, and why on the IDP? The simple answer is that the board approves curricula based on its validity to acquisition functions. The IDP allows the NCR CSO to track and approve course selections and changes electronically, thus reducing paperwork. It is important for courses to be listed in the fiscal year of the first day of the start of the course. Additionally, adding courses to a participant's IDP will result in required continuous learning points.

Applicants must ensure that their ACRB is accurate. The ACRB can be downloaded from the AAC home page and printed. An updated and signed ACRB, with pen and ink changes incorporated, is then forwarded to the ACM in the region that services the applicant's organization.

The SRPE is a document used by an applicant's senior rater to identify an applicant's potential ability and is required by all applicants GS-13 and above (or equivalent personnel demonstration broadband level).

Summary

The intent of the ATAP is to assist individuals in achieving their career goals while helping the Army maintain a highly proficient acquisition workforce. The ACMO Director encourages all workforce employees to take advantage of this valuable tuition assistance resource.

ANNE GALWAY is the NCR CSO ATAP Coordinator. She is completing her degree in government and international relations at George Mason University while working on certification in program management.

NEW REFRIGERANTS FOR ARMY ENVIRONMENTAL CONTROL UNITS

Charles W. Thompson and Darwin Reckart

Introduction

On Jan. 1, 2000, with the world's attention focused on the pending collapse of our information infrastructure, the first deadlines restricting the use of Class II Ozone-Depleting Substances quietly went into effect for several European Union countries. Automobile owners have already experienced the impact of ozone legislation on their air conditioners, either by having to trade in their older vehicles, converting their air conditioners, or paying the high price for a dwindling supply of R-12 refrigerant. Home air conditioners and heat pumps predominately use R-22, a Class II ozone-depleting substance, and so does the Army's standard family of Environmental Control Units (ECUs), which are managed by the U.S. Army Communications-Electronics Command (CECOM).

Deadlines

Statutory regulations to eliminate R-22 mandate decreasing annual production limits of R-22 and restricting its consumption. In the United States, a production cap of 15 million tons went into effect in 1996. This cap decreases to 10 million tons in 2003, 5 million tons in 2010, and zero in 2020. Newly manufactured products that use R-22 will be banned in the U.S. in 2010.

The Netherlands and Germany took a more aggressive stance toward eliminating R-22 and banned introduction of newly manufactured products containing R-22 effective Jan. 1, 2000. DOD environmental policy as applied to host countries is outlined in each country's overseas baseline guidance and final governing standards. Generally, the more restrictive U.S. policy or foreign law is imposed.

Impact

More than 9,500 military standard ECUs are fielded across the Army and integrated throughout a wide variety of combat and combat-service support systems. The standard ECU provides developers and users with a "hardened" heating and cooling capability with a common interface for tactical equipment shelters. As users and program managers (PMs) are aware, ECUs perform a critical role in the reliability and performance of the systems into which they are integrated.

Impending deadlines have caused industry to retool and introduce commercial products for the new refrigerants. However, only a small percentage of commercial sales include alternative refrigerants. Although the military standard ECUs have no commercial equivalent, they are manufactured largely with commercial heating, ventilation, and air conditioning components. Because the U.S. "drop-dead" date is 10 years later than some of the countries where the Army operates and maintains ECUs, CECOM must act quickly and smartly to reconcile the urgency and the readiness of the commercial sector to meet the Army's needs.

Background

The standard military ECU was "born" July 17, 1967, as a result of the ECU policy letter that directed standardization of ECUs. In 1994, an Operational Requirements Document for the Improved Environmental Control Unit (IECU) was approved that addressed the need for a zero ozone-depleting refrigerant ECU. Additional improvements were also outlined for increased high- and low-temperature operation, lower noise, and higher reliability.

The CECOM Research, Development and Engineering Center (RDEC) has conducted evaluations on three alternative refrigerants: R-134a, R-407C, and R-410A. R-134a, widely used in automotive applications, was considered and quickly discarded because of its poor efficiency that would require a larger and heavier ECU design. R-407C is formulated to closely match the performance of R-22, which it does to a

large extent, but requires some material compatibility changes. R-410A is a high-pressure refrigerant used in commercial air conditioning and heat pumps. Although the use of R-410A would require a new ECU design, this refrigerant offers the potential for improved efficiency and reduced ECU weight and size.

A market survey conducted in June 1999 revealed that no industry products could fulfill the requirements outlined in the Operational Requirements Document. As such, the CECOM RDEC hosted a conference attended by more than 40 industry representatives who were interested in developing and producing military ECUs. During the conference's planning stage, industry consortiums, the American Refrigeration Institute, and the American Society of Heating and Refrigeration Engineers were consulted about industry trends.

Performance specifications for the IECU include detailed interface information that defines the integration of the IECU with host systems. The interface specification, which identifies critical interactions with legacy systems, was circulated between April and August 1999 to more than 300 PMs and users to solicit comments. This "freezing" of the interfaces will allow designers to focus on performance of the IECU. For developers who are uncertain of their requirements, CECOM maintains a systems assessment capability to assist developers in determining heating and cooling requirements for new and changing systems and to recommend application of standard ECUs.

Near-Term Planning

CECOM has established an integrated product team to manage the IECU Program. This team, which is comprised of functional representatives from CECOM's Logistics and Readiness Center, RDEC, and the Acquisition Center, has worked closely with the project leader to do detailed planning for the program. Early in the program planning stage, cost as an independent variable reviews identified marginal requirements that resulted in a $17 million acquisition cost avoidance.

During the engineering and manufacturing phase (EMD) of the program, two contractors will select a zero ozone-depleting refrigerant, and they will design, develop, and test prototypes of each horizontal configuration of the IECU family. Contractor selection is based on best-value criteria that emphasize the contractor's engineering design approach, unit and life-cycle cost-management approach, and manufacturing capabilities. Also during the EMD phase, extensive testing will demonstrate that the prototypes meet the ORD's requirements.

A streamlined acquisition approach will allow the production phase to be linked to the EMD phase as options on the contract. This contracting approach will preserve continuity of effort and result in cost-effective technology transfer between phases. The production phase consists of two parts. The first part allows for one contractor to be selected, based on demonstrated ECU performance and proposed unit costs, to provide production test quantities. Limited testing of these units will verify the contractor's production capability and successful transition of the design from EMD to production. The second part will allow for continued production through 2013 to meet the Army's ECU requirements. The first production units are scheduled for fielding in 2003.

The Future

While hydrofluorocarbons such as R-407C and R-410A are becoming the industry standard to meet statutory requirements, investigations of natural refrigerants are continuing. Hydrofluorocarbons have extremely high global-warming potential and are subject to regulation by both the Montreal and the emerging Kyoto Protocols. These hydrofluorocarbons require special handling, recovery, and reclaiming equipment. On the other hand, the natural refrigerant carbon dioxide CO_2 has a global warming potential 1,500 times less than hydrofluorocarbons and does not require special recovery or reclaiming equipment, resulting in a reduced logistics burden in a military application. Also, because of the higher working pressures, CO_2 offers the potential for ECU weight and volume reductions.

The Army is investigating the potential benefits of using CO_2 in a packaged-unitary tactical ECU to heat and cool operations. Past efforts have identified commercially available components for use in both vehicular and packaged-unitary units. Currently, two military ECUs are being fitted with CO_2 components for performance evaluation. A life-cycle cost analysis will also determine the economics of the technology. Should the CO_2 cycle prove successful and cost effective, the Army could introduce ECUs with CO_2 as the refrigerant by the 2010 deadline.

CHARLES W. THOMPSON is the Chief of CECOM's Power/Environmental Division. He holds a B.S. in electrical engineering and is a 1987 graduate of the Defense Systems Management College Program Management Course. An Acquisition Corps member since 1991, he is Level III certified in both program management and acquisition logistics.

DARWIN RECKART is the Chief of CECOM's Systems Integration Team and Project Leader for the IECU Program. He holds an M.S. in electrical engineering. An Acquisition Corps member since 1994, he is Level III certified in both program management and acquisition systems engineering.

MEETING SOLDIER NEEDS THROUGH ACQUISITION LOGISTICS

Jane Benson

"Safe, easy to operate, and efficient," are the words that describe the Modern Burner Unit (MBU) that soldiers use in the field to cook food and heat water for cleaning pots and pans. However, optimal equipment performance can be compromised if a soldier mistakenly uses gasoline instead of JP-8 fuel to power the MBU—an easy mistake to make since the MBU's predecessor, the M2 Burner, is fueled by gasoline.

New Equipment Training (NET) is one of many important functions performed by the U.S. Army Soldier and Biological Chemical Command's (SBCCOM's) Integrated Materiel Management Center (IMMC). NET, which is part of the IMMC's larger acquisition logistics strategy, ensures that soldiers in the field know how to safely and properly use new equipment. Through acquisition logistics, the IMMC anticipates and meets the equipment support, maintenance, sustainment, and training needs of soldiers. The IMMC also supports biological chemical systems from development to disposal.

Supportability

The goal of acquisition logistics is to ensure that support requirements are taken into consideration during system design and that the infrastructure necessary for initial fielding and operation support are identified, developed, and acquired in the early planning stages.

The goal of acquisition logistics is to ensure that support requirements are taken into consideration during system design and that the infrastructure necessary for initial fielding and operation support are identified, developed, and acquired in the early planning stages.

Supportability is an important part of IMMC's acquisition logistics initiatives. Edith Lentz, Manager of the IMMC's Integrated Logistics Support (ILS) Team, explained that ILS encompasses beginning-to-end materiel systems planning. Its goals, she adds, are to influence operational and materiel requirements and design specification, define support requirements, develop and acquire required supports, and repeatedly examine support requirements throughout the service life of the system.

Closing The Gap

ILS ensures that all elements are planned, developed, tested, evaluated, acquired, and deployed before or simultaneously with the materiel system. Through ILS, the IMMC reduces manpower and support costs for soldier equipment, as well as improves reliability, maintainability, producibility, and management efficiency.

The IMMC staff recognizes that the support and maintenance of soldier equipment that may be used for decades is just as important as its design. The IMMC supports soldiers by closing the gap between the engineers and scientists who develop soldier systems and the soldiers who use them. Under the acquisition logistics philosophy, system designers; acquisition logisticians; and program, project, and product managers work together to identify and factor in support considerations against system costs, schedules, and performance parameters.

IMMC employees ensure that equipment is delivered on time and in good condition. They coordinate and anticipate maintenance, repair needs, and spare parts requirements. IMMC employees also support acquisition logistics by specializing in item management, transportation, packaging, customer service, and other support disciplines. Moreover, the IMMC provides thorough training for the safe and efficient use of equipment.

NET is accomplished in combination with Total Package Fielding (TPF), the Army's standard fielding method used to provide units a new product or improved materiel system and all its related support materiel at one time. The materiel is consolidated into unit-level packages. Jay Yurchuck, leader of the NET/TPF group, explained that NET involves the materiel developer or provider teaching the tester, trainer, supporter, and user about operating and maintaining new equipment. He said that the NET/TPF group brings soldiers a new piece of equipment accompanied by all that is needed to operate and support it, such as technical repair manuals, supply documentation, and enough repair parts for initial operation.

Supply actions by the provisioner ensure the item is on the shelf and available for the soldier by the date that the first unit receives the equipment.

Yurchuck pointed out that the importance of what IMMC does is exemplified in the ongoing, worldwide fielding of the MBU.

Proper Training

The MBU will also be an important component in the containerized kitchen. The burner is fielded to units in Korea and the Pacific, as well as the Far East. PM, Soldier Support manages the MBU among other soldier systems and equipment.

Proper training on the MBU is essential, even though soldiers have used the M2 Burner since the 1960s. "Although JP-8 fuel is far less volatile than gasoline, soldiers who are used to powering the M2 with gasoline might mistakenly use gasoline with the MBU, too," Yurchuck said. "This is why we work extensively with the product developer to develop the proper training for our soldiers. Then we travel worldwide to ensure that soldiers stationed everywhere know how to use equipment properly."

Provisioning is another important way that the IMMC supports soldiers and is part of the IMMC's acquisition logistics strategy. Provisioning helps ensure the availability of spare and repair parts for the assigned systems' life cycles. Item management, cataloguing, budget planning, and other input also help ensure parts availability. The provisioner/equipment specialist establishes a maintenance allocation chart by determining what level of maintenance is needed to remove, repair, and dispose of the item, according to Rick Burleson, an IMMC Equipment Specialist. Determining which items are to be provisioned is based on historical requirements or demands of similar pieces of equipment and any failures occurring with testing of the equipment during the acquisition process.

Accurate Information

Burleson explained that provisioning actions must be completed early in the life cycle as technical publications must include National Stock Numbers (NSNs) for every item identified as a provisioned item. Supply actions by the provisioner ensure the item is on the shelf and available for the soldier by the date that the first unit receives the equipment. The provisioning database is reviewed on a recurring basis to maintain part number and NSN accuracy as repair parts become obsolete and are replaced with more modern or upgraded items throughout the life of the system. "The equipment specialist/provisioner is always in touch with soldiers in the field to assist with maintenance and publications issues," Burleson said.

IMMC's technical publication group ensures that technical support documentation such as user manuals are accessible to the soldier in the field. The technical publications team prepares and edits technical publications for accuracy, readability, and proper format. The group works closely with the IMMC's equipment specialists to test the equipment against the manual to ensure that soldiers have the best instructions possible at their fingertips.

Through acquisition logistics, the IMMC staff provides cradle-to-grave support and maintenance for soldier equipment.

JANE BENSON is a Technical Writer/Editor in SBCCOM's IMMC. She has an M.A. in professional writing and publishing from Emerson College, MA. She has previously worked as a Public Affairs Writer and as a Reference Book Writer.

THE JOINT LAND ATTACK CRUISE MISSILE DEFENSE ELEVATED NETTED SENSOR SYSTEM

COL Mary Fuller, Michael J. Grannan, and Robert E. Davis

Introduction

In an effort to field an over-the-horizon land attack cruise missile defense capability for battlefield commanders, the Defense Acquisition Executive, in 1996, directed the Army to establish the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System Project Office (JLENS PO). JLENS was formerly known as the Joint Aerostat Program Office. The Army was designated the lead Service for the JLENS Program, with the Navy and the Air Force providing full-time deputy program managers (DPMs). The Army Acquisition Executive (AAE) assigned the program office to the U.S. Army Space and Missile Defense Command and designated the Project Manager (PM), JLENS as a centrally selected O-6 (colonel).

ACAT Designation

In 1998, the JLENS PO awarded the design and development contract to Raytheon Corp., Bedford, MA. In addition, an Acquisition Category (ACAT) designation was assigned to the program to allow the use of innovative techniques in structuring program strategies to reflect sound business management, to allow successful program execution, and to provide a formal record of the program's maturity and decision processes.

In 1999, the AAE designated the JLENS Program an ACAT II-tailored acquisition program. The AAE retained milestone decision authority (MDA) based on funding growth and the joint program designation.

IPT Formation

The JLENS PO began preparing for the first program review, an Army Systems Acquisition Review Council (ASARC) in-process review. ASARC is the decision review body for the acquisition of major systems and Army designated acquisition programs. It is a structured forum where issues requiring top-level consideration are presented to senior members of the Army leadership. ASARC is chaired by the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) and co-chaired by the Army Vice Chief of Staff. It was critical to establish an integrated product team (IPT) structure to prepare for the ASARC in-process review. (The guidelines for preparation are established in DA Pamphlet 70-3, Appendix 24, *Guide for ASARC Acquisition Program Reviews*.)

Because of the program's joint Service complexity, the ASARC IPT was established early to help the project office organize IPT membership. A kickoff meeting was held and members briefed on the program status and membership of other similar IPTs. The PM, JLENS ensured that other Services and agencies such as the Joint Theater Air and Missile Defense Organization, the Ballistic Missile Defense Organization, the Navy, and the Air Force were involved in the IPT process. The membership of the IPT was based on the program's structure. Four working integrated product teams (WIPTs) were established and initial meetings were scheduled prior to the integrating integrated product team (IIPT) and overarching integrated product team (OIPT) meetings. The chart on Page 44 depicts the JLENS IPT structure.

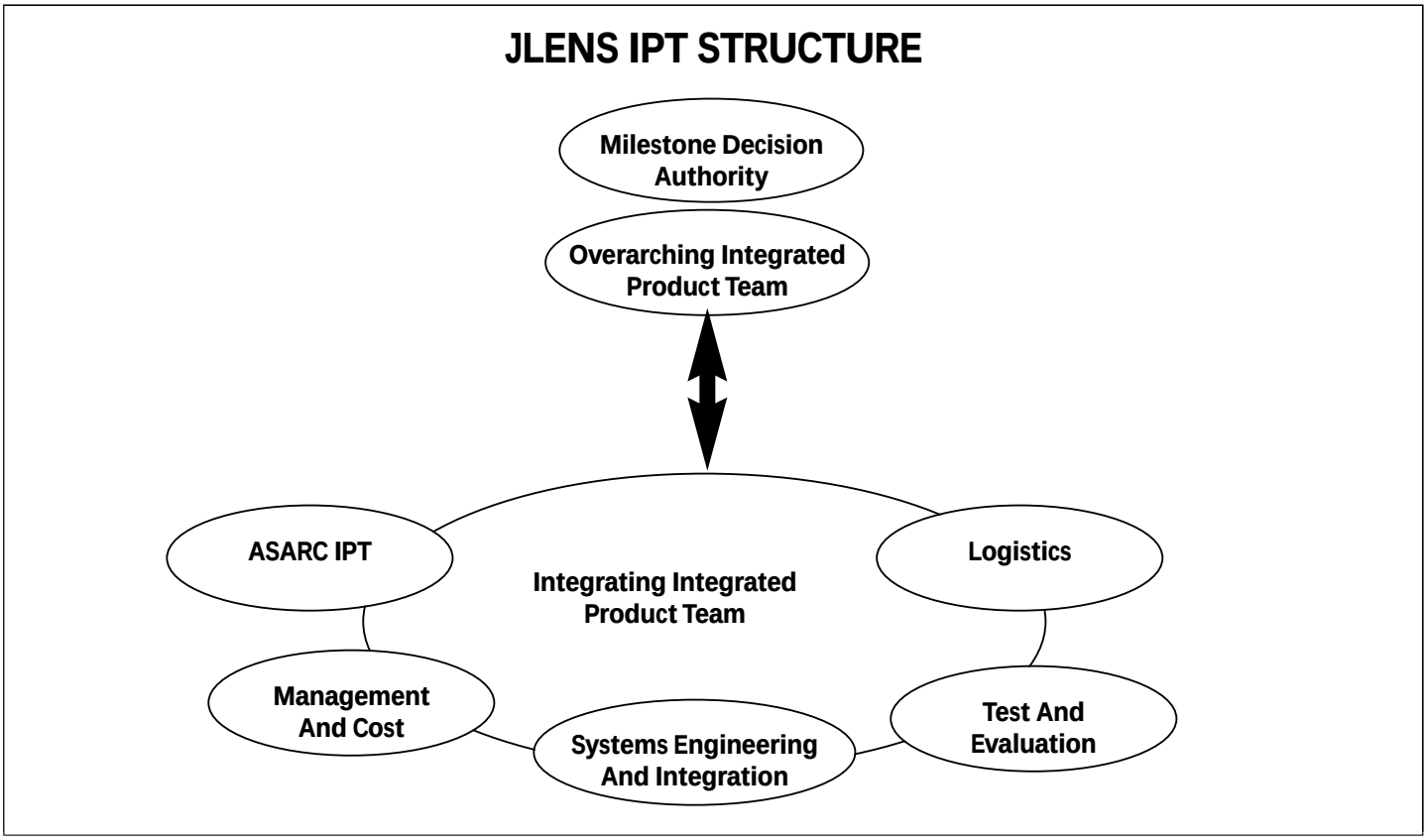
IIPT

The IIPT oversees the WIPTs and provides recommendations on ASARC review readiness to the OIPT. In addition, the IIPT provides support in the development of strategies for acquisition processes and contracts, cost estimates, evaluation of alternatives, logistics management, and cost performance trade-offs.

The JLENS PO held several preliminary IIPT reviews prior to its formal ASARC in-process review. These preliminary reviews were for the purpose of preparing a program overview brief, conducting a detailed analysis of the charters, and discussing documentation and actions required to support a successful ASARC review.

OIPT

The OIPT serves as the MDA assessment and advisory committee on core acquisition management issues for major program and milestone decision reviews. The team resolves as many issues and concerns as possible prior to an ASARC review, identifies the appropriate milestone for the program



initiation, and makes recommendations to the MDA on the status of the anticipated review.

Prior to the ASARC in-process review, the JLENS PO held several OIPT meetings to provide an overview briefing of the program, orient members on the program acquisition strategy and operational requirements, explain the IPT structure, and discuss critical issues and actions necessary for a successful review. The JLENS OIPT was cochaired by the Program Executive Office for Air and Missile Defense and the Assistant Deputy for Systems Management from the Office of the ASAALT.

ASARC Preparation

In preparation for the ASARC in-process review, pre-briefs were scheduled at the Pentagon for all ASARC members and other key players. Central to a successful ASARC is the use of innovative techniques in coordinating program strategies to Department of the Army and DOD stakeholders. The PM, JLENS organized and led the program's IPT. The PM scheduled two group ASARC pre-briefs to flag-level/Senior Executive Service personnel within DOD, the Army, the Navy, and the Air Force. Personnel unable to attend these pre-briefs were briefed on a one-on-one basis because of the number of Services and agencies and senior decisionmakers involved with the program. This IPT process was critical in ensuring that the ASARC co-chairs were able to agree on a quick resolution on JLENS issues, resulting in a successful ASARC in-process review in October 2000.

Summary

The key to any successful effort is to ensure adequate planning is performed early in the process. The IPT concept requires continuous dialog among all team members and other key players in the program. As such, the success of the JLENS Program can be attributed to the establishment of an IPT structure complementary to the program. The close coordination among all those involved in the IPT process, from the working levels to the oversight levels, ensured the ASARC success.

Also key to the successful ASARC in-process review were the pre-briefs given to ASARC members and other key players within DOD, the Army, the Navy, and the Air Force. As a result, the ASARC in-process review went smoothly, and ASARC members unanimously agreed to decisions. Subsequently, the AAE approved an Acquisition Decision Memorandum to the PM, JLENS.

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MICHAEL J. GRANNAN is the DPM, JLENS. He has a B.S. degree in engineering from Ohio State University, Columbus, OH, and a master's degree in management from Central Michigan University, Mount Pleasant, MI.

ROBERT E. DAVIS is a Program Analyst assigned as the JLENS ASARC Coordinator. He has a B.S. degree in management and a certificate in accounting from Athens State University, AL, and an M.S. in management from Florida Institute of Technology, Redstone Arsenal, AL.

Exploring Scientific Frontiers . . .

INSTITUTE FOR ADVANCED TECHNOLOGY (IAT)

LTC(P) Kurt M. Heine

Introduction

In 1996, the movie *Eraser* showed Arnold Schwarzenegger using X-ray vision rail guns to help him destroy the "bad guys" as they attempt to kill a federal witness (Vanessa Williams). You told yourself it was just Hollywood, and those kinds of things don't really exist. Today, do you ever wonder if anyone pays attention to those seemingly impossible ideas? Could the Army ever benefit from them? The answer is yes to both questions.

Meet Dr. Harry Fair and his team at The Institute for Advanced Technology (IAT) at the University of Texas (UT) at Austin. IAT is the Army's University Affiliated Research Center (UARC) and, as such, serves the Army in its quest to advance into the 21st century and beyond. IAT's primary mission is the development of hypervelocity impact physics and electromagnetic (EM) technology for the Army. This is IAT's story.

Background

In March 1983, President Reagan made his famous speech advocating space-based missile defense (nicknamed "Star Wars"), which also became the genesis of the Strategic Defense Initiative (SDI). After his speech, there was tremendous focus on trying to solve the problems space-based weapons might encounter. Money and presidential priority gave a tremendous boost to the study of hypervelocity impact physics and EM technology for the next decade.

Hypervelocity impact is a term that encompasses events in which impact-generated pressures are well in excess of the projectile and target strength. In hypervelocities (normally above 3 kilometers per second), shock dynamics become important to the point that they can dominate the overall response of projectile and target. In layman's terms, the whole "ball game" of physics changes at hypervelocities.

In 1986, the Secretary of Defense characterized the challenge of Warsaw Pact armor as one approaching a matter of "national urgency." He directed the Defense Advanced Research Projects Agency (DARPA) to establish the Joint Armor/Anti-Armor Program to redress the technology imbalance between the East and West.

UT-Austin has long been associated with Defense-related basic and applied research projects. To compliment Reagan's SDI initiative in 1983, UT constructed a facility at the Center for Electromechanics (CEM) to support both the new SDI and DARPA initiatives. In the late 1980s, Star Wars began to lose U.S. and world public support. By 1986, Defense officials thought research efforts concentrating on ground-based weapons were more prudent than putting weapons in space.

Concurrently, the UT Chancellor requested Fair—who was employed at DARPA—to come to UT to assist in establishing a Federally Funded Research and Development Center (FFRDC) for the Army. While at DARPA, Fair had helped establish kinetic energy efforts for the SDI Office and had led armor and anti-armor efforts.

IAT's History

IAT was established at UT in 1990 as the U.S. Army's only FFRDC to study hypervelocity physics and electromagnetics. It was a giant step for both UT and the Army, and marked the beginning of significant accomplishments in the enabling technologies for development of practical EM launchers.

In 1995, IAT transitioned from an FFRDC into one of the Army's UARCs. This allowed IAT increased flexibility to quickly react to key weapon systems issues and provide scientific underpinnings for a new family of electric weapon systems. IAT and CEM continue their teamwork today and provide added synergy to address the Army's future scientific challenges.

Partnering Efforts

To perform this important work, IAT has teamed with some of the best scientists in the world whose efforts have primarily been focused on long-

term basic and applied research and development (R&D). Key focus areas are hypervelocity physics, directed energy, electrodynamics, electromagnetic and electrothermochemical launchers, hypersonic aeroballistics, technology integration, and the application of advanced systems information technology into military systems.

IAT also partners with UT not only in science endeavors, but also in educational ones. UT opens its laboratories to West Point cadets, researchers, university faculty, and selected research fellows. IAT also sponsors graduate fellows from the Army War College during their 1-year-long program, as well as national and international symposia related to IAT's interests.

For the majority of its R&D efforts, IAT is partnered with the Army Research Laboratory (ARL) in Adelphi, MD. With work centered on basic (6.1) and applied (6.2) research, both ARL and IAT have joined in a number of efforts involving the study of advanced materials, electric weapons concepts, the effects of hypervelocity rounds on armor, and the propulsion and flight dynamics of those rounds. Breakthroughs in pulsed power supply and energy management have enabled IAT to help the Army develop a new paradigm for advanced combat vehicle design.

For example, in recent years, the greatest single problem of designing EM guns for vehicles has been constructing a power supply small enough to fit into the cube space within an armored vehicle. In view of the prohibitive capacitor-based systems, inertial storage of energy in high-speed rotors is integrated with electric-pulse generators. These "pulsed-power" generators have the added capability of providing a relatively low signature for the EM gun, and they can be used to power electric weapons, electric drive motors, electric suspension systems, and electric armor, thus reducing the number and weight of other traditional components.

To help ARL determine which technologies provide the payoff needed and to quantify the trade-offs associated with different weapon systems approaches, focused efforts were required to develop both an understanding of current state-of-the-art technologies and potential attributes of emerging concepts related to Army-specific applications and multiuse functions. IAT developed a nationally recognized capability for modeling and simulation (M&S) of combat vehicles under realistic, dynamic mission conditions referred to as POWERSIM.

Beyond POWERSIM, IAT developed a system-level modeling code—named the Electromagnetic Launch Package (EMLP)—for designing and sizing launcher and kinetic energy projectiles for EM weapons. Another model called TRAJ is an external ballistics tool that, when joined with EMLP, allows for end-to-end EM gun-to-target-level simulation and analysis.

In addition to pure M&S, IAT has been involved in the development and testing of actual hybrid electric vehicles for use in building and verifying their M&S tools. Further, combinations of these simulations and vehicles are also able to provide data to organizations such as the Tank-automotive and Armaments Command (TACOM) for use in fuel-consumption studies. M&S has become an important aspect of designing Future Combat Systems (FCS) because it enables a wide range of FCS vehicle types to be evaluated at a fraction of the cost of designing and building them. In addition to helping the Army determine the characteristics of its FCS, IAT has provided valuable research to other Army partners and in other areas of interest.

Other Support Efforts

Another important endeavor is a University XXI Consortium (comprised of Texas A&M and the IAT at UT-Austin) that has significant computer science and M&S expertise to support the Army's digitization efforts. The consortium has focused on brigade commanders and staffs. By conducting a front-end analysis of battle staff tasks and correlating this to the digitized Mission Essential Task List, IAT has aided in modeling battalion staff activities that use simulation rather than exercise controllers to support brigade-level training events. Examples of other continuing efforts include researching sensible agents for potential application as low-overhead digital battlefield staff drivers, and the development of a training and operational data synchronizer for populating databases in fielded systems and to support training and testing simulation systems.

IAT has also embarked on an effort to expand, enhance, and improve the ability of DOD and other federal agencies to address chemical and biological terrorism and to protect U.S. and allied forces from chemical or biological threats. IAT has assembled an integrated team of experts from leading universities, medical centers, the military, the Departments of Justice and Health, and other organizations to promote the rapid transition of developed technology, training, and strategies into the hands of those who will be directly affected during an emergency. IAT's goal is to help the appropriate federal, state, and county agencies develop advanced sensors, appropriate communications nodes, and physical and medical countermeasures to effectively deal with and respond to these potential threats.

Conclusion

Where will the IAT team go from here? Since its inception, IAT has provided the Army with the ability to surpass numerous barriers in the study of hypervelocity impact physics and EM technology. Other applications of this science extend to the destruction of oncoming near-Earth asteroids; protection of space-based satellites, space stations, and other objects against hypervelocity "space junk" and debris; and launchers that will deliver payloads into space without using traditional rocket fuels as the means of propulsion.

The IAT team continues to play a vital role in helping the Army explore the frontiers of science, maintain its pace with technology, and exploit advances in science and technology for its future weapons systems.

LTC(P) KURT M. HEINE is a U.S. Army War College Fellow at the Center for Strategic Analysis, UT-Austin. He has a B.S. in geology from the University of Mississippi, an M.S. in systems management from the University of Denver, and is a graduate of the Defense Systems Management College.

FROM THE DIRECTOR ACQUISITION CAREER MANAGEMENT OFFICE

I would like to introduce a new feature in *Army AL&T* magazine. "Ask The ACMO" will include responses to some of the most frequently asked questions submitted to the Acquisition Career Management Office (ACMO). As I wrote in my last letter, your goals drive what we, the ACMO, need to accomplish in terms of the "what, where, when, and how" of professional development. We welcome your questions and want to provide the answers you need.

In this issue's Ask The ACMO section, a question is raised regarding the difference between Corps Eligible status and Army Acquisition Corps (AAC) membership. Relative to AAC membership, since we opened membership to those reaching Level III certification, we have received a wonderful response, and we are processing the requests for membership as soon as possible. Letters of acceptance are being routinely signed, but the actual membership certificates will be delayed until the new Army Acquisition Executive is named and confirmed.

Now in its fourth year, the Competitive Development Group (CDG) Program continues to thrive. I am pleased to congratulate CDG year group (YG) 98 graduates and to welcome new members of the CDG Program. The YG02 CDG orientation was held Aug. 21-22, 2001, in the National Capital Region in Springfield, VA. Be sure to read the article on the YG02 CDG orientation in the January-February 2002 issue of *Army AL&T* magazine. That issue will also feature an article on the annual Army Acquisition Workshop held August 6-9, 2001, in Atlanta, GA.

I also suggest that you read the article on the AAC Training With Industry (TWI) Orientation Workshop held July 2001 in Springfield, VA, in the November-December issue of *Army AL&T* magazine.

The Army's TWI Program was initiated in response to the Army's critical need for officers with state-of-the-art skills in industrial practices and procedures, skills not readily attained through formal education programs. We are currently expanding the program to include civilians. TWI now affords both AAC officers and civilians training opportunities in an industry environment where commercial best practices are closely observed. Industry hosts can observe and interact with AAC members in a commercial environment. All program participants act as ambassadors, communicating the Army vision and values to those in the business community.

Please pay close attention to the recently published acquisition education, training and experience and Army Tuition Assistance Program training policies. We've made changes to strengthen program execution but not decrease training opportunities. Requirements continue to grow while training dollars remain tight. Thus, we must ensure efficient administration of training opportunities.

On another note, I am pleased to announce that ACMO Deputy Director Craig Spisak is attending the Industrial College of the Armed Forces. I regret that he will be gone for the next 10 months, but the Army will gain a more valuable asset upon his return.

Finally, I would like to invite you to stop by the AAC display at the annual Association of the United States Army (AUSA) meeting, Oct. 15-17 at the Marriott Wardman Park Hotel in Washington, DC. You will also have an opportunity to visit our acquisition career management suite located in the Johnson Room at the hotel.

The ACMO continues to focus on providing the best support to ensure a well-trained, educated, and revitalized acquisition and technology workforce. We've got you covered!

COL Frank C. Davis III
Director
Acquisition Career
Management Office

ASK THE ACMO . . .

In an effort to better serve Army Acquisition and Technology Workforce members, *Army AL&T* magazine will periodically publish responses to your most frequently asked questions beginning with this issue of the magazine. These responses, which will be provided by the Director of the Acquisition Career Management Office (ACMO) or by a Regional Director, will appear along with your questions under the headline "Ask The ACMO" in the Career Development Update section of the magazine. Your questions must be submitted via the Army Acquisition Corps home page at **http://dacm.rdaisa.army.mil/**. Point to **Comments/Feedback** at the top right of the page and send your submission to the ACMO Director or to one of the three listed Regional Directors. Please do not send your questions to *Army AL&T* magazine.

I am currently pursuing college courses but have not yet completed my degree requirements. How do I reflect this on my Acquisition Career Record Brief (ACRB)?

To make a change to your ACRB, you must first contact your Acquisition Career Manager. Until you complete 1 year of college, your ACRB should reflect "some college (less than 1 year)" and the university designated. Upon completion of 1 year, an entry should be made to indicate "1 year of college" and the university designated.

At 2 years, if an associate's degree is achieved, this should be entered with the date of completion. If an associate's degree is not achieved, then the phrase "2 years of college" should be entered.

If you are pursuing education beyond the bachelor's degree, your ACRB entry should be displayed as Post Bachelor's with the university identified, but no graduation year. If you are pursuing education beyond the master's degree, then it should be displayed as Post Master's with the university designated, but no graduation/completion date.

What is the difference between Army Acquisition Corps (AAC) membership and Corps Eligible (CE) status?

Primarily, there are four key differences between AAC membership and CE status:

• AAC membership requires mobility agreements, CE status does not;

• Applications for AAC membership are submitted to the U.S. Total Army Personnel Command; applications for CE status are submitted to the Acquisition Career Management Office National Capital Region;

• AAC membership is restricted to personnel GS-13 and above (or equivalent personnel demonstration broadband level); CE status is not restricted by grade; and

• AAC membership is required of critical acquisition position (CAP) incumbents; CE status is not mandatory for any Acquisition and Technology Workforce (A&TWF) position.

To fully understand the impact these differences have on the A&TWF professional, one must understand the philosophies behind the two designations and the progression from CE status to AAC member.

CE status identifies an individual as someone in an upcoming population of acquisition professionals, designates eligibility for AAC membership, provides opportunities for career enhancement in preparation for senior leadership positions, streamlines the AAC accession process, and identifies an applicant pool for specific AAC position announcements and centralized boards. Many of these opportunities are identified in the Acquisition Education, Training and Experience Catalog.

AAC membership is required of all CAP incumbents and is available to select personnel GS-13 and above (or equivalent personnel demonstration broadband level) who have obtained CE status AND who have accomplished Level III certification in an acquisition career field (ACF). Additionally, AAC members can distinguish themselves by belonging to a professional corps that recognizes their career accomplishments and potential as future acquisition leaders.

Eligibility requirements for AAC membership and CE status are identical: 4 years of acquisition experience, a baccalaureate degree, 12/24 semester credit hours in business, Level II certification, or Level II training in an ACF.

For complete guidance on AAC membership and CE status, visit our Web site at ***http://dacm.rdaisa.army.mil/*** *and click on* ***Policy/Procedures****.*

I have taken all required Defense Acquisition University (DAU) training. Why isn't my certification listed on my Acquisition Career Record Brief (ACRB)?

Completion of DAU training is only one aspect of obtaining certification. The Defense Acquisition Workforce Improvement Act requires the Secretary of Defense to establish education, training, and experience requirements for all acquisition positions based on the level of complexity of a position. Acquisition career field (ACF) position certification requirements are detailed in DoD 5000.52-M. These requirements are also specified in the DAU Catalog, which is located online at ***https://dau.fedworld.gov/dau/ondes.htm****.*

To attain certification, individuals must meet all education, training, and experience standards established for an ACF. Actual certification is accomplished when a certifying official confirms by signature that an individual meets the mandatory standards for an ACF and an acquisition career level.

Individuals should work with their Acquisition Career Manager (ACM) to ensure their education, training, and experience achievements are documented on their ACRBs or Officer Record Briefs (ORBs). The next step is to sign the updated ACRB or ORB, annotate Section X to indicate the ACF and level of certification requested, obtain your supervisor's initials, and provide the ACRB or ORB, along with your work experience (resume or DA Form 2302), to your ACM. ACMs may require more data to verify experience. ACMs will review and forward this data to a certifying official. Once a certifying official has approved the certification, the ACM will disseminate the certification documents and provide the requesting individual the original, signed ACRB or ORB. The ACRB or ORB signed by the individual and the certifying official is the official record of certification—not the certificate.

For detailed information on Army acquisition certification policy and procedures, go to ***http://dacm.rdaisa.army.mil*** *(point to* ***Policy/Procedures****, and click on* ***Certification****).*

29 Graduate From MAM Course

In June 2001, 29 students graduated from the Materiel Acquisition Management (MAM) Course, Class 01-003, at the Army Logistics Management College, Fort Lee, VA. The graduates included 25 Army officers, 1 Navy SEAL, 1 allied officer from Greece, and 2 Army civilians. The Distinguished Graduate Award was presented to MAJ Hely Dave Wood, an Army aviator assigned as a Functional Area 50 Manager, 2nd Infantry Division, Korea.

The 7-week MAM Course provides a broad perspective of the materiel acquisition process and includes a discussion of national policies and objectives that shape it. Areas of coverage include combat developments, research and development, test and evaluation, budgeting and cost estimating, acquisition logistics, software acquisition, production management, risk assessment, and contracting. Emphasis is on developing professionals who will manage the acquisition process.

Research and development, program management, materiel testing, contracting, requirements generation, and materiel fielding are typical acquisition work assignment areas offered to these graduates. The names of the graduates follow.

Burris, CPT Joshua R.
Carter, CPT Don C.
Conroy, CPT Michael P.
Courtney, MAJ John M.
Cummings, CPT Kenneth F.
Hackett, CPT Christine A.
Heck, CPT Joseph D.
Hinkle, Robert C. (CIV)
Hoffman, MAJ Curtis W.
Hribar, CPT Robert S.
Kimball, CPT Charles F.
Kreun, CPT David R.
Lafontaine, CPT David R.
Meehan, CPT Scott A.
Miller, MAJ Michael
Nerdig, CPT Daniel A.
Newell, MAJ Michael W.
Ogburn, CPT John D.
Paul, MAJ Gregory J.
Paulus, CPT Mark L.
Poole, MAJ Robert M.
Roane, Constance T. (CIV)
Smith, CPT Robert S.
Soule', BMCS David C.
Stawowczyk, MAJ Edward J.
Vergidis, CPT George E. (Greece)
Welsh, MAJ Robert H.
Williams, CPT Kevin D.
Wood, MAJ Hely Dave

Memo Provides Guidance On A&TWF Assimilation

On July 11, 2001, the Deputy Director for Acquisition Career Management signed a memorandum providing guidance on the Army's implementation of the refined Packard Commission acquisition and technology workforce (A&TWF) definition. Guidance in this memorandum provides commands with a step-by-step process for identifying civilian acquisition positions and for assimilating those in newly identified civilian acquisition positions into the A&TWF. Per Office of the Secretary of Defense guidance, assimilation is defined as entry of a newly identified workforce member's acquisition data in the Defense Civilian Personnel Data System, and must be accomplished by Oct. 31, 2001.

It is important to note that command points of contact recently completed their position review process and entered the updated information on spreadsheets. The Acquisition Career Management Office (ACMO) then reviewed and sorted the information by regional Civilian Personnel Operations Center (CPOC) and submitted it to the Office of the Assistant Secretary of the Army for Manpower and Reserve Affairs for dissemination to the CPOCs.

The refined Packard definition for identifying members of the DOD acquisition workforce was approved by the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) on May 13, 1999. Subsequently, on April 6, 2001, the USD(AT&L) issued a memorandum containing instructions for assimilating newly identified personnel into the Defense Civilian Personnel Data System. The refined Packard definition will now be used in conjunction with the DoD 5000.52-M position category descriptions to identify and categorize new A&TWF personnel and to assimilate incumbents of "key" positions defined by the Packard definition into the workforce. These do not include clerical and administrative support personnel.

The refined Packard definition uses three categories of occupations and two groupings of organizations to identify the workforce. Category I includes occupations counted throughout all DOD organizations. These are occupations such as contracting or program management. Category II is composed of specific occupational series in specific organizations and is divided into two subcategories. Category IIA consists of acquisition-related organizations such as the Army Materiel Command and the Army Acquisition Executive Support Agency. Category IIB includes science and technology occupations in organizations such as the Army Research Laboratory. Category III is used to add any key acquisition and technology positions not listed above or to delete any Category II positions that are not applicable.

Under implementation guidance, commands can eliminate individual noncritical positions that are not associated with one of the existing category descriptions or positions that require less than 50 percent acquisition duties; however, only the Director for Acquisition Career Management may eliminate a critical acquisition position that is identified under the refined Packard definition. The Army will closely monitor additions that fall outside the definition and may disapprove those that are not considered to be key acquisition positions. It should be noted that there are also acquisition positions that exist outside the definition that may be included. For example, there are a number of previously identified Defense Acquisition Workforce Improvement Act positions not included in the Packard definition.

Under the new implementation guidance, all acquisition positions will be coded on the Table of Distribution and Allowances, thus allowing the ACMO to identify both "spaces" and "faces" in the workforce. While both military and civilian acquisition positions will be coded, the assimilation guidance applies only to civilians. There is currently no impact on the policy for identifying military acquisition positions and accessing military personnel into the A&TWF.

When fully implemented, the refined Packard definition will provide an effective, independently verifiable, uniform system for identifying acquisition positions. The definition will also assist in managing and training the key A&TWF and ensure that all professional development programs are available to each member of the workforce.

Webster University Names Top Graduate School Student

On May 31, 2001, MAJ Charles Wells, an Army Acquisition Corps (AAC) officer participating in the Acquisition Graduate Degree Program (AGDP) as a student in the resident U.S. Army Command and General Staff Officer Course (CGSOC), received the Webster University Outstanding Graduate School Student Award for academic year 2000-2001. Webster University is the AGDP provider at Fort Leavenworth, KS. Wells was nominated and selected by Webster University faculty from more than 170 students participating in its graduate programs at its Fort Leavenworth campus.

The award ceremony was held in conjunction with the AGDP commencement at Fort Leavenworth, where Wells and 17 other AAC officers received acquisition-related M.A. degrees from Webster University. Officers who received M.A. degrees in procurement and acquisition management were MAJ Wayne Epps, MAJ Jeffrey Hager, MAJ Tonie Jackson,

MAJ Lewis Johnson, MAJ John Jones, MAJ Yewston Myers, MAJ John O'Regan, MAJ Matthew Schnaidt, MAJ Kevin Stoddard, MAJ Edward Swanson, and MAJ Reginald Terry. In addition, Wells and the following officers received M.A. degrees in computer resources and information management: MAJ Albert Grubbs, MAJ Ruthann Haider, MAJ Kevin Hillman, MAJ Walter Jones, MAJ James Mitchell, and MAJ Duane Riddle. Randy Wright, Webster University Associate Vice President for Academic Affairs and Director of Military Programs, gave the commencement address.

The AGDP is a fully funded program that permits selected Acquisition Corps members to complete an acquisition-related advanced degree concurrently with their attendance in the resident CGSOC. Acquisition Corps officers selected for the resident CGSOC who are interested in the AGDP should contact the Chief of the Acquisition Education and Training Program, U.S. Army Command and General Staff College, Fort Leavenworth at (913) 684-5330/5329 or DSN 552-5330/5329.

PERSCOM Notes . . .

FY02 LTC/GS-14 PM/AC Slate

The U.S. Total Army Personnel Command recently released the FY02 lieutenant colonel (LTC)/GS-14 product manager (PM)/acquisition command (AC) slate. The following slate consists of 41 officers (all lieutenant colonels) and 6 civilians.

NAME	SLATE	COMMAND
Bezwada, Haribabu (CIV)	INFO TECH SERVICES	AMC
Bither, David E.	TAC OPS CTR C2 (C3S)	AAESA
Blyth, Jeffrey B.	COMM MGT SYS (C3S)	AAESA
Borgardts, Allen L.	GND CBT TACT TRAINING	AMC
Carpenter, Robert C.	SMALL ARMS	AMC
Crabb, Jeffrey A.	SCOUT/ATTACK HELICOPTER	AMC
Dukes, Beatrice S.	DCMC ST LOUIS	DCMA
Earl, Arthur J.	DEF SAT COMM SYS INSTAL	AMC
Edwards, Keith R.	DCMC BOEING MESA, AZ	DCMA
Ellis, Carl M.	DCMC INDIANAPOLIS	DCMA
Ellis, William (CIV)	RADIO FREQ CM (AVN)	AAESA
Fletcher, James P.	NON-STOCK CHEM DISP (CHEM D)	AAESA
Giunta, Joseph A. Jr.	AIR & COMMAND TACT TRAINING	AMC
Green, William L. III	18TH ABN CONTRACTING CMD	FORSCOM
Greene, Bradley D.	TACT APPLICATIONS	BMDO
Healy, Edward A. Jr.	TECH APPLICATIONS	SOCOM
Hines, Claude Jr. (MSC)	MED C4 (STAMIS)	AAESA
Ikirt, Steven C.	DCMC GENERAL DYN LIMA, OH	DCMA
Jenkins, Kennedy E.	DCMC KUWAIT	DCMA
Jennings, Kevin N.	PALADIN/FA AMMO SPT VEH	AMC
Kihara, Steven W.	AV TECH TEST CENTER	ATEC
Klumpp, Joseph J.	ARMY HUMAN RES SYS (STAMIS)	AAESA
Lamb, William L.	NMD IFICS/COMMO (NMD)	AAESA
Lepine, Paul R.	TENCAP-DEVELOPMENT	SMDC
Madden, Michael (CIV)	TESAR (IEWS)	AAESA
Malatesta, Mark L.	BIO PT DETECTION SYS (BIO D)	AAESA
Manning, Barry G.	PAC III MSL (AMD)	AAESA
McVeigh, Bryan J.	IAV CBT SUPPORT (GCSS)	AAESA
Moore, David M.	MANEUVER CONTROL SYS (C3S)	AAESA
Nicolella, Anthony J.	NTC ACQ CENTER	FORSCOM
Oday, Sean P.	DCMC READING PA	DCMA
Oelberg, Gregory P.	AIR TRAFFIC CONTROL	AMC
Oxford, John R. Jr.	MLRS PGM (TAC MSL)	AAESA
Pietruszka, Raymond (CIV)	INFRARED CM (AVN)	AAESA
Rice, David J.	TMAS (GCSS)	AAESA
Robinson, Keith W.	UH-60M	AMC

NAME	SLATE	COMMAND
Roitz, Frederick P.	TRADOC ACQ CENTER	TRADOC
Shalosky, Christopher	FUTURE CBT SYS (DARPA)	AAESA
Shifrin, Scott E.	STINGER BLK I (MSL PLTF)	AMC
Stockel, Eugene F.	PHYSICAL SECURITY EQUIP	AMC
Tubell, Wallace J. Jr.	TO BE DETERMINED	
Vanrassen, Michael J.	AMDCCS (C3S)	AAESA
Verville, Michael (CIV)	SARSS (ALIS) (STAMIS)	AAESA
Vollmecke, Kirk F.	DCMC BOEING PHILADELPHIA	DCMA
Walsh, Damon T.	PFLA-MD	DCMA
White, William (CIV)	HERCULES	AMC
Winters, Brian C.	WATERCRAFT	AMC

FY02 COL/GS-15 PM/AC Board Results

The U.S. Total Army Personnel Command's Acquisition Management Branch recently completed an analysis of the FY02 Colonel (COL)/GS-15 Project Manager (PM) and Acquisition Command (AC) Board results for Army Acquisition Corps (AAC) officers and civilians. The following paragraphs summarize the results and indicate possible trends.

Overall Results

Board members reviewed the files of 61 AAC members (37 Active duty officers and 24 civilians). From this population, the board selected 32 principals for PM and AC assignments. The selectees included 29 officers and 3 civilians. Results by year group (YG) for Army officers are as follows:

	YG77	YG78	YG79	YG80	YG81
Competed	2	6	27	1	1
Principals	0	5	22	1	1
Alternates	2	1	5	0	0

Who Was Selected?

Twenty-four of the 29 officers (83 percent) selected as principals were selected on their first time considered. Two of the three AAC civilians (67 percent) selected as principals were selected the first time considered. Twenty-six (90 percent) of the Army officers selected are Senior Service College (SSC) graduates, and two (67 percent) of the civilian selectees are also SSC graduates. Twenty-seven (93 percent) of the officers selected have served as lieutenant colonel (LTC) PMs or in AC assignments. One of the civilian selectees previously served as both a GS-14 and GS-15 PM. The other two civilians had experience as deputy PMs at the GS-15 level.

General Observations

Officers are selected for COL PM/AC the first or second time considered after completion of SSC and successful LTC PM/AC assignments. With few exceptions, a successful command was one where at least 50 percent of an officer's command Officer Evaluation Reports were rated above center of mass (ACOM). Previous program office experience at the critical acquisition position level continues to be the most important combination for civilians to be competitive for PM/AC. However, there is no evidence that consecutive or repetitive program office tours better qualify an individual for PM selection. On the contrary, a very successful product management tour, coupled with successful performance in a major headquarters staff position, is a common formula for PM selection. Contracting officers require extensive contracting training and experience combined with a very successful contracting command assignment. Again, success in a major headquarters staff position enhances overall file strength toward selection.

Summary

Because of the competitiveness for command, AAC members must pay close attention to the components of their board file to ensure accurate information is provided to board members so they can make an informed decision. The trend continues for command boards to select acquisition professionals with a diverse acquisition background coupled with a successful LTC/GS-14 PM/AC assignment.

FY02 COL/GS-15 PM/AC Selectees

All selectees are LTC(P) unless otherwise indicated.

Bianca, Damian P.
Bianco, Stephen G.
Bowman, Michael
Buck, Stephen D.
Burke, John D.
Crosby, William T.
Defatta, Richard P.
Dietrick, Kevin M.
Ernst, Adolph H. III
Fox, Steven G.
Gavora, William M.
Grotke, Mark L.
Heine, Kurt M.
Hodge, Yolanda (CIV)
Hrdy, Russell J.
Janker, Peter S.
Johnson, Michael E. (COL)
Kallam, Charles T.
Martin, Edwin H.
Maxwell, Jody A. (COL)
McCoy, Curtis L.
Mills, Ainsworth B.
Nenninger, Gary S. (CIV)
Noonan, Kevin S.
Pallotta, Ralph G.
Pecoraro, Joseph E.
Price, Nancy L.
Rasmussen, Valerie A.
Schmidt, Rodney H.
Sledge, Nathaniel H. Jr.
Smith, Michael
Sutton, James C. (CIV)

FY01 LTC Promotion Board Results

The FY01 Lieutenant Colonel (LTC) Promotion Board results were released in June 2001. The selection rate for Army Acquisition Corps (AAC) officers in the primary zone was 74.4 percent, while the selection rate for the Army competitive category was 75.7 percent.

Although the primary zone selection percentage was lower than the Army average, this year's primary zone selection rate of 74.4 percent compares very favorably with last year's rate of 64.1 percent.

Overall AAC Results

The FY01 LTC Promotion Board reviewed the files of 133 AAC officers in the primary zone. The selection board was required to select a minimum of 88 fully qualified AAC officers for promotion. However, the overall file quality of AAC officers resulted in the board selecting 99 officers. Ten AAC officers (6.6 percent) were selected from above the zone, and five officers (4.6 percent) were selected from below the zone.

Promotion Trends

A review of the files of those officers selected for promotion by the board revealed several trends leading to successful promotion. An outline of these trends follows.

Command And Staff College (CSC)

Sixty-three of 99 (63.6 percent) AAC officers selected in the primary zone attended the resident CSC. Thirty-six of 99 (36.4 percent) AAC officers selected in the primary zone completed CSC through nonresident studies. Ten officers (9.9 percent) in the primary zone did not complete CSC (either resident or nonresident), and none of these officers were selected for promotion.

Command

Company command evaluation reports appeared to be extremely important to the board. The majority of AAC officers selected for promotion received at least one above-center-of-mass (ACOM) Officer Evaluation Report (OER) as company commanders. These reports generally had either clear ACOM senior rater profiles and/or strong, exclusive senior rater comments on potential. In general, AAC officers with more than one COM command OER were not favorably considered.

Consistent COM(+) Performance/Job Progression

The last two important trends are consistent COM(+) performance throughout an officer's career and job progression. AAC officers selected for promotion generally had consistent COM(+)/ACOM OERs and demonstrated increased responsibility from one assignment to the next. OERs on selected officers generally showed increasing levels of responsibility from one assignment to the next, as well as acquisition diversity in assignments.

The New OER (DA Form 67-9)

Analysis clearly showed that the board placed significant emphasis on the new OER. Every officer considered in the primary zone had at least one new OER. Nineteen selectees had four or more DA Form 67-9 reports. Seventy-three percent of those officers selected had at least one COM DA Form 67-9 report. This reinforces the belief that a COM report is not a "career ender." However, there is a difference between a single COM report and a COM file. Those officers considered for promotion who had only COM DA Form 67-9 reports were not selected.

The DA Form 67-9 is still relatively new—not yet 5 years old. As such, it is still too early to establish long-term trends that are applicable to all future promotion boards.

Bottom Line

The board based its decision on the "whole-person" concept that includes performance, qualifications (positions held, schools attended, etc.), and Army needs (functional area requirements). Further, the board demonstrated confidence in the new OER by carefully considering both the block-check and senior rater comments.

A list of 112 AAC officers selected for promotion to LTC is shown below. An asterisk indicates below-the-zone selections. The names of two officers were not available at the time this magazine went to press. Congratulations to those selected!

CAREER DEVELOPMENT UPDATE

Akins, Elton D.
Anderson, Zelma A.
Aragon, Arthur J.
Arn, Mark R.
Bailey, Calvin D.
Benda, Gregory S.
Berlin, Jacob L.
Blackwell, Bobby F.
Bonk, Steven S.
Boyd, Cris J.
Butler, Matthew C.
Campbell, Robert K.
Campbell, Scott A.
Carson, Craig H.
Castrinos, Nicholas L.
Cavalier, Michael P.
Chandler, Michael R.
Chapman, James J.
Childress, James S.
Clarke, Matthew T.
Clemons, Daniel C.
*Colvin, Darryl J.
Conklin, Daryl L.
Contreras, Andres
Cross, Maureen W.
Darrow, Keith R.
Daugherty, Anne R.
David, Jackie W.
Davis, Dawne M.
Decato, Steven W.
Dedecker, Craig A.
Dietrich, Shane
Drake, Steven G.
Ellis, John A.
Fields, Gregory M.
Flynn, Karl S.
*Gabbert, Jeffrey A.
Gilmartin, Robert F.
Grebe, Joseph A.
Guerra, Nicholas C.
Haider, Michael K.
Hall, Randy R.
Hamilton, Regina J.
Harris, Bobby
Harvey, Christopher J.
Herbert, Linda R.
Hinds, Russell A.
Horrocks, Brent J.
Holzman, Simon L.
Jacobsen, Scott A.
Jacoby, Grant A.
Justis, Daniel N.
Kirkpatrick, Robert E.
Kopra, Timothy L.
Lee, Stephen H.
Lindsay, Michael A.
Long, John E.
Lotwin, Andrew M.
Lunn, Robert H.
Mabry, Mark J.
Mansir, Martin J.
McKsymick, Eric M.
Meister, David P.
Merritt, Layne B.
Mockensturm, Jeffrey J.
Morton, Dwayne A.
Mullis, William S.
Munoz, Daniel M.
Myers, James M.
Nieto, Anthony J.
Noble, Earl D.
Norris, James W.
O'Donell, Warren N.
Oliver, Christopher M.
Olson, Thomas M.
Openshaw, Shane T.
Ostrowski, Paul A.
Packard, Charles J.
Patten, Jeffery C.
Pelczynski, Anthony S.
Peterson, Kevin B.
Poe, Matthew D.
*Potts, Anthony W.
Ramsay, Thomas A.
*Rand, Jaimy S.
Rhodes, William B.
Robinson, Larnce L.
Robinson, Willard L.
Rombough, Douglas H.
Rosso, Daniel C.
Ruiz, Gabriel
Samek, Rocky G.
Schumitz, Robert W.
Silas, Lawrence S.
Simpson, James E.
Smith, Christopher F.
Steves, Michael R.
Surdu, John R.
Tamilio, Douglas A.
Tarcza, Kenneth R.
*Thurgood, Leon N.
Tomlin, Karen D.
Torrent, Fernando L.
Wagner, Eric C.
Wason, John D.
Watts, Charles D.
Wendel, John M.
Wical, Steven C.
Wickham, Tracy L.
Wills, Michael D.
Wood, Bradley J.
Yurkanin, Kathryn M.

U.S. Army Experimental Test Pilot Selection Board

One of the responsibilities of the U.S. Total Army Personnel Command's (PERSCOM's) Acquisition Management Branch (AMB) is to manage the Army Aviation Experimental Test Pilot Training Program. Under this program, Active duty Army aviators attend the U.S. Naval Test Pilot School (USNTPS).

The FY01 U.S. Army Aviation Experimental Test Pilot Training Program Selection Board was held May 7-8, 2001. Congratulations to the following "best-qualified" commissioned and warrant officers who were selected to attend the USNTPS.

MAJ Paul D. Howard
CPT George D. Bailey Jr.
CPT Evan J. Brown
CPT James W. Frazier
CPT Michael G. Olmstead
CPT Robert A. Willis
CW4 John K. Heinecke
CW3 Scott E. Hutcheson
CW2 James L. Stidfole

Commissioned officers selected for the program are automatically awarded Functional Area 51 (Research, Development and Acquisition) and accessed into the Army Acquisition Corps. PERSCOM's Warrant Officer Division will continue to manage warrant officers selected for the program. Selected candidates will attend the 11-month test pilot program at the USNTPS at Patuxent River Naval Air Station, MD. Two classes are held every year; one begins in July and the other the following January. These officers may also be required to spend 12-18 months at a civilian educational institution pursuing an aeronautical engineering degree program prior to entering USNTPS.

After successfully completing the USNTPS program, graduates are assigned to a tour as experimental test pilots at the U.S. Army Aviation Technical Test Center, Fort Rucker, AL. Subsequent assignments are consistent with the officer's

designated functional area specialty and the needs of the Army. Officers in research, development and acquisition positions may serve either as experimental test pilots or in positions affecting the type, design, and configuration of Army aircraft.

This year's board was highly competitive. Those interested in applying for next year's selection board should review the information in the following paragraphs. Board members will thoroughly review all aspects of an application packet.

Academic Background

The academic program at USNTPS is extremely rigorous and challenging because it involves the simultaneous demands of academics as well as a flight syllabus and report writing. Accordingly, applicants should have a strong background in mathematics, engineering, and other related courses, with above-average grades. Applicants should ensure that these courses are annotated on official transcripts from the academic institution. If a course that may qualify for equivalency was taken, supporting documentation should be included in the packet.

At a minimum, warrant officers are required to have completed college algebra, calculus, differential equations, and physics (or mechanics). Commissioned officers are required to have a formal degree in engineering or the hard sciences. Highly desired courses include mechanics (structures, solids, statics, and dynamics), thermo and fluid dynamics, aerodynamics, stability and control theory, and advanced mathematics.

Overall, the academic performance in all areas as well as cumulative grade point average is considered when assessing an applicant's ability to complete the stringent academic requirements of the USNTPS program. For this year's board, many warrant officer applicants were missing one or more of the required courses.

Flight Hours

The minimum flight requirements are 700 hours for commissioned officers and 1,000 hours for warrant officers. DA Form 759, *Individual Flight Record and Flight Certificate-Army*, will be reviewed in detail to determine the scope of the applicant's flight experience. Emphasis is placed on operational flight hours versus time accrued in a simulator. For this year's board, most selected candidates surpassed the minimum hour requirement by approximately 33 percent. Pilot-in-command time is weighed heavily as an indicator of aviation experience and maturity. Ratings as an instructor pilot, instrument flight examiner, and maintenance test pilot are also viewed favorably. Civilian fixed-wing ratings and training are viewed favorably as well and should be documented appropriately. However, civilian hours do not count toward the minimum flight-hour requirement.

Endorsements

Letters of recommendation from an instructor pilot/standardization instructor pilot (IP/SIP) pertaining to an applicant's flying abilities and potential should be included. Applicants should ensure that IP/SIP endorsements are current. Other endorsements may be included within the packet and will be given due consideration.

Chain Of Command

Application packets require endorsement by the officer's chain of command through the O-6 level. Officers in advanced civil schooling should also use their current chain of command through the O-6 level. The endorsement can be routed through the chain of command on the application memorandum or be included under separate cover.

Time On Station

This year's selection board chose officers to attend either USNTPS Class 123 (July 2, 2001-June 3, 2002) or Class 124 (Jan. 3, 2002-Dec. 3, 2002). Officers are required to have at least 1 year time on station per the board message. This allows the officer to attend the USNTPS in one of the above classes while fulfilling a minimum of 2 years time on station within their current assignment. For next year's board, applicants must have at least 12 months time on station by April 2002. Students in advanced civil schooling are the only exception.

The next USNTPS board session is tentatively scheduled for April 2002. Interested applicants should review the MILPER message announcing the FY02 USNTPS board session (to be released around October 2001) to verify that they meet the minimum requirements. Commissioned officers interested in applying for the test pilot program should contact MAJ Jeff Bochonok at (703) 325-2800/DSN 221-2800, or e-mail **Jeffrey.Bochonok@hoffman.army.mil**. Warrant officers should contact CW3 Kim Young at (703) 325-5251/DSN 221-5251, or e-mail **kim.young@hoffman.army.mil**.

Student Writing Award Winners

The Commandant of the U.S. Army War College (AWC) recently announced the names of recipients of student writing awards for academic year 2001. Listed below are Army Acquisition Corps members who won awards, the name of the award they received, and the titles of their papers.

LTC Nathaniel H. Sledge won the third place award in the Chairman of the Joint Chiefs of Staff Strategy Essay Contest for his paper *Broken Promises: The United States, China, and Nuclear Non-Proliferation*.

LTC Kevin M. Dietrick received the AWC Foundation Award For Outstanding Strategy Research Paper for his work *Whence The Army's Role in Space*.

LTC Michael Bowman won the COL Don and Mrs. Anne Bussey Military Intelligence Writing Award for his work *Center of Gravity Analysis: Preparing for Intelligent Agents*.

ACQUISITION REFORM

Army Contracting Progress Report

The FY00 Procurement Statistical Reports and Summary of Procurement Actions have been published, and the Office of the Deputy Assistant Secretary of the Army for Procurement has completed its annual progress reports. The results are posted on the Web at **http://acqnet.saalt.army.mil/acqref/armetrc.htm.**

By looking at historical data, conducting ratio analysis, and assessing the overall trends, we can reach important conclusions about the health of the contracting mission area, in general, and the impact of Army acquisition reform, in particular. One key measurement tool that has been used since 1995 is the cost-to-purchase ratio. This ratio shows the cost of purchasing one dollar's worth of supplies or services. Over the analysis period from FY95 through FY00, the cost-to-purchase ratio decreased from 1.42 cents per dollar in FY95 to 1.12 cents per dollar in FY00, a decrease of 21 percent.

Another ratio being studied is the average annual obligation per person. Between FY95 and FY00, the average dollar obligated per person per year has risen from $3.3 million to $5.4 million, an increase of 64 percent over that period. This ratio indicates that the average Army contracting professional has become significantly more productive in terms of total output. This increase is attributed to a variety of factors including personnel reductions, process improvements, and acquisition reform initiatives.

A third ratio being examined is the average obligation per contracting action. Between FY95 and FY00, this ratio has risen from $14,400 per action to $83,165 per action—an increase of more than 578 percent. This reflects the increased use of the government purchase card for micropurchases, as well as consolidating contract requirements whenever possible.

The Army Acquisition Reform Office will continue to test these and other management metrics to determine whether or not our improvement efforts are yielding the desired outcomes.

For additional information on this article, contact Monti Jaggers at (703) 681-7571 or ***monteze.jaggers@saalt.army.mil****.*

AWARDS

PMs/ACs Of The Year Honored

The Army's Project Manager of the Year Award, Product Manager of the Year Award, and two Acquisition Commander (AC) of the Year Awards were presented in early August during a ceremony at the annual Army Acquisition Workshop in Atlanta, GA. The winners, all recognized for their outstanding achievements, are as follows:

- *Project Manager of the Year*—COL Patrick J. O'Reilly, PM, Theater High Altitude Area Defense;
- *Product Manager of the Year*—LTC Edward L. Mullin, PM, PATRIOT Advanced Capability-3;
- *Acquisition Commander of the Year* (O6 level)—COL William N. Phillips, Commander of Defense Contract Management, San Francisco, CA;
- *Acquisition Commander of the Year* (O5 level)—LTC George P. Slagle, Commander of the National Training Center, CA.

Any military or civilian PM (LTC/GS-14 and COL/GS-15) is eligible to receive the PM Award. Acquisition commanders occupying positions on the Command Designated Position List are eligible to receive the Acquisition Commander Award.

DiMarco Receives Hite Award

MAJ Andrew J. DiMarco received the LTG Ronald V. Hite Award at a ceremony held May 31, 2001, at Fort Leavenworth, KS. Established in March 1999 by LTG Paul J. Kern, Director, Army Acquisition Corps (AAC), the award recognizes the outstanding AAC student attending the resident Command and General Staff Officer Course (CGSOC). This year's award was presented by COL Frank Davis, Director, Army Acquisition Career Management Office. DiMarco received an individual plaque, a three-star AAC coin, and a congratulatory note from Kern. Additionally, DiMarco's name was placed on a plaque that is permanently displayed at the U.S. Army Command and General Staff College.

DiMarco was selected from 58 AAC students attending the 2000-2001 CGSOC. All AAC officers attending the resident CGSOC are eligible for the award. Selection is based on a student's grade point average, contribution to group work, leadership skills, written and oral communications, research ability, recommendation from the student's academic counselor or evaluator, and consensus of the acquisition faculty. Hite, for whom the award is named, is a former AAC Director who was instrumental in establishing the Acquisition Education and Training Program (AETP) at the U.S. Army Command and General Staff College.

The AETP provides instruction in a distinct Acquisition Corps area of concentration within CGSOC and a fully funded M.A. degree-producing Acquisition Graduate Degree Program offered in conjunction with the CGSOC. The AETP was described in an article in the July-August 2000 edition of *Army AL&T.*

DiMarco's next assignment is in the Office of the Project Manager for Heavy Tactical Vehicles at the U.S. Army Tank-automotive and Armaments Command, Warren, MI.

AWARDS

ARL Wins DOD Awards

The Army Research Laboratory (ARL) Intelligence and Security (I&S) Office and Mary Fisher, an ARL employee, are recent recipients of the DOD Award for Counterintelligence Best Practices. Fisher, who is ARL's Foreign Disclosure Officer, won the individual award while the I&S Office received the organizational award. Both awards were presented in recognition of achievements related to ARL's Foreign Disclosure and Visitor Program.

Fisher was specifically cited for her efforts in overseeing the development of a tracking system and database that maintains records on all ARL visitors. Both Fisher and the I&S Office were recognized for establishing more efficient procedures and policies for use in the Foreign Disclosure and Visitor Program.

Fisher credits cooperation within the I&S Office, coworker support, and cooperation of ARL scientists and engineers for making the program a success.

BOOKS

Serious Play: How the World's Best Companies Simulate to Innovate

By Michael Schrage
Harvard Business School Press, Boston, 2000

Reviewed by LTC John Lesko (U.S. Army Reserve), a Decision Coach and Group Facilitator for Anteon Corp. Lesko is a member of the Army Acquisition Corps and a frequent contributor to Army AL&T. He can be contacted at John.Lesko@saftas.com.

"*Serious Play* is about serious work: how the world's leading companies model, prototype, and simulate to innovate. Increasingly, prototypes are the key platforms and models are the core media for managing risk and creating value. They allow for cost-effective creativity, encourage profitable improvisation, and inspire organizations to collaborate in unexpected ways. *Serious Play* is a crisply written handbook for product, process, and project leaders who are determined to manage their innovation initiatives successfully."

Thus begins the first paragraph from this book's jacket cover. Although this reviewer may argue with just how "crisply" this book is written, I wholeheartedly agree with the author's premise that by studying prototyping successes we may better prepare our own organizations for needed change and innovation. Relative to the book's readability, peruse this book. Study it. Work through its abstractions and complexity. This is a dense yet insightful work that may significantly alter the way you view models and simulations in the future.

Serious Play picks up where Schrage's earlier work, *No More Teams!*, leaves off. In *No More Teams!*, Schrage examines several of the key elements of creative collaboration. Notably, he introduces the concept of *shared space* and describes the importance of prototypes in managing cross-functional creativity between partners such as Mitch Kapor and John Sachs (co-creators of Lotus 1-2-3 software) and Drs. James Watson and Francis Crick (co-discoverers of DNA's double-helix molecular structure).

In *Serious Play*, Schrage expands and refines these themes and draws upon a much wider range of success stories. Now we learn of the best business and innovative practices of companies such as Walt Disney, Boeing, Merrill Lynch, General Electric, Sony, IBM, IDEO, Microsoft, Royal Dutch Shell, DaimlerChrysler, and American Airlines.

Schrage, who is a Research Associate at the MIT Media Lab and a Columnist for *Fortune* magazine, concludes this book with a very practical *User's Guide*, which contains 10 lessons for prototyping success:

- Ask, "Who benefits?"
- Decide what the main paybacks should be and measure them. Rigorously.
- Fail early and often.
- Manage a diversified prototype portfolio.
- Commit to a migration path. Honor that commitment.
- Prototypes should encourage play.
- Create markets around the prototype.
- Encourage role-playing.
- Determine the points of diminishing return.
- Record and review relentlessly and rigorously.

Product and process development engineers will no doubt find a way to apply at least one, and perhaps several, of these lessons to their own projects or programs.

However, *Serious Play* should also appeal to a much broader audience, thus benefiting today's warfighters, analysts, logisticians, and Defense executives as they prepare for and participate in acquisition war games beside their engineering brethren. This book is written for more than just materiel developers, operations research types, and research and development officers. Schrage's work challenges all readers to think about their mental models and how to adapt these models to enrich their planning and decisionmaking.

It is time to remember the old saying, "All work and no play makes Jack a dull boy." The acquisition workforce cannot afford to develop dullards. This book belongs on the *must read* list for all acquisition professionals. Let's engage in serious play.

The Knowing-Doing Gap: How Smart Companies Turn Knowledge into Action

By Jeffrey Pfeffer and Robert I. Sutton
Harvard Business School Press, 2000

Reviewed by LTC Kenneth H. Rose (USA, Ret.), a Project Management Instructor for ESI International residing in Hampton, VA, and a former member of the Army Acquisition Corps.

Conventional wisdom has it that knowledge is the new vector of competitive advantage on the field of business endeavor. In their recent book, *The Knowing-Doing Gap: How Smart Companies Turn Knowledge into Action*, Jeffrey Pfeffer and Robert I. Sutton see things a bit differently. To them, advantage goes not to those who have the best knowledge, but to those who use knowledge best.

This is an important issue for project managers. If projects are, as David Cleland describes, "building blocks in the design and execution of organization strategies," then project managers must be vitally interested in action; that is, knowledge at work, not just knowledge in place.

Knowledge is not necessarily the unique, hard-to-copy asset that has been portrayed in recent management literature. Every year, organizations spend $60 billion on training and more than $40 billion on consulting services that deliver essentially the same knowledge to all buyers. The problem, according to Pfeffer and Sutton, is not that organizations do not have enough knowledge, it's that organizations don't do anything, or at least not enough, with the knowledge they have.

Early on, the authors emphasize the importance of learning-by-doing as a means of avoiding the knowing-doing gap. People who *learn* as they do have little problem *doing* based on what they learned because the two—learning and doing—are a connected continuum, not discrete steps. Soldiers and surgeons are cited as examples of successful do-learn-do professionals. Pfeffer and Sutton discuss five hurdles often encountered in turning knowledge into action in other organizations.

One of the main hurdles is talk substituting for action. Talking about something is not the same as doing something about it; yet briefings, discussions, and plans all seem to take the place of action in many organizations. The authors cite examples of preventive measures, chief among them the selection of leaders who have personal experience and intimate knowledge of organization work processes.

Memory can substitute for thinking. Organizations can adopt an almost mindless reliance on things past, which impedes action in the present. Any new challenge is met by the same old response out of a misplaced reverence for precedent and consistency. Pfeffer and Sutton describe three approaches for breaking this mold: build a new sub-organization unfettered by the old ways; make it difficult—sometimes by drastic means—to adhere to the old ways; and, rarely applied, build an organization in which people constantly question precedent.

Fear is a powerful emotion that can prevent people from acting on their knowledge. The authors show that fear remains a pervasive management technique. "Tough" managers get the good press, reinforcing their fear-based approach. They also drive the workforce into a cautious lethargy that limits both desire and ability to act. A key step in overcoming this situation is to treat mistakes as a source of learning and subsequently better action, not a foundation for punishment. Communication and understanding go a long way toward building an organization free of debilitating fear and distrust.

Measurements are almost objects of homage in many organizations. Badly designed or overly complex measurements are also one of the greatest barriers to putting knowledge into action. Measurement is a powerful communicator of what is important. People will stick like glue to what is measured, and do whatever is necessary to get the right numbers. If measurement is focused on the wrong things, the resulting action can be good for the measure but bad for the organization. The authors suggest focusing measurement on groups, recognizing that individual control is usually limited. They also suggest measuring processes, where action can make a difference, rather than outcomes where action is always after the fact. Overall, measurement should reinforce organization goals, not merely reflect short-term appearances.

Competition may be great in the marketplace, but it can be a killer within an organization. How can an organization compete successfully on a larger scale when its members are locked in a deadly survival-of-the-fittest conflict with each other? Competition undermines collaboration and teamwork and limits effective action for the good of the organization. Instead, people act for the good of themselves, or worse, to the detriment of others. Pfeffer and Sutton offer a number of techniques for avoiding destructive competition, including rewarding collaborative work, avoiding zero-sum individual reward systems, modeling desired behavior at top levels of management, and building an organizational culture that defines individual success partly by the success of others.

Pfeffer and Sutton apply their premise that knowing is not enough and describe eight guidelines for action, which provide a framework for closing the knowing-doing gap. And on the last page, they remind readers that *knowing* about the gap is not sufficient. They encourage readers to take action within their own organization and thereby learn more about it, which should enable further action.

The Knowing-Doing Gap is an insightful treatment of a common, often unrecognized problem. It will generate some "light bulbs" in reader's minds and probably a little defensiveness. ("Thank goodness *I* am not like that!") Regardless, it should generate action that improves an organization's ability to apply what it knows. It provides the *knowledge* for *doing* just that.

LETTERS

Dear Editor:

When I saw that **SMART** [Simulation and Modeling for Acquisition, Requirements and Training] was the theme of the May-June 2001 issue of *Army AL&T*, I couldn't wait to read through it. I've worked for 33 years for an Army organization that specializes in systems analysis and, thus, modeling and simulation [M&S]. However, I found that only the areas of acquisition and technology were addressed. The word "logistics" appeared only a couple of times in the entire issue. I work in the area of logistics analysis and know firsthand how important logistics M&S is throughout the life cycle of military systems, so you can imagine how disappointed I was. M&S should be a key component in determining a system's maintenance concept, whether or not to use contractor logistics support, identifying the least-cost mix of spares, and helping to make trade-off decisions between the user's readiness requirements and life-cycle costs. Even the article on OT&E [operational test and evaluation] (Page 26) missed a key point on logistics modeling: you can test a lot of things in OT, but you can't test the adequacy of provisioning. What you can do is model it and, thus, evaluate it!

I think this issue makes a strong case that, although an "L" was added to the office title, the importance of logistics remains a mystery to much of the acquisition community. A golden opportunity was missed with this issue of *Army AL&T*.

Sincerely,
Dick McGauley
Operations Research Analyst
Logistics Analysis Division
Army Materiel Systems Analysis Activity

Dear Editor:

I note with irony Truelove and Donlin's SMART article in *Army AL&T's* May-June 2001 issue, which states, "The new name encompasses the need for collaboration among all those in the three Army M&S domains," and earlier, "... SBA [simulation based acquisition] is not just about systems development, but also about the Army's overall modernization process." And yet there is not a single SMART ACR [advanced concepts and requirements] or SMART TEMO [training, exercises, and military operations] article in the entire issue. Nor is there any recognition of anything but the "M" in DTLOMS [doctrine, training, leader development, organization, materiel and soldier]. As long as SMART is perceived to be a materiel developer-centered program, the combat developer community will view the program to be Directed Utilization of Models for a Materiel Bureaucracy (DUMMB).

Let's have some "smart" success stories and "smart" reporting on the use of SMART for us folks in the ACR and TEMO M&S domains. Surely there must be a few smart SMART efforts in the Joint M&S arena—JMASS [joint modeling and simulation system], JSIMS [joint simulation system] and JWARS [joint warfare system]. We need to SMARTen up!

Richard M. Berg
Acting Chief, Simulation Development Division
Army Space & Missile Defense Battle Lab
Huntsville, AL

Author Response:

While my coauthor, Mike Truelove, and I can't speak for the articles submitted or selected for the May-June issue of the magazine (nor for Mr. Berg's "creative" use of acronyms), Mr. Berg does raise a very perceptive issue. In fact, his underlying point is the very reason the sponsorship for SMART was transferred to the AMSEC [Army Model and Simulation Executive Council] co-chairs. As the article states, the transfer was initiated to counter the perception that while being managed from within the RDA domain, the SMART concept would always be viewed as acquisition centric. Apparently, we haven't been too successful in countering this perception.

We would ask for everyone's assistance in this regard. One of the tasks in the SMART Execution Plan is to compile lessons learned and best business practices with the use of SMART. We would ask anyone with input to provide it to us. We can be reached easily through the AMSO [Army Model and Simulation Office] Web page at **http://www.amso.army.mil**. A lot of people, in places like the Army Space and Missile Defense Command, are doing great work through the collaborative use of M&S, and we want to hear about it. We would also like to encourage those in the ACR and TEMO domains with success stories to submit them for publication.

Bruce J. Donlin
Contractor Support
U.S. Army Model and Simulation Office
Arlington, VA

IN MEMORY

The *Army AL&T* staff was saddened to learn of the recent death of George J. Makuta, a former Associate Editor of this magazine (then known as *Army RD&A*). He retired in 1983 following 30 years of dedicated federal service. During his more than 22 years with the magazine, Mr. Makuta consistently earned high praise from the Army's printing, publications, and research and development communities for his outstanding journalistic, layout, and design skills. He is survived by his wife Delores, three children, and six grandchildren.

PERSONNEL

Hoppe Assumes Command Of RDAISA

LTC William C. (Chuck) Hoppe recently took command of the U.S. Army Research, Development and Acquisition Information Systems Activity (RDAISA), succeeding LTC(P) Stephen D. Buck who retired from the Army following more than 22 years of Active military service. Hoppe joins RDAISA following assignments at the Defense Information Systems Agency, first as the Division Chief for Public Key Infrastructure and most recently as the Chief Engineer for the Global Command and Control System. He served earlier tours with the 1st Infantry Division, Fort Riley, KS; the U.S. Army Software Development Center-Washington; the U.S. Army Information Systems Software Center, Fort Belvoir, VA; and the Office of the Director of Information Systems for Command, Control, Communications and Computers. A 1983 graduate of the U.S. Military Academy, Hoppe has an M.S. degree in computer science from the Naval Postgraduate School and an M.A. degree in national security and strategic affairs from the Naval War College.

IMPORTANT NOTICE

If you are an individual who receives *Army AL&T* magazine and you have changed your mailing address, do not contact the *Army AL&T* Editorial Office! **We cannot make address changes regarding distribution of the magazine.** Please note the following procedures if you need to change your mailing address:

• Civilian members of the Army acquisition workforce must submit address changes to their Civilian Personnel Advisory Center (CPAC).

• Active duty military personnel must submit address changes to their Military Personnel Office (MILPO).

• Army Reserve personnel must submit address changes to the U.S. Army Reserve Personnel Command (ARPERSCOM) in St. Louis, MO.

• National Guard personnel must submit address changes to the Army National Guard Acquisition Career Management Branch at **perkindc@ngb-arng.ngb.army.mil** or call DSN 327-7481 or (703) 607-7481.

Your attention to these procedures will ensure timely mailing of your magazine.

Correction

The article entitled *Acquisition Education, Training and Experience Opportunities* in the July-August 2001 issue incorrectly stated that civilian applicants to the Senior Service College Fellowship Program must apply to the Office of the Assistant Secretary of the Army for Manpower and Reserve Affairs. The article should have stated that civilians must apply to the Acquisition Education, Training and Experience Board.

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Jim Welsh (703) 604-7116, DSN 664-7116
e-mail: **jim.welsh@saalt.army.mil**

ARMY AL&T WRITER'S GUIDELINES
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Purpose

To instruct members of the AL&T community about relevant processes, procedures, techniques, and management philosophy and to disseminate other information pertinent to the professional development of the Army Acquisition and Technology Workforce (A&TWF).

Subject Matter

Subjects may include, but are not restricted to, professional development of the Army's A&TWF, AL&T program accomplishments, technology developments, policy guidance, information technology, and acquisition reform initiatives. Acronyms used in manuscripts, photos, illustrations, and captions must be kept to a minimum and must be defined on first reference. Articles submitted to *Army AL&T* will not be accepted if they have been scheduled for publication in other magazines.

Length of Articles

Articles should be approximately 8 double-spaced typed pages, using a 20-line page, and must not exceed 1,600 words. Articles exceeding 1,600 words will not be accepted. Do not submit articles in a layout format or articles containing footnotes, endnotes, or acknowledgement lists of individuals.

Photos and Illustrations

A maximum of 3 photos or illustrations, or a combination of both, may accompany each article in a separate file from the manuscript. Photos may be black and white or color. Illustrations must be black and white and must not contain any shading, screens, or tints. All electronic files of photos must have a resolution of at least 300 dpi (JPEG or TIFF). If they do not meet this requirement, glossy prints of all photos must be submitted via U.S. mail, Fedex, etc. Photos and illustrations will not be returned unless requested.

Biographical Sketch

Include a short biographical sketch of the author/s that includes educational background and current position.

Clearance

All articles must be cleared by the author's security/OPSEC office and public affairs office prior to submission. The cover letter accompanying the article must state that these clearances have been obtained and that the article has command approval for open publication.

Offices and individuals submitting articles that report Army cost savings must be prepared to quickly provide detailed documentation upon request that verifies the cost savings and shows where the savings were reinvested. Organizations should be prepared to defend these monies in the event that higher headquarters have a higher priority use for these savings. All Army *AL&T* articles are cleared by the Army Acquisition Career Management Office.

Submission Dates

Issue	*Author's Deadline*
January-February	15 October
March-April	15 December
May-June	15 February
July-August	15 April
September-October	15 June
November-December	15 August

Submission Procedures

Article manuscripts (in MS Word) and illustrations/photos (300 dpi JPEG or TIFF) may be submitted via e-mail to bleicheh@aaesa.belvoir.army.mil, or via U.S. mail to the address in the first paragraph at the top of this page. All submissions must include the author's mailing address; office phone number (DSN and commercial); and a typed, self-adhesive return address label.

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