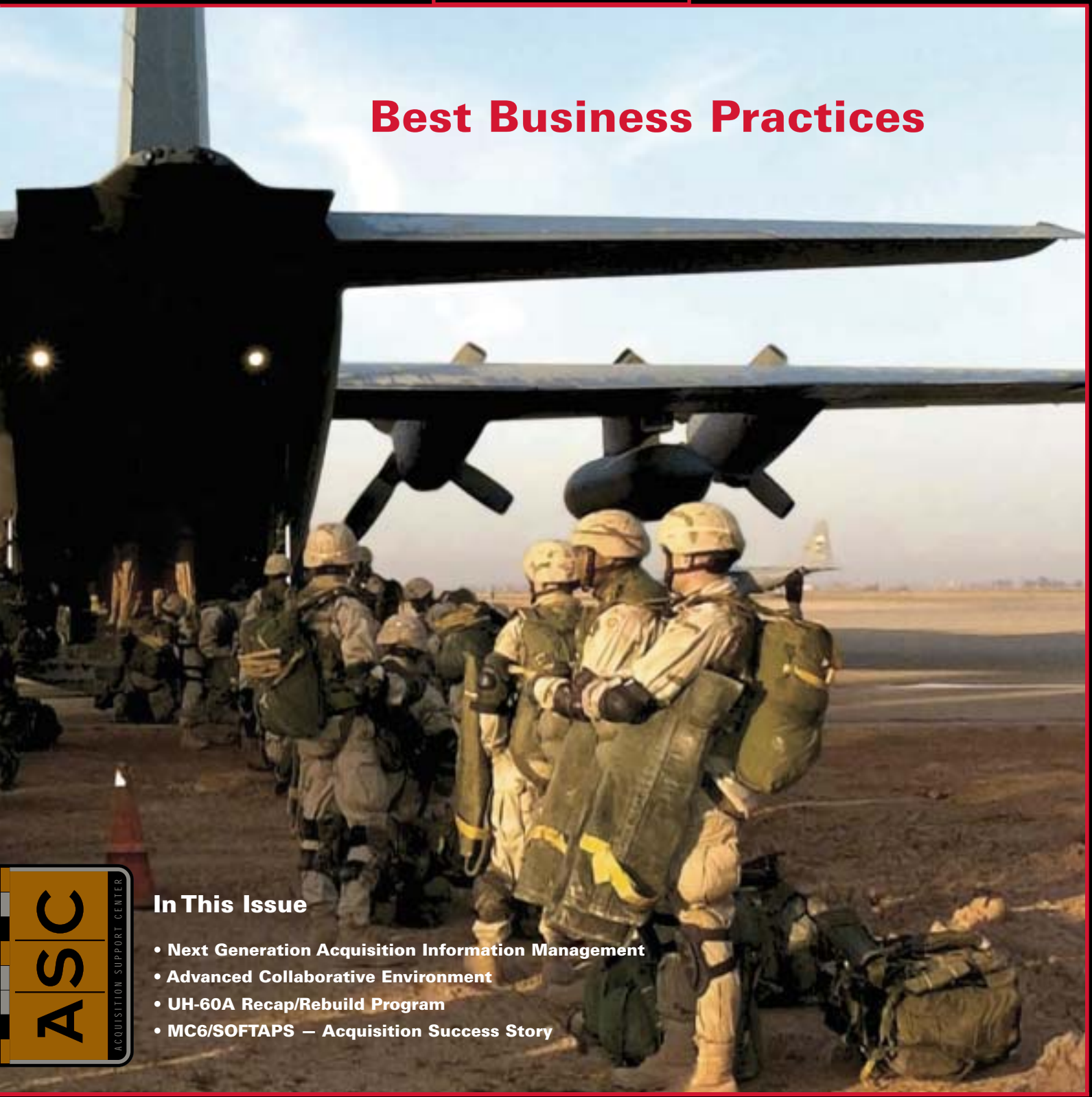
ARMY AL&T

March - April 2004

Best Business Practices



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- Advanced Collaborative Environment
- UH-60A Recap/Rebuild Program
- MC6/SOFTAPS — Acquisition Success Story

ASC ACQUISITION SUPPORT CENTER

From the Army Acquisition Executive

Strategic Realignment

Throughout the world, our Soldiers are the face of America. They represent the strength, determination and resolve of America. Their success is our success.

Here in Army Acquisition, Logistics and Technology (AL&T), we have the awesome responsibility of providing weapon systems and equipment to enable our Soldiers to accomplish their mission and return home safely. Our responsibility has taken on even greater urgency as we work to rapidly field equipment to protect our force in Iraq and Afghanistan, including body armor for Soldiers and add-on armor for the vehicles they operate. Because of this responsibility, we are constantly assessing ways to improve how we do business.

How can we focus our resources and assets to improve our organization to better serve Soldiers and our Army? One way is to put a strategic plan in place to guide our work — a vision and a mission with clear goals and objectives to drive the acquisition management process and ensure that we deliver the right product to our Soldiers at the right time and place. We have developed such a plan, thanks to hard work by a lot of people within our organization. Let me share with you the results of that work.

Our Vision
Equip and sustain the world's most capable, powerful and respected Army.

Our Mission
Effectively and efficiently develop, acquire, field and sustain materiel by leveraging domestic, organic, commercial and foreign technologies and capabilities to meet the Army's current and future mission requirements.

Our Goals and Objectives

Goal 1 — Develop and institutionalize a process that provides a single, integrated view of life-cycle management.

Objective 1.1. Create a life-cycle management structure that invests life-cycle authority and responsibility in one person at the lowest possible level.

Objective 1.2. Implement an AL&T collaborative environment that better facilitates decisions.

Objective 1.3. Create an optimized, integrated decision process including AL&T across program objective memorandum and extended planning annex to define appropriate investment requirements.

Goal 2 — Develop flexible AL&T processes to field supportable capabilities quicker (systems and system-of-systems).

Objective 2.1. Develop and codify a "quick-reaction" acquisition process for immediate operational needs.

Objective 2.2. Maximize use of acquisition streamlining processes currently in existence.

Objective 2.3. Reconcile the spiral development process with other acquisition processes.

Objective 2.4. Develop a system-of-systems management plan.

Goal 3 — Shape an acquisition workforce that is poised to succeed to meet the needs of the Army.

Objective 3.1. Develop and implement an acquisition leadership strategy.

Objective 3.2. Understand, leverage and influence the application of the National Security Personnel System.

Objective 3.3. Institutionalize human capital forecasting, development and resourcing.

Goal 4 — Build and cultivate strategic partnerships and outreach to provide better products to the Soldier.

Objective 4.1. Develop and implement an Office of the Assistant Secretary of the Army (Acquisition, Logistics and Technology) strategic communications campaign plan.

Objective 4.2. Expand and improve strategic partnerships.

Objective 4.3. Improve Soldier satisfaction with products and services.

Now that we have a guiding light, we are developing ways to measure our effectiveness. Still, all that we do comes back to the Soldier.

We in the AL&T Community serve the Soldier. American Soldiers display unrelenting tenacity, steadfast purpose, quiet confidence and selfless heroism. Their success is our success.

Claude M. Bolton Jr.
Army Acquisition Executive

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Cover Story

BEST BUSINESS PRACTICES

Features

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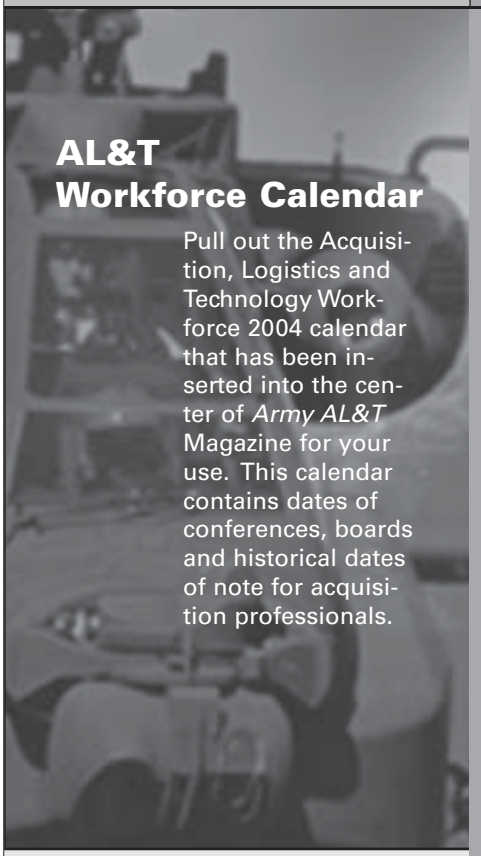
ACQUISITION, LOGISTICS & TECHNOLOGY



AL&T Workforce Calendar

Pull out the Acquisition, Logistics and Technology Workforce 2004 calendar that has been inserted into the center of *Army AL&T* Magazine for your use. This calendar contains dates of conferences, boards and historical dates of note for acquisition professionals.

Departments

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By order of the Secretary of the Army

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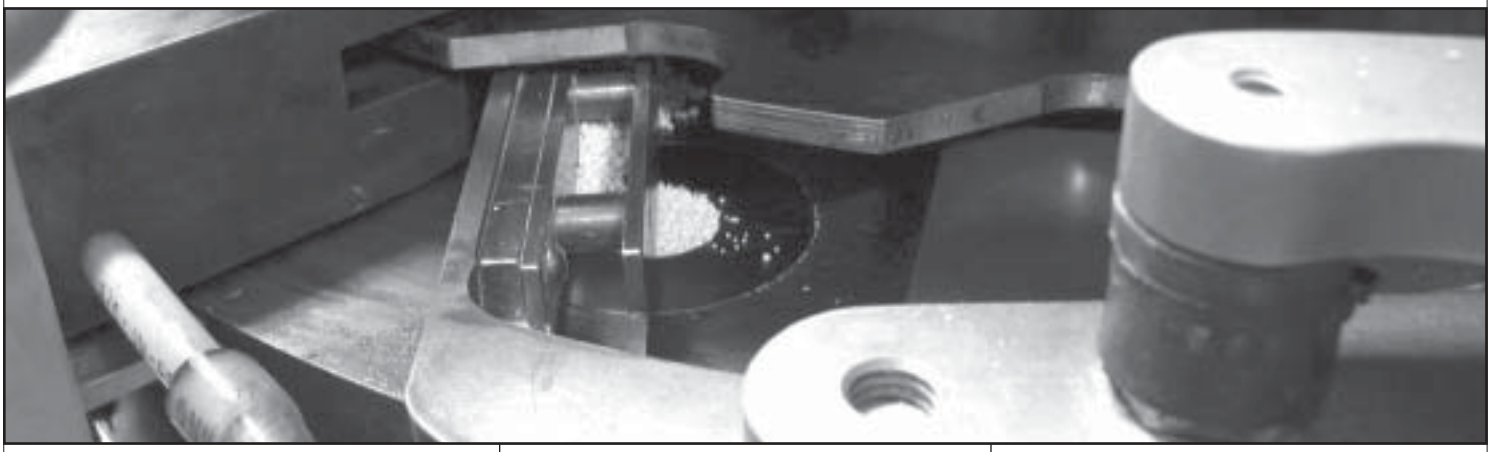
0408601

Six Sigma Program Helps Solve Explosive and Grenade Production Problems

Donald A. Geiss Jr., Robert Ho,
Keith E. Van Biert and William V. Vogt

BEST BUSINESS PRACTICES

The Project Manager for Combat Ammunition Systems (PM CAS) and the U.S. Army Tank-automotive and Armaments Command's Armament Research, Development and Engineering Center (TACOM-ARDEC) have been working with VSE Corp. since 2000 to implement Six Sigma. This article highlights the extraordinary customer-supplier teamwork at Picatinny Arsenal, NJ, and details Six Sigma as a proven, effective strategy for applying rigorous controls to design, production and business processes and activities. More specifically, this article demonstrates the importance of focusing on increasing productivity, reducing cost and using Six Sigma tools to solve the problem of manufacturing Picatinny Arsenal Explosive-2A (PAX-2A) — an insensitive munition (IM) that users want — into M77 and M80 grenades.



Background

The M915 105mm Dual-Purpose Improved Conventional Munition (DPICM) is an extended-range projectile with an improved anti-personnel, anti-materiel capability. The 105mm DPICM cartridges are being developed primarily for use in the M119A1 howitzer to leverage its greater range capability. The projectiles contain a submunition payload of 42 dual-purpose M80 grenades. The M80 is a 1.22-inch diameter fragmentation/shaped charge submunition.

To increase safety to soldiers in the field and follow recommended DOD policy for incorporating IM technology, the M915 Developmental Project Officer decided to replace the Comp A5 explosive with a Type II insensitive material PAX-2A explosive.

PAX-2A was developed in the late 1980s as a less sensitive, high-explosive replacement for use in main charge conventional munition warhead applications. Initial specifications for PAX-2A were developed to mimic Comp A5 specifications. Small mixes of the material were fabricated and successfully loaded at Lone Star Army Ammunition Plant (LSAAP), Texarkana, TX. Grenades loaded with this material were successfully tested per IM requirements (sympathetic detonation, bullet impact and slow cook-off). Based on these results, the M915 Developmental Project Officer decided to enter full-rate production and field the M915 105mm projectile with PAX-2A.

Accordingly, the M915 program contracted Alliant Techsystems Inc. (ATK) for a total delivery of 18,800 pounds of PAX-2A. ATK subcontracted Thiokol Corp. to manufacture the PAX-2A. For this effort, Thiokol intended to scale-up the manufacturing process from a research and

development (R&D) 50-gallon mixer to a 600-gallon production mixer to supply the contract quantity for M915. It became evident that delivery of this large quantity of PAX-2A would be difficult within the available resources. Thiokol could not meet the specifications in large quantities and the prime contractor could not use the material from its subcontractor. Thiokol requested a "termination for convenience," which would conservatively cost both sides more than $500,000 each in technical preparation for the case, legal fees and bad feelings, and put a "black-mark" against a good subcontractor. At this juncture, Thiokol requested PM CAS assistance in solving the current PAX-2A production and loading problems.

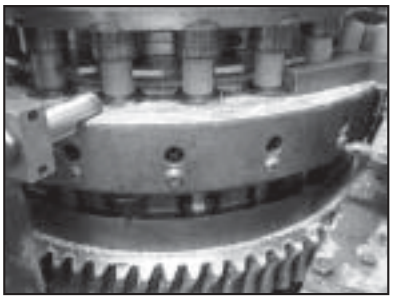
During the initial evaluation of PAX-2A loading in the M80 grenades, there was no record of excessive dusting or spillage of explosive material on the press. However, sticking of the explosive material to the powder guides, punches and rotary die face was observed during the loading of the Multiple Launch Rocket System (MLRS) M77 grenade under a TACOM-ARDEC Logistics R&D IM program.

Initial M77 grenade loading of this mix from the 600-gallon mixer did not prove successful. Heavy spillage was observed during loading. The grenade-loading presses at both LSAAP and Kansas Army Ammunition Plant (KSAAP), Parsons, KS, required intensive cleaning after short product runs, which proved essentially cost-prohibitive for full-scale production. The impact of this spillage problem became a major issue. The spillage created a safety problem and greatly reduced production rate and efficiency. Only 500 grenades could be loaded between maintenance on the standard high-rate production Day & Zimmermann rotary press. With Comp A5, the number is much higher and is about 60,000 parts in run-time between maintenance cycles (two 10-hour shifts). The same result was found in the M915 M80 grenade loading during a quick rotary press evaluation.

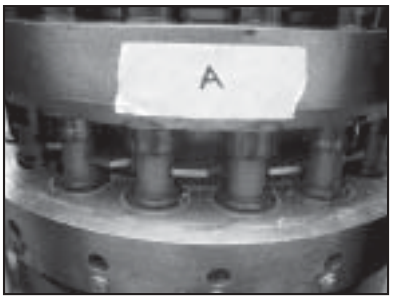
PAX-2A Explosive Build-up

Feed shoe and die cavity before Six Sigma

Feed shoe and die cavity after Six Sigma



Press before Six Sigma



Press after Six Sigma

Six Sigma Program

Successfully loading PAX-2A Type II into M80 grenades required the use of the following Six Sigma tools:

- Quality Function Deployment (QFD). This caused the team to re-evaluate the requirements and focus on the key system-level requirements.
- Brainstorming. This permitted the joint collection of ideas and concepts that could be evaluated in an open format. This included weekly status telephone conference calls to maintain team member coordination.
- Process Maps — Walking the Line. By actually walking the process, we determined a number of areas that were not initially stated in the process map. The process also identified potential problem areas that needed to be addressed and those that could be either optimized or eliminated.
- Failure Modes and Effects Analysis (FMEA). All team members contributed to formulating a failure effects analysis and provided recommendations for reducing individual and overall process risks.
- Design of Experiments (DOEs). This is where we would get small samples of the material's different sizes and try to load them. When we found one or more sizes that could actually be loaded, the experiment was repeated to ensure that there were no additional variables influencing our observations.

- Validation Process. When we found a mix that could work in small quantities, we expanded on that load to verify that we were on the correct path.

By using Six Sigma tools, the team was able to identify the critical parameters and concentrate on actual failure modes. As a result of applying Six Sigma tools such as DOE, brainstorming, FMEA and process maps, the subcontractor was able to produce material that could be manufactured at economical yield rates and used by the prime contractor to load M77 and M80 grenades.

The focus on main system requirements using QFD included penetration requirements, IM properties and low cost. In this process, the team was able to step back and look at the main system requirements and determine the four main problem areas:

By using Six Sigma tools, the team was able to identify the critical parameters and concentrate on actual failure modes.

- Not being able to efficiently load PAX-2A at an acceptable rate with normal maintenance intervals with the current hopper and feed shoe.
- Explosive smearing on the powder guides (nests) leaving a hard residue that requires extensive cleaning of nests and punches.
- The possibility of segregation where the larger particles will settle on the container's bottom and smaller particles will go to its top. Particle size uniformity is extremely important.
- Ability to fully use product from the 600-gallon mixer and reduce unnecessary post-processing of powder.

Through production line studies at LSAAP and Thiokol, soliciting the services of material flow experts and conducting numerous DOEs, the following conditions were identified:

- The segregation problem was addressed by the design, fabrication and installation of a new blender, hopper and feed shoe for PAX-2A Type II.
- The addition of an acceptable flow agent provides solutions to address loading and explosive smearing problems.
- The U.S. Standard Sieve Number (USSS#) 6-30 particle size band is the best compromise between maximizing product from the 600-gallon mixer and feeding powder to the rotary press that can be loaded with minimal press spillage.

The above statements were documented and validated with two separate runs of PAX-2A Type II in different mixes to determine the correct particle size. Verification was documented with two small runs of PAX-2A Type II. A sustained run of a 3,000-pound mix of USSS#6-30 proved to be the most efficient material from both a manufacturing process and a loading process. With the 3,000 pounds, we were able to successfully load 69,120 M80 grenades and 1,991 M77 grenades within normal maintenance intervals. Prior to adding a flow additive and the new particle distribution requirement, we could load fewer than 300 M80 grenades with PAX-2A before it became a safety issue, forcing loading press stoppage and intense cleaning. This type of production cycle is not acceptable for high-volume grenade loading. After completing Phase One of the Six Sigma program, we saw a 400:1 improvement in run times between maintenance cycles (two 10-hour shifts). Before LSAAP applied Six Sigma, consolidation press loading with PAX-2A particle distribution USSS#20-80 without an additive resulted in 3-minute run times. With Six Sigma application, particle distribution USSS#6-30 using an additive resulted in 1,200-minute run times.

This project has demonstrated the benefits of applying Six Sigma tools and techniques for achieving Army munitions goals and objectives. It also demonstrated the importance of customer-supplier teamwork for cost-effectively developing and producing explosives.

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ROBERT HO is the IM Project Officer, Logistics R&D Activity, TACOM-ARDEC. He holds a B.S. in mechanical engineering from the University of Hawaii.

KEITH E. VAN BIERT is a mechanical engineer with the Projectile Team, TACOM-ARDEC at Picatinny Arsenal. He graduated magna cum laude from Farleigh Dickinson University with a B.S. in mechanical engineering and is black belt certified in Six Sigma through VSE Corp.

WILLIAM V. VOGT is the M915/XM916 Project Officer. He holds a B.S. in electrical engineering from New Jersey Institute of Technology and an M.S. in computer science from Stevens Institute of Technology. In addition, Vogt is a graduate of the Defense Systems Management College and holds a black belt certification in Six Sigma from VSE Corp.

ALTESS: A One-Stop Shop for the Acquisition Domain

LTC Fernando L. Torrent

Imagine the perfect virtual environment managed by a single program office for your enterprise domain. Imagine single sign-on access to all the authorized reporting data you can handle at nanosecond speeds. Then imagine a network-centric environment with integrated encrypted security that would take hundreds of years to break. Fantasy? No! In the works? Yes!

Acquisition professionals have been dreaming about this networked environment for quite some time and the Acquisition, Logistics and Technology Enterprise Systems and Services (ALTESS) program office is making that dream a reality for the acquisition community today.

Headquartered in Radford, VA, ALTESS also has functional and business elements in Washington, DC. It is chartered by the Army Acquisition Executive's (AAE's) authority and by Program Executive Officer Enterprise Information Systems (PEO EIS) designation, with delegated full-line authority of PEO EIS for centralized management.

ALTESS provides both software integration and network operation services to the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) and specialized application development to the Army AL&T Workforce. ALTESS also develops software for other DOD organizations in the acquisition domain.

ALTESS provides both software integration and network operation services to the Assistant Secretary of the Army for Acquisition, Logistics and Technology and specialized application development to the Army AL&T Workforce. ALTESS also develops software for other DOD organizations in the acquisition domain.

Why ALTESS?

In the past, the acquisition community shouldered considerable reporting workload directed by the AAE for mandatory and regulatory oversight reports required by HQDA, Office of the Secretary of Defense (OSD), Office of Management and Budget and Congress. Many other Army requests for information resulted in reworking previously supplied information into different formats for the requesting organization. And yet, with all this information submitted up the reporting chain, there was often little or none to the field, even on major program decisions.

ALTESS was tasked to reduce this workload for the field, improve the use of existing information by HQDA and provide timely feedback to field organizations.

Eileen Reichler (left), ACM, ASC's National Capital Region (NCR) CSO, watches as Pat Hale, Program Specialist, ALTESS, explains an AIM application.

Acquisition Information Management (AIM)

ALTESS' flagship program, AIM, provides automation system services to the AL&T Workforce to support planning, programming, management and execution of acquisition programs. Access to AIM is via the World Wide Web, specifically, the Non-classified Internet Protocol Router Network. Customers include Congress, Office of Congressional Legislative Liaison, OSD, HQDA, Army Materiel Command, Chief Information Officer (CIO)/G-6,

PEOs and program/project/product/ managers (PMs). AIM provides the following applications and services:

- AIM portal and all associated infostructure that bind together the underlying user applications.
- AIM Digital Library — applications, user team rooms and program document repositories.
- CIO Assessments and Certifications — the CIO reporting system supports the role of CIO/G-6 in compliance with the *Clinger-Cohen Act of 1996.*
- Command, Control, Communications, Computers and Intelligence Support Plan documents.
- Monthly Acquisition Program Report (MAPR) and Senior Army Leadership MAPR.
- Monthly Acquisition Report (MAR) — provides a simple Web interface to allow the PEO/PM community the capability to enter their MAR.
- AIM Information — a program-centric information display.
- Acquisition Category Reports.
- Acquisition Support Center (ASC) Web site hosting.
- PEO/PM listings.
- ASC reports.
- Acquisition Commanders/Senior Managers Directory.
- Military and Civilian Acquisition Position Listings.
- AIM user administration.
- Team Rooms — provides a central location for a team to share documents, send messages, assign tasks, manage calendar events and develop ideas through discussion forums.
- OSD Rapid Improvement Team pilot.

ALTESS' flagship program, AIM, provides automation system services to the AL&T Workforce to support planning, programming, management and execution of acquisition programs.

Planning, Programming, Budgeting and Execution System (PBBES)

In addition to the above-mentioned applications and services, ALTESS integrates, supports and maintains applications to support the PPBES. First and foremost, the Web Army Research, Development and Acquisition (RDA) Budget Update Computer System (WARBUCS) is at the center of PPBES applications. WARBUCS is tightly integrated with other PPBES applications such as the PEO/PM RDA/ Operations and Maintenance Army Ownership Package that allows PMs to track to the RDA budget. In addition, WARBUCS has achieved a tighter integration with Smart Charts, AIM and the Acquisition Database (ADB).

Smart Charts are managerial tools used to create, display and distribute standardized charts that senior and RDA leadership use to support congressional and OSD activities associated with major weapon systems and communications, command and control information systems.

The Past Performance Information Management System (PPIMS) is the Army's automated repository for the collection and use of Armywide contractor Past Performance Information (PPI). It allows users to gather and maintain PPI on contractors for subsequent use in source selection. PPIMS provides unclassified/sensitive information to users CONUS and OCONUS 24 hours a day, 365 days per year via the Internet.

Betty Hearn (left), Information Technology Specialist, ALTESS, works together with Chris Rimestad, ACM for ASC's NCR CSO.

The Career Acquisition Personnel & Position Management Information System (CAPPMIS) is a set of tools developed to manage the AL&T Workforce. It is a combination of Web and client/server application modules that feature a relational database residing on a Microsoft® System Query Language Server 7.0. CAPPMIS is used by ASC (the proponent), ASC Customer Support Offices (CSOs), Acquisition Career Managers (ACMs), Army Human Resources Command Acquisition Management Branch, National Guard, Army Reserve and Army Medical Department Career Managers and the AL&T Workforce. CAPPMIS includes Individual Development Plans, Acquisition Career Record Briefs and Position Modules.

CODIFY

Most of these applications started in the past as stovepipes to better support upcoming requirements. However, ALTESS has integrated many of these applications under a single umbrella named CODIFY. CODIFY allows ALTESS to merge physical and logical database infrastructure into one coherent fully integrated entity — the ADB — to eliminate data redundancy and process duplication. The ADB enables full interapplication data flow, communication and standardization while providing for the easy exposure of our logical data infrastructure to other organizations. The ADB is a relational model based on Oracle® 9i.

ALTESS helps support ASC's videoteleconferencing needs. ALTESS Information Technology (IT) Specialist Gloria Sawyers (left) details the steps to run the videoteleconference equipment with Eileen Reichler (middle) and Chris Rimestad, both ACMs with NCR CSO.

The ALTESS intranet extends AIM to incorporate an enterprisewide intranet. AIM maintains and conducts office-specific business operations on the Web, and enables independent management of each work space. ALTESS defines, procures, installs and maintains intranet architecture components to ensure interoperability standards with PEO intranets. In addition, ALTESS' ability to reconfigure commercial-off-the-shelf (COTS) systems enhances decision support to the HQDA staff in program management, funding and financial control.

AIM and its next generation, ADVICE — the Acquisition Domain Virtual Integrated Collaborative Environment — will be the intermediate answer the AL&T Workforce has been looking for. The efforts and applications contained in ADVICE will prepare the field for the objective acquisition system, the Army Advanced Collaborative Environment. This initiative was accomplished by extremely determined and motivated ALTESS employees who continually strive to improve internal policies, modernize and maintain continuity for internal business processes.

CODIFY allows ALTESS to merge physical and logical database infrastructure into one coherent fully integrated entity — the ADB — to eliminate data redundancy and process duplication.

Modernization and Business Improvements

Annually, ALTESS invests a large portion of its budget in systems modernization and improvement. When an initiative lands outside the budget scope, either by dollar amount or time, it is placed on a Requirements Review Board list, also known as an Unfunded Requirement, and assigned a priority number. ALTESS is a centrally funded and reimbursable organization. Most of its operating resources are spent on modernization, COTS integration, enterprise generation and developing redundant systems to ensure operations continuity.

The ALTESS Management Steering Group (MSG) reviews and updates the ALTESS *Strategic Plan* as necessary. The ALTESS *Strategic Plan* sets and communicates the goals, priorities and courses of action to ensure the continued vitality of ALTESS. Goals, objectives and plan accomplishments are monitored by objective measures and critical success indicators. The challenges and associated personnel issues will require efficiency, dedication and hard work over the next few years. The ALTESS MSG will review and track progress toward accomplishing the *Strategic Plan's* goals and revise/update the plan on a semiannual basis.

The extent to which ALTESS achieves planned goals will determine the overall effectiveness of the modernization and business improvements envisioned for the AL&T Workforce. The ALTESS *Performance Measurement Plan* identifies the measures for each goal. The plan provides a common framework to measure how well ALTESS staff is doing against established goals. The performance measures will be updated as necessary to reflect evolution and change in strategies, goals and implementation plans for the organization.

The *Strategic Plan* was developed to define ALTESS' direction to accomplish its goals and objectives. The MSG has established the goals and objectives identified in the plan and the efforts to accomplish them are fully supported at all levels. Management is committed to providing resources in the area of personnel, cost, technology and support to facilitate this plan. The organization's employees will be provided with the knowledge and training necessary to accomplish the plan's goals and objectives. The following goals are based on ALTESS' priorities.

- Goal 1 — Maximize customer satisfaction.
- Goal 2 — Improve ALTESS processes.
- Goal 3 — Provide a stable and secure computing environment.
- Goal 4 — Maintain a highly competent staff.
- Goal 5 — Institute processes and policies for test, development and production architectures.

The ultimate goal is to provide our customers with reliable, effective

Doc Carter, IT Specialist, ALTESS, works with the new MS Exchange® servers being installed to run e-mail programs.

equipment and software for use in their jobs. With integrity, accountability and reliability at the forefront, ALTESS is dedicated to safeguarding its entrusted responsibilities. ALTESS continues to adhere to the high standards established for the integration and development of our software initiatives, operating procedures and, most importantly, our people. Excellent customer service drives our work efforts and ethics. Throughout the entire process, our focus is customer-centric service and support. ATLESS is working to achieve Capability Maturity Model Integrated Level II by FY05.

ALTESS' motto is *Custos Portae*, which reflects ALTESS' role as the gatekeeper of acquisition data. To be the guard (*custos*) or guardian of the gate (*portae*) for such a critical resource as acquisition enterprise data carries with it the responsibility to ensure the integrity, reliability, dependability and security of the resource.

ALTESS actively supports transformation and the Army Focus Areas by providing the right systems and services at the right time. ALTESS' current and future strategic planning and business processes will ensure it stays abreast of current and future policies to support the best warfighters in the world — American Soldiers.

LTC FERNANDO L. TORRENT is the Commander and PM for the ALTESS Product Office in Radford. He holds an M.S. in information systems management from Hawaii Pacific University and is a graduate of the Command and General Staff College. He is Level III certified in systems development (program management), systems automation engineering and acquisition (communication-computer systems) and test and evaluation.

Next Generation Acquisition Information Management

Ronnie D. Jewell and Raymond S. Soroka

The Acquisition Information Management (AIM) system has been the flagship product for Program Manager (PM) Acquisition, Logistics and Technology Enterprise Systems and Services (ALTESS) for the past 6 years. It provides integrated Web-based automation services to the acquisition community to support management, planning, programming, budgeting and acquisition program execution. Its varied customer base comprises users from the Office of the Secretary of Defense, HQDA, Army Materiel Command, Chief Information Officer (CIO/G-6), program executive offices (PEOs) and PM offices.

In 2002, AIM's role expanded to provide an enterprise solution for the acquisition community. A primary objective was to enable all community members to proactively manage, report and analyze all aspects of programs throughout their life cycles. The AIM System's core is a relational database environment composed of standardized data elements and strictly enforced data access and control mechanisms. These provide conformance to DOD-mandated data standards and also allow each PM to retain ownership of program data while providing data access to higher levels of the Army acquisition community and data aggregation to support statutory reporting requirements. By significantly reducing the level of manual effort needed to perform administrative PM duties and to monitor and report program data through the acquisition chain, AIM enables PMs to concentrate resources on successfully developing and fielding systems. The Army Acquisition Executive; the Deputy Assistant Secretary of the Army for Plans, Programs and Resources; and PEO Enterprise Information Systems are the functional proponents for AIM.

The current system is application-specific with an emphasis on HQDA reporting. It is an umbrella application for a suite of integrated, Web-based products that focus on program

management and financial support. It encompasses applications such as Monthly Acquisition Report; Monthly Acquisition Program Review; CIO Module; Smart Charts; Probability of Success; Defense Contract Management Agency Module, Planning and Programming Decision Support System; Web Army RDA (research, development and acquisition) Budget Update Computer System (WARBUCS); and Procurement and RDTE (research, development, test and evaluation) Forms. Other major ALTESS applications closely related to AIM are Past Performance Information Management System (PPIMS) and the Career Acquisition Personnel & Position Management Information System (CAPPMIS). The CAPPMIS suite comprises Workforce Management, Position Management, Acquisition Position List, Acquisition Career Record Brief, Individual Development Plan, Acquisition Lessons Learned Management System and Senior Rater Potential Evaluations.

The Army Acquisition Executive; the Deputy Assistant Secretary of the Army for Plans, Programs and Resources; and PEO Enterprise Information Systems are the functional proponents for AIM.

Future AIM

The broad goals of Next Generation (NextGen) AIM are:

- Establish an information technology infostructure that enables full interoperability and data integration across the acquisition enterprise that is consistent with DOD operational, architecture and security requirements.
- Enable data access through a single sign-on, Web-based portal linked to Army Knowledge Online (AKO).
- Reduce the number of independent systems and provide a consistent integrated view of the Army's acquisition data.
- Support standardized enterprisewide processes across the PEO/PM community.
- Provide program management tools for all levels of management.
- Create a collaborative environment to support the acquisition community that will seamlessly integrate with, and smartly plug into, the future Army Advanced Collaborative Environment (ACE).

NextGen AIM will be built on the foundation already established in AIM. It will follow the Software Development Methodology (SDM) currently in place at ALTESS. The SDM places a strong emphasis on requirements definition and management. The development team will work closely with the Army ACE team to allow NextGen AIM to plug into the future Army ACE with minimal retrofitting. The architecture will support a presentation layer separate from the functional and database layers to make the transition to Army ACE transparent to end users.

NextGen AIM will be program-centric (applicationless) featuring an Executive Portfolio System (EPS) that will provide executives at all levels of acquisition management a graphical interface with drill-down capability and exception reporting in support of program oversight. The second priority will be to expand NextGen AIM to incorporate tools that support the day-to-day business processes in the PEO/PM community. It will capture real-time data in an event-driven environment allowing data to flow from the bottom up (PM to PEO to HQDA) in support of drill-down analysis. The focus will be in program management with an emphasis on financial and contract management tools.

The third priority will be workforce management, emphasizing the integration of CAPPMIS with local acquisition workforce data and the Acquisition Database (ADB). The fourth priority will be to integrate PPIMS with the field contract management functionality. In addition, NextGen AIM will provide virtual integration of the ADB to AKO, Virtual Army Systems Acquisition Review Council (VASARC) and PEO/PM databases providing users seamless access to a variety of acquisition data through a single sign-on. It will be developed over a 3-year period, using a spiral, phased implementation approach.

Transition Plan

The plan calls for an elite integrated product team made up of a few hand-picked, expert users from all levels of the Army acquisition community to assist the ALTESS development team in the study of business processes and analysis of commercial-off-the-shelf (COTS) and government-off-the-shelf tools, both new and those currently used, to expedite the requirements-gathering process. As previously mentioned, the initial priority is to implement an EPS for the benefit of HQDA, PEOs and PMs. The idea is to put dynamic tools in the hands of the executive staff to allow ad hoc analysis and reporting without involving the ALTESS development staff. Now, dynamic, graphical tools can be loaded/accessed on desktops and laptops, and the development staff can concentrate more on defining and developing day-to-day tools for the PEO/PM workforce. Realizing that time management is a significant driver, the ALTESS team will concentrate on defining the data elements that make up the 80-percent solution upfront. Standard data sets will be

NextGen AIM (ADVICE) Transformation

ADB Internal and External Integration	4th Qtr FY03 - 1st Qtr FY06
EPS Design and Development	4th Qtr FY03 - 1st Qtr FY06
Contract and Financial Management	3rd Qtr FY04 - 1st Qtr FY06
Workforce Management	1st Qtr FY05 - 4th Qtr FY06
PPIMS Integration	3rd Qtr FY05 - 4th Qtr FY06

Figure 1.

defined and standard interface exchange requirements (IERs) established to begin capturing data electronically from the field as early as possible. This gives the PEO/PM community some immediate relief by eliminating duplicate data entry while simultaneously providing more information available to the EPS.

NextGen AIM will provide the PEO/PM community with viable alternatives to local legacy systems. By applying a "better-before-best" approach and using spiral development over the initial 3-year period, more and more capability will be developed incrementally for the PEO/PM community, allowing daily functionality for the local legacy systems to be absorbed into NextGen AIM. This is depicted in Figure 1. Once real-time data entry is transitioned to NextGen AIM, data can be exported back to the PEO/PM community using the standard IERs. This step is necessary to keep local legacy systems intact until the entire system may be absorbed into NextGen AIM and the host servers decommissioned in conjunction with Army Knowledge Management (AKM) goals.

Enterprise Architecture and Data Goals

The NextGen AIM system architecture will be composed of the three layers annotated in Figure 2. The presentation layer will provide the user community one consistent interface with single sign-on capability through the AKO portal. Perspectives into the data will be tailored to the roles and the data access privileges of each user and will support high-level data summaries with drill-down capability to lower-level detail in a graphical user interface.

Policies, processes, security and business rules will drive the functional layer and will define how the presentation layer interacts with the data layer. The data layer will use eXtensible Markup Language (XML) and Interface Exchange Requirements to build a network-centric data environment to integrate both internal and external databases with the ADB. This will include the integration of independent COTS-based products and corresponding databases such as those that are being deployed in support of the VASARC.

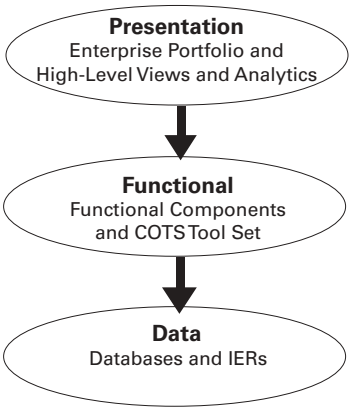

Figure 2.

The specific enterprise architecture and data goals follow:

- Implement the Assistant Secretary of the Army for Acquisition, Logistics and Technology architecture requirements.
- Maintain compliance with the DOD architecture framework.
- Adhere to the many DOD and Army guidance policies including *Executive Order 13011*, the *Clinger-Cohen Act of 1996*, *Department of Defense Directive (DoDD) 4630.5*, *Department of Defense Instruction (DoDI) 4630.8*, *DoDD 8000.1, DoDD 8100.01, DoDD 5000.1*, *DoDI 5000.2* and *Chairman of the Joint Chiefs of Staff Instruction 3170.01C*.
- Ensure complete data integrity and enable smooth interchange between all data components within the enterprise.
- Align with the AKM Plan, AKO objectives and the to-be-defined Army ACE objectives.
- Provide data archival, warehousing and mining capabilities.
- Maintain an online integrated data dictionary that defines all data elements and is aligned with the Defense Data Dictionary System.

The new name for NextGen AIM is ADVICE (Acquisition Domain Virtual Integrated Collaborative Environment). ADVICE will be built on the current AIM infostructure over a 3-year period to develop an 80-percent enterprise solution for the acquisition community that will offer seamless integration into the future Army ACE.

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RAYMOND S. SOROKA is the AIM Group Leader. He joined ALTESS in 1988 and has served in both the Systems Engineering and Applications Integrations divisions. He has a B.S. in mathematics and computer science from Wilkes University.

The Army's Advanced Collaborative Environment (ACE)

Lee James III

BEST BUSINESS PRACTICES

A totally collaborative environment will help improve sensor-to-shooter response time and identification of high-payoff targets at all depths of the tactical battlefield.

The Army is making fundamental shifts in its organizational structure, its business processes and its management and use of information, information systems and information technologies. As the acquisition business is practiced in the Army today, many program managers (PMs) and program executive officers (PEOs) invest in the development, implementation and sustainment of disparate knowledge systems to support their individual programs or small groups of programs. These investments represent a substantial expense for the Army, investments that can potentially dilute mission funds programmed for warfighting systems. Because these systems are typically implemented independently by individual PMs and PEOs, the resulting capabilities are duplicative, lack sufficient interoperability and can inadvertently prevent timely, accurate and complete information from reaching decision makers.

To effectively achieve all Army transformation objectives, the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) has initiated an effort to develop the Army's ACE. ACE consists of a coordinated suite of systems that work together to meet the Army's data management needs across the life cycle. ACE will provide the business intelligence required for timely and strategic decisions, while adding the value of interoperability across programs, domains, other services and industry. On Aug. 26, 2003, the ASAALT/Army Acquisition Executive Claude M. Bolton Jr. and GEN Paul J. Kern, Commanding General, Army Materiel Command (AMC), jointly signed and released a policy memorandum that created the ACE initiative and directed PEO Enterprise Information Systems (EIS) to form and lead a Governance Board to manage ACE development and fielding.

The ACE concept grew out of the previous Integrated Digital Environment mandate to promote the sharing of information and life-cycle management of program and product life-cycle data. ACE is envisioned as an integrated suite of commercial-off-the-shelf products that will provide the domain with a standard set of data management capabilities in a network-centric, services-oriented environment. ACE's objectives will reduce domain investments in information management and information technology (IT), while also improving data interoperability, thereby ensuring that decision makers have timely and accurate data

on which to make program decisions. Ultimately, ACE will enable the acquisition domain to efficiently and appropriately share its data and data management services with other domains, services and industry partners. ACE will also significantly improve the acquisition domain's ability to manage its programs across the acquisition life cycle and enable more effective and comprehensive integration of modeling and simulation tools and capabilities with all aspects of the life cycle. The goal: ensure the effective integration of acquisition data with the logistics and sustainment domain, the requirements development domain and the warfighter. The policy memorandum orders all new or existing programs under ASAALT and AMC Research, Development and Engineering Command (RDECOM) oversight to plan for integration to the Army ACE as its capabilities and services become available.

> ACE is envisioned as an integrated suite of COTS products that will provide the domain with a standard set of data management capabilities in a network-centric, services-oriented environment.

As a prototype effort aligned with the Army's transformation objectives, the Future Combat Systems (FCS) program has already established an ACE for the system-of-systems that fall under the FCS umbrella. Although ACE will leverage proven and appropriate FCS ACE elements, it is independently pursuing:

- Architecture options.
- Functional and life-cycle requirements across the entire domain.
- External and cross-domain interoperability requirements.
- Information technologies that can best provide for ACE requirements.

We must ensure that the industry information systems that interface and exchange information management services with ACE work efficiently and effectively because of the major role they play in the development, fielding and life-cycle support of our weapon systems.

PEO EIS has the lead in the Army ACE effort and is the focal point in coordinating with the PEO community, RDECOM, AMC G-3 and other organizations to ensure that all stakeholder requirements are adequately reflected in the development of ACE requirements and the FY06 Program Objective Memorandum (POM) submission. Kevin Carroll, PEO EIS, is leading the Army ACE Governance Board and its supporting working groups' activities. His focus is to ensure that the evolving services-oriented ACE architecture model is traceable to Army ACE requirements and is compliant with both the DOD Net-Centric Enterprise Services model and the Joint Technical Architecture. The Governance Board and its subordinate working groups will produce a coordinated functional requirements document and a business case analysis in time to compete for funding in the FY 06-11 POM.

PEO EIS has enlisted the help of the PEO/PM community to kick-off the requirements development process by requesting the participation of 15 to 20 individuals from each PEO community. These individuals must have recent and substantial experience/expertise in a variety of functional areas, from a wide range of programs representing different acquisition category levels and different acquisition phases. The PEO EIS team will

The FCS Program has already established an ACE for the system-of-systems that fall under its purview. Once the domain is fully established and integrated Armywide, warfighters will benefit from the data management capabilities and network-centric, services-oriented environment. Ultimately, ACE will enhance battlefield situational awareness by providing commanders seamless connectivity between satellites, sensors, communications equipment, vehicles, weapons platforms and aircraft. U.S. Army photo by CPT Tim Beninato, 28th Public Affairs Detachment Commander.

personally interview those individuals using a structured, process-focused questionnaire augmented by an unstructured dialogue that will focus on producing a comprehensive picture of the PEO and PM priority and supporting requirements. This effort is being augmented by a parallel exploration of RDE community requirements, and will then be expanded into ASAALT and other domain information requirements. Once completed, PEO EIS will then take the collected information and develop an Initial Capabilities Document (ICD). Those requirements will then be used to support a business case analysis and support the competition for funds in the FY 06-11 POM process.

The FY 06-11 POM support documentation will include an initial Acquisition Strategy, a Life Cycle Cost Estimate (LCCE) and a Business Case Analysis (BCA). The ACE POM documentation will be submitted under the Equipping Program Evaluation Group. The LCCE will be based on the requirements in the ICD and include hardware, software and operations and sustainment costs. The BCA will estimate ACE cost, its benefits to the Army and the project's economic viability. The BCA will provide PEO EIS and Army leaders with visibility into ACE's capabilities, costs and value, and provide insight into the actions that may be necessary to realize the expected benefits.

Assuming a successful competition in the POM submission, the ACE effort will evolve into a formal acquisition program that will be managed under PM Acquisition, Logistics and Technology Enterprise Systems and Services (ALTESS). PM ALTESS will assess the resources and personnel required to complete this mission. Then, ALTESS will determine and recommend an implementation schedule to the Governance Board. ASAALT will sponsor the ACE's central funding and work to support PEO EIS in delivering an incremental suite of evolving capabilities that provide priority solutions to the domain at large. By implementing a centrally funded, comprehensive suite of priority capabilities that meet the domain's life cycle needs, and its participation in the larger Army and defense community, ASAALT will be furthering the objectives of Army transformation and providing more effective and capable services to the warfighter at substantially less cost.

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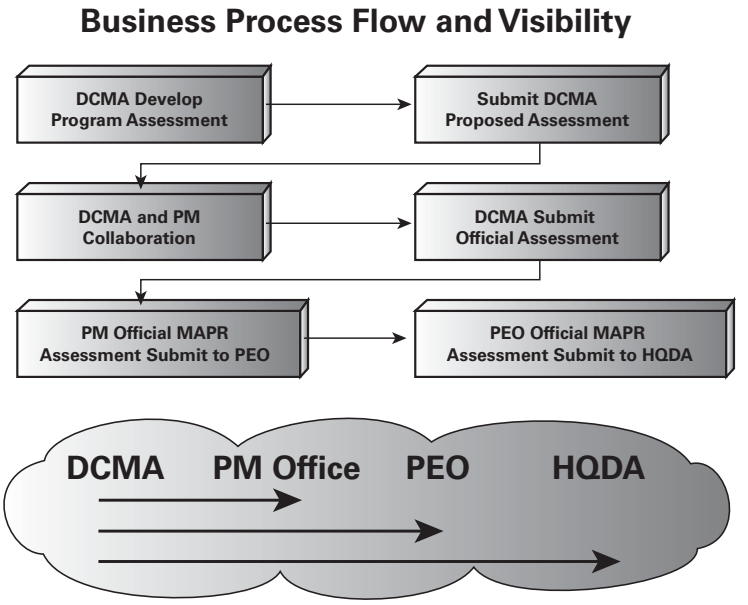
The DCMA Program Status Visibility Initiative

LTC Bob Ordonio and Betty Hearn

BEST BUSINESS PRACTICES

Fast-paced development is happening throughout the Army acquisition community to provide warfighters the best products and services available. Hence, many new acquisition initiatives are being identified and implemented to support the program manager office (PMO) in achieving program success. One such acquisition program currently being implemented is the Program Status Visibility (PSV) initiative. This initiative is a joint endeavor between the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) and the Defense Contract Management Agency (DCMA). The initiative will facilitate a collaborative environment between the PMO and DCMA on program assessments. The PSV initiative will provide PMOs, program executive offices (PEOs) and HQDA timely information on major defense programs and will assist in developing an integrated and collaborative approach between ASAALT and DCMA in assessing acquisition programs.



DCMA's mission is to partner with PMOs to provide information on an acquisition program's cost, schedule and performance. DCMA is collocated with defense contractors in their facilities and monitors the areas that are of PMO concern. DCMA works with the PMO staff daily to provide this critical support. DCMA provides PMOs with an independent monthly program status. This status report assesses the program's health. The PMO, in turn, provides a monthly program assessment to the PEO and HQDA. Occasionally, the PMO and DCMA report conflicting assessments. When this occurs, efforts are extended to reconcile the discrepancies. This situation breaches the "one-voice" concept. To resolve such issues, ASAALT uses the PSV initiative. The PSV initiative's purpose is to provide an environment where DCMA and the PMO can collaborate on the program's assessment and provide the one definitive voice on program status.

On June 20, 2003, Donald Damstetter, Deputy Assistant Secretary for Plans, Programs and Resources signed the Program Status Visibility Pilot policy memorandum. This memorandum set the stage for this business process initiative (BPI) collaboration between DCMA and the acquisition community. It established a collaborative environment and unified approach to assessing a program's health by providing a link between DCMA, PMO, PEO and HQDA. Both DCMA and the PMO will use the same criteria ratings and assessment colors in providing the program's assessment, thereby promoting a mutual understanding of the definition for each assessment rating and color throughout the process for each level.

The JTRS Cluster 1 participated in the PSV automated pilot program. The JTRS Cluster 1 provides the warfighter with a software-reprogrammable, multiband/multimode capable, networkable system that provides simultaneous voice, data and video communications.

Concept Validation and Implementation

Working with PEO Intelligence, Electronic Warfare and Sensors, an initial manual pilot with DCMA and PM Aerial Common Sensor started the PSV initiative. The manual pilot's assessment concluded that this BPI would help solve the problem by supporting open and common dialogue between the PMO and DCMA. ASAALT decided to automate this business process incorporating lessons learned from the manual pilot. To automate the process, ASAALT selected PM Acquisition, Logistics and Technology Enterprise Systems and Services (ALTESS) in Radford, VA. When PM ALTESS completed the development of the automated solution, ASAALT conducted another pilot in August 2003. The automated pilot program included PM Phoenix Battlefield Sensor System, PM Black Hawk (UH-60), and PM Joint Tactical Radio System (JTRS) Cluster 1.

Aligning Information Technology (IT) With Business Process

The Acquisition Information Management (AIM) system hosts the PSV initiative. The AIM system's goal is to provide automated tools to assist PMs to proactively manage assigned programs. The AIM service's core is a relational database that allows the PMO to retain program data ownership while providing data access to higher levels of the Army AL&T Workforce and aggregation of this data to support statutory reporting requirements.

AIM was modified to incorporate a new DCMA module. The DCMA module is used by DCMA to enter an independent color-coded monthly program assessment. The DCMA assessment uses categories from the Defense

Acquisition Executive Summary. These categories are also used in the Monthly Acquisition Program Review (MAPR) process as follows:

- Performance characteristics
- Test and evaluation
- Logistics requirements
- Cost performance
- Funding
- Schedule performance
- Contracts
- Production
- Management
- Interoperability

For each category listed above, DCMA assigns a color code rating as follows:

- **Green**. Program on track. All aspects of the program are progressing satisfactorily. Some minor problems may exist, but appropriate solutions are available.
- **Green advisory**. Program is generally progressing satisfactorily, but some event has occurred or is anticipated that will require additional effort and emphasis by the PM and/or contractor.
- **Yellow**. Potential or actual problems. The program is generally progressing satisfactorily, but some event has occurred or is anticipated that is expected to impair progress against major objectives in one or more segment(s) of the program.
- **Yellow advisory**. Program is generally progressing satisfactorily, but some event has occurred or is anticipated that is expected to impair progress against major objectives in one or more segment(s) of the program.
- **Red**. Major weakness. Some event has occurred that seriously impedes successful accomplishment of one or more major program objective(s), requiring reorientation or reprogramming of the effort, with the advice and consent of the PEO, Component Acquisition Executive or Defense Acquisition Executive.
- **Red advisory**. This rating indicates that the program has experienced some event that has caused a change in a major weakness.

The AIM system's goal is to provide automated tools to assist PMs to proactively manage assigned programs. The AIM service's core is a relational database that allows the PMO to retain program data ownership while providing data access to higher levels of the Army AL&T Workforce.

Based on the color code rating, DCMA enters comments. Comments for a color rating of green are optional, but recommended. All other color code ratings require comments. The comment area provides the PMO specific information on the selected color code rating. An "option-out" selection is provided to DCMA for any category not assessable.

MAPR Reuse

PMOs and PEOs use the MAPR to provide program assessments to HQDA, to include the Secretary of the Army, Under Secretary of the Army, Army Chief of Staff and Army Vice Chief of Staff. To facilitate this initiative's implementation, ASAALT and DCMA decided to link the DCMA assessment with the MAPR. HQDA, PEOs and PMs can view the DCMA assessments via MAPR. This strategy minimizes training requirements and incorporates the "enter once, use many" philosophy.

Business Process

When developing the business process, the intent was to forge a special relationship between DCMA and the program office. To maintain and foster the current relationship between DCMA and the program office, the PSV initiative will coordinate the DCMA program assessment through the program office. The business process starts when DCMA initializes the monthly program assessment. The figure represents the business process and the DCMA program assessment visibility during each step. At this point, the program assessment's status is in "draft mode" and the visibility is at DCMA only. The draft mode allows DCMA to assess each MAPR category and assign a color code rating. After program assessment completion, it is submitted to the PMO in the "proposed status" mode.

In the proposed status, the assessment is visible to DCMA and the PMO via the MAPR application. The proposed status provides a collaboration period regarding the written DCMA assessment between the PMO and DCMA. In addition to normal day-to-day conversations between the PMO and DCMA, the collaboration period provides a more structured opportunity for open and common dialogue between the PMO and DCMA for any issues presented in the assessment. The length of time for this collaboration period is mutually agreed on. At the end of the collaboration period, DCMA makes modifications to the program assessment and submits its program assessment in the "official status." In the official status, DCMA and the PMO have program assessment visibility.

Next, the PMO does its monthly program assessment via the MAPR application. While the PMO is preparing its program assessment, they can view

The automated pilot program includes PM Black Hawk. U.S. Army photo by SPC Kieran Moore.

the DCMA assessment status (proposed or official), the color code rating and any comments entered by DCMA. When the PMO completes and submits the program assessment, the program assessment is now "official," meaning the DCMA program assessment is visible to DCMA, the PMO and PEO.

However, if the DCMA program assessment is only in draft or proposed status and has not been submitted as official, the DCMA assessment is locked out and they will not be able to submit the assessment for the month. This means careful coordination by the PMO and DCMA must be followed to ensure any DCMA official assessment is submitted before the PMO submits its own assessment as official and inadvertently locks out the DCMA assessment. If draft or proposed DCMA program assessments exist, the application will lock and copy the assessment to the next month into draft status. This eliminates the need to start an assessment from scratch each month and provides a starting point for the next month's assessment.

Following the MAPR process, the PEO has the opportunity to provide comments on the PMO's program assessment. Once the PEO has entered any comments, the PEO can submit the program assessment. The PEO will then submit the assessment to HQDA as official. In the official status, the PM, PEO, HQDA and DCMA can view the official DCMA program assessment. All stakeholders in the process will have the capability to read the program assessment entered by the PMO and DCMA, but won't have the capability to make changes to that program assessment. Additionally, the only way that one can see the DCMA assessment is with the PM assessment. Again, this was done to ensure that the collaborative relationship between DCMA and the PMO was maintained. This completes the business process flow between all stakeholders and helps enforce the one-voice program assessment.

The Path Forward

As of December 2003, ASAALT and PM ALTESS have trained DCMA Headquarters, East and West, on the business process and the DCMA module within AIM. ASAALT developed a policy memorandum to implement the initiative. ASAALT distributed this policy memorandum, *Implementation of the DCMA Program Visibility Initiative*, to the acquisition community in January 2004.

The PSV initiative is a new BPI being provided to support the acquisition community. As issues were identified, a concept validation and implementation phase was performed confirming that solutions to the issue were accurate. The new validated business process was aligned with the current IT to take advantage of reuse capabilities, as opposed to starting from scratch with a brand new system. Finally, the IT solution, along with the validated business process, will provide PMOs, PEOs and HQDA timely information on major defense programs and will continue assisting in developing a fully integrated and collaborative environment.

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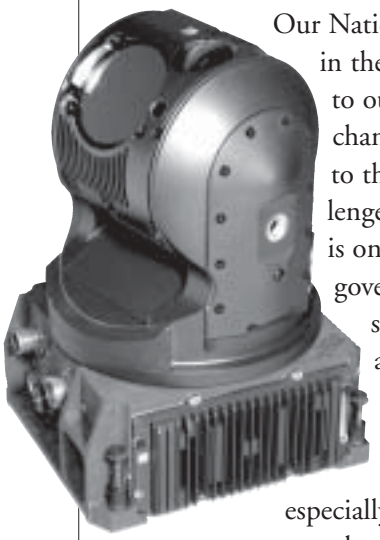
BETTY HEARN is an Information Technology Specialist with PM ALTESS. She is Level III certified in Information Technology and Level II certified in Program Management. She holds an A.A. in Computer and Information Science. For more information on the DCMA Program Status Visibility Initiative, contact her at **Betty.Hearn @us.army.mil**.

SMART: The Army's Way of Doing Business

George R. Harris

BEST BUSINESS PRACTICES



The Army learned valuable lessons by applying SMART to the ATIRCM program.

Our Nation's successes in the past were due to our ability to change and adapt to the new challenges we faced. It is only natural that government should seek out and reap the benefits of emerging technologies, especially those shown to be successful by academia and the private sector. The Army's Simulation and Modeling for Acquisition, Requirements and Training (SMART) initiative is intended to anticipate and accelerate the use of modeling and simulation (M&S) and related information age technologies. For the past 6 years, the Army has capitalized on these emerging technologies, and significant gains have been made. The Army has used SMART to improve our requirements development, acquisition and training capabilities. The SMART concept is about how we change the way we do business to exploit the potential of M&S and other emerging information age technologies, and ensure collaboration and synchronization across total Army system life cycles.

> The Army's Simulation and Modeling for Acquisition, Requirements and Training (SMART) initiative is intended to anticipate and accelerate the use of modeling and simulation (M&S) and related information age technologies.

The SMART Success Formula: M&S + IT = ACE

The Advanced Collaborative Environment (ACE) is an integral SMART concept element and will be vital to our success in fielding Future Combat Systems (FCS). Collaboration — a level of information sharing — is a key SMART tenet. It often requires using a whole information technology (IT) suite to sustain an effective environment in which true collaboration can be achieved. This environment is where M&S benefits and efficiencies are recognized. M&S, in concert with IT, provides the capability to build and sustain the robust collaborative environment in an emerging network-centric world.

Imagine the traditional clay model of auto industry lore as a digital model. Instead of using clay to enable collaboration among participants in a room, we now use electrons to enable collaboration among stakeholders distributed geographically around the world. The most effective "what-if" analysis is done while the model is still in the computer. We must use M&S to discover "the better mousetrap" before "bending metal."

Expensive hardware prototypes should be replaced, to the extent possible, with models and simulations. M&S and IT enable crucial "what-if" analysis while ensuring that key production, training and sustainment knowledge is readily shared by all stakeholders early in the development cycle. To field better systems at lower cost and in less time, we must be "smart" about how we do business. Case in point, the FCS program recognized the need for ACE and has implemented this current capability into its program structure.

AMSO Director W.H. (Dell) Lunceford Jr. (left) presents the SMART Lifetime Achievement Award to James E. Shiflett, FCS Integrated Product Team Director.

SMART Awareness

There is a tendency to use the terms SMART and M&S interchangeably, but there is a distinction to be made that is critical to successful future force fielding. SMART has driven a much-needed change in Army business practices. By exploiting M&S and IT and ensuring collaboration and synchronization across the total life cycle of Army systems, the Army Model and Simulation Office (AMSO), the

Advanced Concepts and Requirements Domain Manager Vern Bettencourt "collaborates" with Training, Exercises and Military Operations Domain Manager Jim Gunlicks at the latest SMART Conference.

Army's SMART Executive Agent, is working hard to increase SMART awareness. The SMART Web site (**http://www.amso. army.mil/SMART/**) and SMART conferences, respectively, are must-see and must-attend information sources helping AMSO succeed in this endeavor.

The SMART Web site includes valuable information aimed at helping organizations adopt SMART principles into their routine business practices. Particularly interesting are the site's "What is SMART?" and "Lessons Learned" sections. The former provides the Army's vision for SMART and online tutorials that can be played at the student's convenience. The latter are drawn from the experiences of programs such as the Aerial Common Sensor, the Advanced Threat Infrared Counter Measures (ATIRCM) and the Joint Common Missile, and information captured here will benefit many programs Armywide. If your organization has valuable SMART lessons learned, let AMSO know via the SMART Web site. A team will contact you to discuss lessons learned. Also available on the Web site are documents that provide "how-to" information on implementing SMART principles across the various Army communities. Additionally, SMART conference information dating back to 2000 is archived for reference purposes.

Then MG Joseph L. Yakovac Jr., PEO Ground Combat Support, opens the SMART Conference. LTG Yakovac is now the Director, Army Acquisition Corps.

SMART conferences will continue to be instrumental in sustaining Army — and we hope DOD — momentum in making SMART the way to do business. The next SMART conference is projected for June 2005. The recently completed SMART conference, co-sponsored by AMSO and the U.S. Army Tank Automotive Research, Development and Engineering Center in Dearborn, MI, sharpened military, civilian and industry M&S professionals' focus on upcoming FCS Milestone C (Systems Development and Demonstration) challenges.

The stakes are high. Attendees at this conference were, for the most part, the same people who will determine success or failure of FCS Milestone C and follow-on efforts to field the Future Force. SMART is crucial to these efforts and especially important for achieving leadership objectives to field initial FCS operational capabilities by decade's end. Attendance, which increased by 28 percent over the prior conference, may well indicate that SMART is gaining momentum.

SMART is crucial to these efforts and especially important for achieving leadership objectives to field initial FCS operational capabilities by decade's end.

While our SMART understanding improves, our top priority is teaching other Army organizations to successfully apply SMART to the way we do business. SMART tutorials are available online and, in the area of product research and development, SMART contact teams are available to meet with science and technology objective managers, integrated concept team leads and program managers to discuss how to plan for and document M&S use in their programs. Army objectives to field initial Future Force operating capability by the end of this decade depend on taking our understanding of SMART to heart and implementing the concept within our own day-to-day practices.

GEORGE R. HARRIS is a SMART Manager for AMSO. He holds master's degrees in strategic studies and comptrollership and is a U.S. Army Reserve colonel.

Virtual InSight (VIS) Will Revolutionize the Milestone Review Process

Dee Aranza

The Army Systems Acquisition Review Council program review process is a complicated and labor-intensive endeavor that extends across the entire acquisition community's spectrum of responsibility and oversight. Program/product managers (PMs) are held accountable for preparing a myriad of programmatic documentation that must be completed at a sufficient level of detail for the milestone decision being sought. The current milestone decision review process (DRP) is extremely complex, requiring coordination and collaboration among a large number of organizations and individuals.

Likewise, programmatic documentation requirements extend across multiple functional areas associated with the acquisition process. There is no consistent business practice or method that PMs can employ to facilitate a smooth and successful milestone decision. Given the dynamic nature of acquisition programs seeking milestone decisions, it became apparent that extensive resources were being expended to manage the DRP associated with all acquisition category (ACAT) I, II and III programs. Further, a survey revealed that there was a variety of custom-developed and commercial products being used by the community to support the activities associated with the DRP. In some instances, multiple purchases of the same product were discovered. Inefficiencies are not affordable in today's resource-constrained fiscal climate.

Given the dynamic nature of acquisition programs seeking milestone decisions, it became apparent that extensive resources were being expended to manage the DRP associated with all acquisition category I, II and III programs.

In an effort to align the tenets of network-centric enterprise strategies, the Assistant Secretary of the Army for Acquisition, Logistics and Technology has centrally funded an enterprise commercial-off-the-shelf (COTS) solution that will be used throughout the acquisition community to support DRP milestones. VIS will be the standard business practice and method that all Army acquisition programs will be required to use. VIS is an Oracle® Web-based solution that will be compatible with the existing Acquisition Information Management (AIM) services infrastructure and will be implemented and managed by PM Acquisition, Logistics and Technology Enterprise Systems and Services (ALT-ESS). This COTS product consists of a user-friendly graphical interface and mirrors Microsoft® Windows-like features with drop-down menus.

VIS's principle objective is to implement an enterprise approach/solution that will streamline the activities associated with preparing, coordinating and staffing programmatic documentation required for milestone decision reviews. All individuals associated with the development, coordination, staffing, review and approval of programmatic documentation will have access to VIS. Level of access will be granted based on the individual's role in the programmatic document process.

PM-Level Benefits

Specific PM-level features and benefits that can be realized include:

- *General Project Plan Visibility/Execution Information*. This capability allows users to establish task assignments and improve project visibility through using point of contact roster management, project plan communication, schedule management and electronic notifications.
- *Document Management*. This capability encompasses preparing, coordinating, approving and managing documents involved in milestone reviews along with project/task viewing and monitoring. The tool serves as a central repository for critical program documents and provides PMs the ability to add documents related to the project and

the associated tasks, review and revise milestone documents, route documents for approval and then track approval status, track sources (who and when for updates/revisions), control document access and provide separate working areas for document development and archiving.

- *Issue Management*. This capability provides mechanisms for creating, managing and facilitating issue resolution surfaced throughout the integrated product team (IPT) process. This includes the ability to establish organization-specific business rules, create issues related to the projects/tasks, relate issues to project activity, attach documents to issues as they are routed and track threaded discussions.
- *Internet Meeting*. This capability allows users to collaborate online and reduce the requirement for face-to-face meetings. In addition, a user tool kit provides "how-to" guides for using the tools, document and process templates and online user guide and tutorials.

Other tangible benefits that may accrue from using VIS include a simplified and streamlined milestone documentation process resulting in reduced time for individual milestone document preparation, common tool support to provide document visibility and reduce management effort in preparing consolidated milestone packages. Further benefits include standardized management and preparation to improve visibility and oversight and standardized document templates that reduce training and enhance consistency and general productivity.

VIS implementation — as part of a larger set of coordinated tools — will provide a single COTS-based architecture to reduce development and maintenance costs associated with individual tools proliferated throughout the acquisition community.

Program Executive Office (PEO)-Level Benefits

In addition to the above-mentioned features and benefits that accrue to the PM, the PEO business process will emphasize other features. The *General Project Plan Visibility/ Execution Information* feature will improve the capability to manage and coordinate multiple projects centrally. The *Document Management* capability archival function will be especially handy for accessing the full history of any program. With a collaborative milestone decision process in operation, the *Issue Management* features will provide for early issue visibility and detection. As a complete package to support the PEO milestone decision business process, the *Online User Guide and Tutorial* will be key to the cultural change required to achieve sufficient levels of user acceptance of centralized acquisition tools.

HQDA-Level Benefits

Time is the acquisition community's most precious resource. VIS implementation — as part of a larger set of coordinated tools — will provide a single COTS-based architecture to reduce development and maintenance costs associated with individual tools proliferated throughout the acquisition community. The resulting database will be a one-stop source for all milestone documentation, providing both current status and program history.

The capability to allow users to collaborate online and reduce the requirement for face-to-face meetings will benefit all players in the milestone DRP and other acquisition business processes. The *Web Conferencing* and *Collaboration* features will significantly reduce the need for temporary duty (TDY)/travel for working IPTs. Program/project visibility provided by the *Tracking* feature will reduce the need for TDY for integrating the working IPTs. The Deputy Assistant Secretary of the Army for Plans, Programs and Resources (DASA (PP&R)) has established a goal for 50-percent reduction in TDY associated with milestone DRPs.

Deployment

The current deployment consists of a 120-day pilot. Up to five programs/ projects are targeted for the pilot and will be used as a basis for documenting requirements, configuring the software to support the requirement and developing and tailoring the training requirements. The acquisition community can anticipate VIS rollout beginning in June 2004. Subject matter experts fluent in DRP activities will be integral to successful implementation at each PEO/PM office.

Senior acquisition leaders have expressed their strong support for the VIS effort and will help implement the necessary changes to the current process. All parties recognize the need for improved business practices that would make milestone reviews more effective and efficient over time. Change management will become the watchword for success as the VIS capability is extended to the entire acquisition community.

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UH-60A Recapitalization/ Rebuild Program — The First Steps to Recapitalizing the UH-60 Fleet

MAJ Randy Murray

BEST BUSINESS PRACTICES

Paratroopers from 82nd Airborne Division's 3rd BCT pass by a Black Hawk helicopter at Rifle Base in Al Asad, Iraq, on their way to get equipment for the airborne assault operation to demonstrate joint U.S. capabilities for rapid deployment/redeployment anywhere in the world to support the war on terror during *Operation Iraqi Freedom*, Feb. 24, 2004. U.S. Army photo by SSG Charles B. Johnson, 982d Signal Company.

The UH-60 Black Hawk helicopter has served the Nation faithfully and with great distinction in peace and war during the past quarter century. As the Army's workhorse utility helicopter (UH), its missions include air assault, general support, command and control, combat search and rescue, special operations and air medical evacuation. It has performed these missions in Grenada, Panama, Somalia, Bosnia, Kosovo and in *Operations Desert Shield* and *Desert Storm*. In the past 10 months, during *Operations Enduring* and *Iraqi Freedom*, Black Hawks have flown more than 92,000 flying hours and evacuated 2,467 patients. While known for its ruggedness and reliability, the oldest aircraft in the fleet are now more than 25 years old and are showing the wear and tear of time and hard work. The UH Project Manager's Office (PMO) designed the UH-60A Recapitalization (Recap)/Rebuild Program to address these issues.

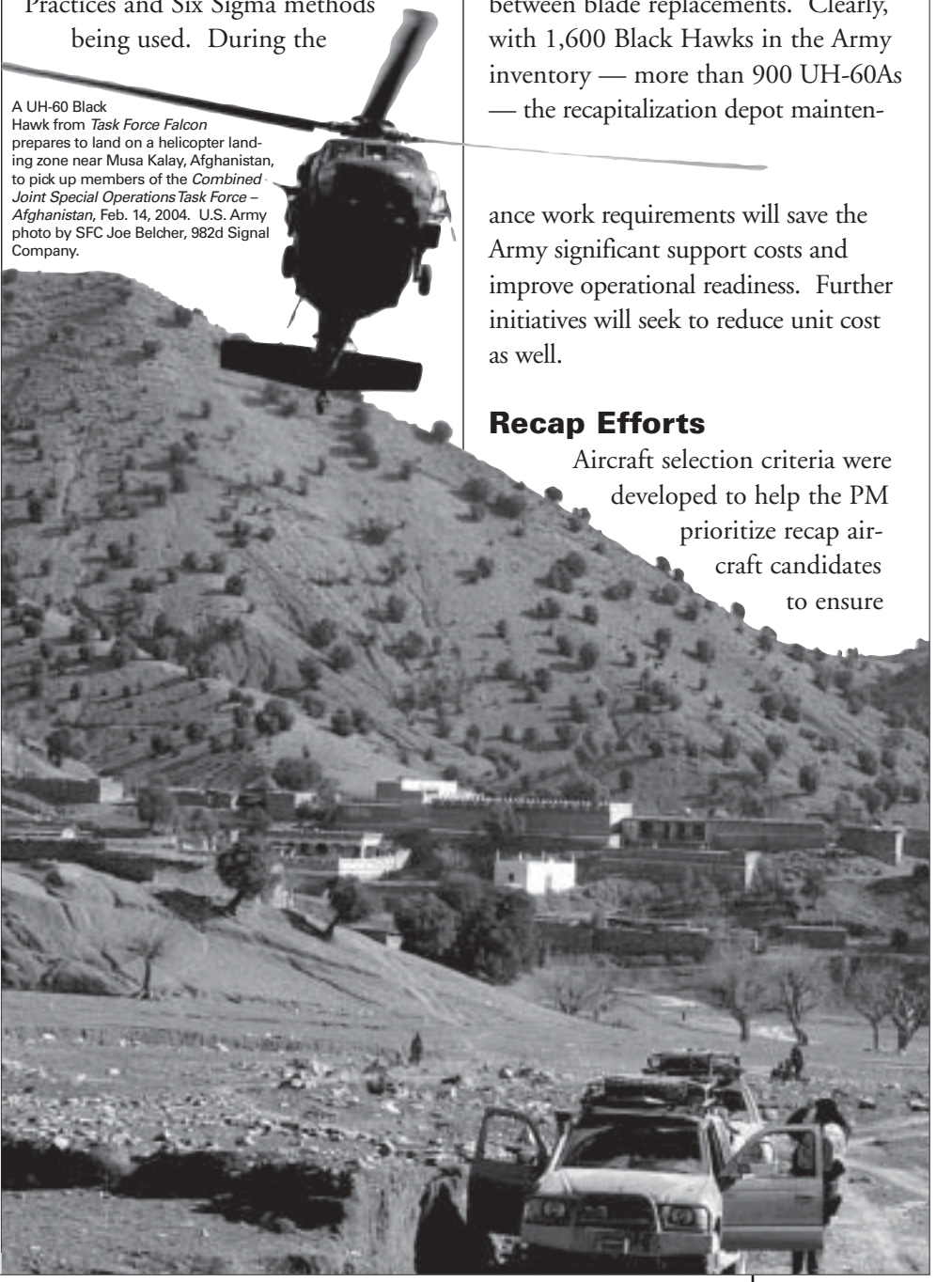
The UH-60A Recap/Rebuild Program is a $1.2 billion effort to rebuild 193 UH-60A aircraft at Corpus Christi Army Depot (CCAD), TX, between FY02 and FY13. The program's purpose is to sustain the fleet until induction into the UH-60M Recapitalization/Upgrade Program. The program has two elements: airframe recapitalization and components that both support the airframe recapitalization and sustain the remaining UH-60 fleet. The ultimate goals are to extend aircraft service life 10 to 15 years, improve reliability, reduce operations and support cost rates and enhance operational safety. This article describes the program and its many initiatives such as recapitalization standards, depot and industry partnerships and "lean" practices.

Partnerships and Standards

A joint UH PMO, CCAD and Sikorsky Aircraft Corp. (SAC) team evaluated the airframe in 2000 to ascertain focus areas during the recap/rebuild process to meet the goal of producing "like-new" aircraft. The evaluation resulted in an improved airframe structural assembly that mitigates many field-experienced deficiencies.

The U.S. Army Aviation and Missile Command (AMCOM) and U.S. Army Communications-Electronics Command (CECOM) supported the initiative by analyzing the depot-level repairable (DLR) aircraft components to determine potential recapitalization benefits. The review encompassed more than 98 components whose mean time between replacement (MTBR) after multiple overhauls had fallen significantly below the rate experienced between new and first overhaul. An engineering team analyzed each DLR to determine whether MTBR could be restored to like-new performance. This standard maintains the current configuration for the item — the design of the item may not change — but may tighten tolerances or increase mandatory replacement items during the overhaul process. This effort established recapitalization standards for 75 AMCOM airframes, 10 AMCOM engines and 13 CECOM DLRs.

The T700 engine and main rotor blades were among the first components to receive recapitalization standards. A partnership with General Electric (GE) Co. was established for the engine line with Best Commercial Practices and Six Sigma methods being used. During the review process, the engineering team's goal was to implement changes to restore overhauled engine life to at least 1,500 hours between first and second overhaul. The partnership reduced turnaround time from 300 to 100 days and improved T700 turbine engine life from 309 hours to more than 900 hours MTBR. Likewise, the main rotor blades were being replaced at 100 hours after the third overhaul. The lead-the-fleet aircraft at the U.S. Army Aviation Center and School are now averaging more than 700 hours between blade replacements. Clearly, with 1,600 Black Hawks in the Army inventory — more than 900 UH-60As — the recapitalization depot maintenance work requirements will save the Army significant support costs and improve operational readiness. Further initiatives will seek to reduce unit cost as well.



A UH-60 Black Hawk from *Task Force Falcon* prepares to land on a helicopter landing zone near Musa Kalay, Afghanistan, to pick up members of the *Combined Joint Special Operations Task Force – Afghanistan,* Feb. 14, 2004. U.S. Army photo by SFC Joe Belcher, 982d Signal Company.

Recap Efforts

Aircraft selection criteria were developed to help the PM prioritize recap aircraft candidates to ensure

the entire fleet's readiness was supported. These criteria were safety, the aircraft's airframe condition evaluation score, the aircraft configuration, depot history and force structure considerations.

The first recap Black Hawk flew out of CCAD in August 2003 and was issued to Fort Rucker, AL, as part of the school fleet refreshment program. The aircraft was fitted with 75 DLR components that were recapitalized like new, including the GE/CCAD partnership-produced engine, main rotor blades and main transmission with improved planetary carrier. The airframe alignment was verified and a structural enhancement assembly applied to the cockpit, cabin, transition, tailcone and pylon areas to minimize potential depot-level maintenance requirements. Fresh paint and the replacement of more than 120 non-DLR items including new fuel cells, interior, windscreens, wheels and tires completed the "new-from-the-factory" look.

While the recap/rebuild program is improving the fleet with more reliable components and aircraft, it also provides a venue for additional initiatives to reduce depot operation costs while improving quality, efficiency and support to a wide range of customers.

Since its return to service, pilots and maintainers alike have lauded its flying characteristics and reliability.

While the recap/rebuild program is improving the fleet with more reliable components and aircraft, it also provides a venue for additional initiatives to reduce depot operation costs while improving quality, efficiency and support to a wide range of customers.

Lean Practices

In 2002, the Army Materiel Command (AMC) Commander directed that all commodity commands implement lean practices. AMC's lean efforts have grown from the traditional lean production approaches espoused in the 1980s by Toyota executive Taiichi Ohno (now retired). The lean philosophy boils down to reducing waste, turnaround time and costs; improving quality and eliminating nonvalue adding processes.

CCAD began implementing lean practices via the Black Hawk recap/rebuild program by using an integrated product team (IPT) consisting of depot, UH PMO, Defense Logistics Agency (DLA) and AMCOM personnel. The team developed a 3- to 5-year plan to eliminate waste in the recap/rebuild program. Realizing that 5 years was too long, and such a delay was a form of waste itself, they developed a 6- to 12-month plan to reap immediate benefits.

CCAD's challenge was significant. Turnaround time for the first recapitalized Black Hawk program was 327 days. CCAD planned to reduce that to 211 days by February 2004 and to 150 days by March 2005. Implementation effectiveness measures were developed to include defect quantity and type, time-in-flight test, customer satisfaction, component time-on-wing, DLR removal rate, maintenance man-hours/flight hours and aircraft mission capability rates.

Among the major areas the Lean IPT identified to improve and reduce waste was aircraft flow between processes. Each aircraft was moved 30 times, through 8 buildings, for 5.5 miles through 213 steps. Parts storage and retrieval was a contributing challenge. Parts were delivered to

U.S. Army UH-60 Black Hawk crew members from the 1/126th Aviation Regiment, Rhode Island Army National Guard, prepare the aircraft after arriving from the U.S. aboard the High Speed Vessel (HSV) 2 "Swift" at Puerto Cortes, Honduras, during the Joint Logistics Over the Shore (JLOTS) exercise Feb. 24, 2004. U.S. Army photo by Kaye Richey, U.S. Army South.

the assembly area before they were required, leading to clutter, damage and loss, which further slowed the assembly process.

In its quest to reach a 211-day turnaround, CCAD consolidated all major processes — disassembly, intermediate maintenance, structures/electrical and assembly — in one building, thereby reducing the number of times the aircraft is moved from 30 to 8. Personnel supporting these processes, such as quality and production control, are collocated to further reduce the time spent on defects, motion and transportation. These steps alone have accounted for a 61-day reduction. Other 211-day target enablers are automating the flight preparation and support area, adding a second shift and improving parts flow to ensure parts are delivered to an assembly area when they are actually needed.

To address the increased flow of airframe parts required for the program, an industry-government partnership was formed between SAC and CCAD. Under this agreement, SAC will become the materiel integrator for Black Hawk programs, providing components, parts and assembly-supporting hardware kits. SAC's role will be to provide inventory management, support to the production line and parts movement. Responsibilities include reducing repair turnaround time, increasing quality and operating time of repaired components. Ultimately, SAC will establish a true "pull" parts process using a Web-based customer ordering system. Combined with the GE/CCAD partnership, this should streamline the logistics infrastructure and provide more responsive, cost-effective support to the depot.

A key enabler to reaching the 150-calendar-day turnaround time is modernized equipment. One example is a second alignment fixture, which reduces the time to verify alignment after structural work is completed, builds efforts into the repair requirements and reduces possible rework. Additional enablers are continued lean rapid improvement events to reform processes and automation.

> The UH-60A recap/rebuild program and lean practices implemented by CCAD and its partners are helping to ensure continued fleet readiness. Recapitalized components are exceeding initial engineering estimates, thereby improving reliability and slowing the rise in operations and sustainment costs.

The UH-60A Recap/Rebuild Program and lean practices implemented by CCAD and its partners are helping to ensure continued fleet readiness. Recapitalized components are exceeding initial engineering estimates, thereby improving reliability and slowing the rise in operations and sustainment costs. Improved production quality and faster turnaround time are ensuring airframes are quickly and efficiently returned to warfighters. Black Hawk recap/rebuild is spearheading Army aviation recapitalization. The initiatives highlighted here show that Black Hawk products will surpass the desired results and indicate the benefits to be gained by other aviation systems as they undertake their recap efforts.

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MC6/SOFTAPS — An Acquisition Reform Success Story

MAJ J.T. Craft and David Roy

BEST BUSINESS PRACTICES

In past years, the acquisition process was laborious, time-consuming and had a tendency to produce materiel solutions that varied widely from the original requirement. This fact is not lost on today's acquisition professionals whose honest motivation is to produce proper materiel solutions in a timely, cost-effective manner, for those who matter most — Soldiers fighting our Nation's wars.

Acquisition reform, including a host of subinitiatives such as Evolutionary Acquisition (EA) and Incremental Acquisition (IA) — just to name a few — are the mechanisms used to streamline the acquisition process in a rapidly changing DOD environment. This article highlights an acquisition reform success story — The Maneuverable Canopy 6 (MC6)/Special Operation Forces Tactical Advanced Parachute System (SOFTAPS).

MC6/SOFTAPS

MC6/SOFTAPS has taken advantage of acquisition reform concepts including rapid fielding, acquisition streamlining, IA and the idea that common sense should govern our materiel developments for operational requirements. This system is one solution that meets two requirements:

- Static-line deployed parachutes that can withstand heavy operation loads at high altitudes. Currently, the MC1-1C main and Modified Improved Reserve Parachute System (MIRPS) cannot operate at high altitude with an adequate mission load without significant damage or failure.
- The Advanced Tactical Parachute System (ATPS), designed to replace the T-10 parachute in mass-tactical, static-line parachute operations. APTS is a Pre-Planned Product Improvement (P3I) of a steerable variant.

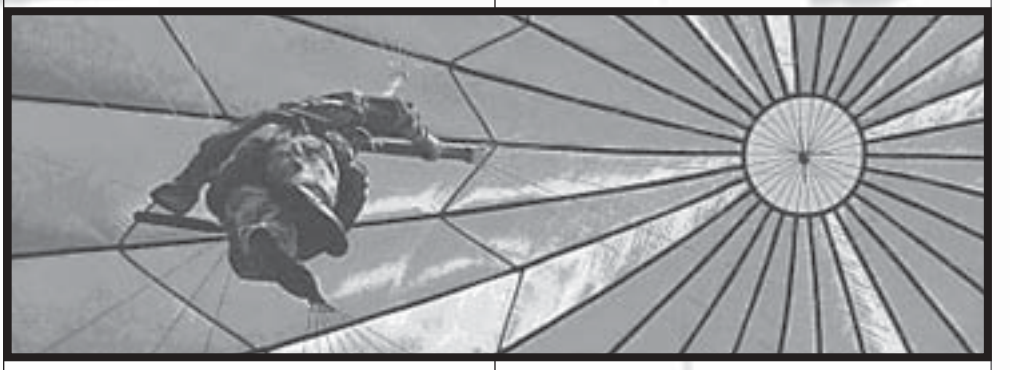
Live jump with the ATPS canopy.

The MC6 system rigged on the jumper ready for use. The MC6 system consists of the ATPS harness and pack tray, ATPS reserve personnel parachute and SF-10A main canopy. The outside appearance of the SOFTAPS and ATPS is the same with the exception of the blue nylon webbing used for the confluence wrap on the risers, which allows for easy recognition of systems at the time of issue from the parachute storage/issue facility. The ATPS will replace the MIRPS.

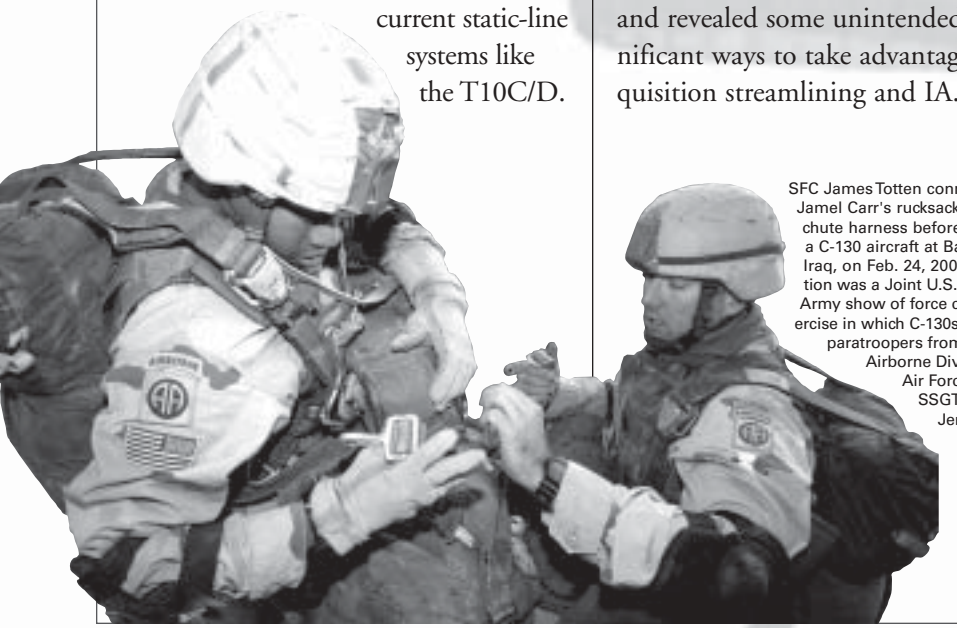
In December 1999, the U.S. Army Special Operations Command (USASOC) decided to replace the MC1-1C for high-altitude static-line operations. They found that the SF-10A canopy, actively used by the Forestry Service for smoke jump operations, could successfully sustain Special Forces (SF) soldiers with appropriate mission loads at high altitudes and consequently purchased the SF-10A canopy to meet that need. USASOC attached the SF-10A canopy to the T-10 harness and MIRPS and began to use this nonstandard parachute system for operational requirements. The advantage is that USASOC rapidly acquired a solution to its operational requirement without extensive acquisition research, development and testing lag time. This approach's shortcomings are that USASOC is now responsible for the purchase, care, upkeep and maintenance of a non-type classified, nonstandard parachute system. Basically, USASOC is footing the entire bill for a system that could be adopted Armywide.

Multiple Requirements, One Solution

Concurrently, the U.S. Army Infantry Center and School identified a need for developing a parachute system that would significantly reduce jump injuries associated with current static-line systems like the T10C/D. ATPS resulted from this requirement and entered into the traditional acquisition process. The end state was a vastly improved static-line, mass-tactical parachute system — especially in the parachute harness and reserve parachute areas. Additionally, within the requirements document, a P3I was established to produce a steerable variant that would replace the MC1-1C canopy.



USASOC quickly realized that ATPS had a vastly superior parachute harness and reserve chute system. In October 2002, USASOC came to the acquisition community with the idea to develop SOFTAPS, which simply took the SF-10A canopy — already in operational use — and with minor modifications to the risers, integrated it with the ATPS harness and reserve. This proposal ideally solved two requirements with one materiel development and revealed some unintended but significant ways to take advantage of acquisition streamlining and IA.



SFC James Totten connects 1LT Jamel Carr's rucksack to his parachute harness before loading onto a C-130 aircraft at Balad Air Base, Iraq, on Feb. 24, 2004. The operation was a Joint U.S. Air Force and Army show of force capabilities exercise in which C-130s dropped 240 paratroopers from the 82nd Airborne Division. U.S. Air Force photo by SSGT Suzanne M. Jenkins.

Testing Simplified

Because the SF-10A canopy was already extensively used by the Forestry Service and USASOC, all jumps using that canopy could be used as reliability data to support conclusions about canopy performance. This approach significantly reduced the scope of both the developmental test (DT) and operational test (OT) because of the wealth of readily available SF-10A canopy data. Additionally, DT and OT scope was reduced because the ATPS harness and reserve chute had undergone extensive testing and all the data applied to SOFTAPS. Product development time was reduced from 2 years for both OT and DT to 6 months for full SOFTAPS performance evaluation. As a result, from Milestone A in April 2003 to Milestone C projected in February 2005, SOFTAPS will be fielded to meet two operational needs in approximately 3 years, an awesome accomplishment.

USASOC funding already in place for SF-10A development can potentially be leveraged to complete MC6/SOFTAPS development, significantly reducing total program cost. Partnering the acquisition community with USASOC for funding will take the system through OT to type classification and Low-Rate Initial Production. Funds originally earmarked by USASOC for SF-10A costs are now applied to a larger program, eliminating the need for

Pararescuemen from the 301st Rescue Squadron perform a HALO jump over Tallil Air Base, Iraq, during *Operation Iraqi Freedom*. U.S. Air Force photo by SSGT Shane Cuomo, 1st Combat Camera.

USASOC to dedicate funds for its own unique system. USASOC realizes budgetary savings through the MC6/SOFTAPS program and the acquisition community realizes budgetary savings by leveraging nontraditional funding sources — a win-win situation for Soldiers, the Army and DOD.

Because the SF-10A canopy is currently fielded within USASOC, additional cost savings can be potentially realized by taking canopies in use and providing them as government-furnished equipment to the contractor to build MC6/SOFTAPS. With an estimated 18,000 total systems needed, the 3,000 canopies currently in the inventory will significantly impact the acquisition effort's total cost.

> Product development time was reduced from 2 years for both OT and DT to 6 months for full SOFTAPS performance evaluation.

MC6/SOFTAPS clearly serves as an acquisition reform success story whereby acquisition streamlining concepts led to the use of existing data on system subcomponents and applying that data to the testing. By evaluating complementary requirements, one material solution was sought instead of two. The MC6/SOFTAPS also took advantage of IA concepts by deploying a full capability, incrementally fielded solution based on established requirements, to a broad range of units requiring these capabilities. Finally, this program system serves as an example of common sense acquisition by appropriately reducing DT and OT and creatively leveraging nontraditional funding sources to field a much needed capability quickly.

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DAVID ROY is the Project Lead for the SOFTAPS Program, Product Manager Clothing and Individual Equipment. He earned a B.A. in history from Norwich University.

SAE International G-11 Standards Development in System Reliability

Dr. David Gorsich, Bob Kuper,
Heather Molitoris and Tom Udvare

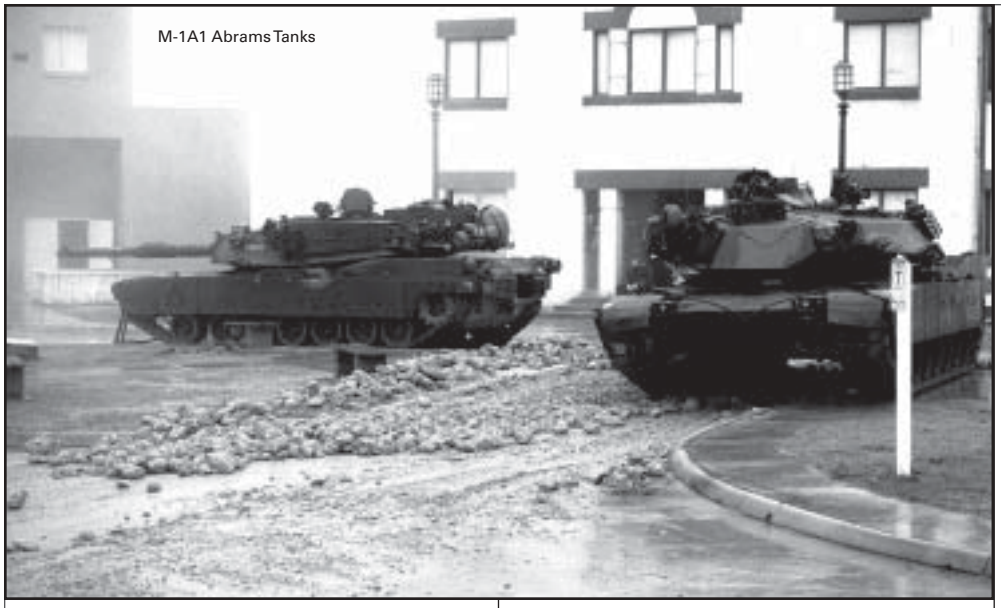
BEST BUSINESS PRACTICES

SAE International's G-11 Standards Division on Reliability, Maintainability, Serviceability and Logistics (RMSL) held its semiannual workshop Oct. 6-8, 2003, in Detroit, MI. The G-11 Division mission for RMSL provides an industry/government forum to review RMSL technology and investigates the interfaces with logistics support, engineering design and development, support costs, maintainability, reliability, repairability, tooling and diagnostics. This particular SAE Division's importance to the Army was emphasized by the attendance of GEN Paul J. Kern, Commanding General (CG), Army Materiel Command; MG N. Ross Thompson, CG, U.S. Army Tank-automotive and Armaments Command; and BG William M. Lenaers, CG, U.S. Army Ordnance (OD) Command and School, with full realizations that their presence was required at the opening ceremonies for the Association of the United States Army (AUSA) Annual Convention in Washington, DC, that afternoon.

About 22 years ago, SAE began a committee to address the reliability of aerospace systems, primarily focused on developing standards in RMSL. Since then, the G-11 Committee was expanded to the G-11 Division and has published 24 standards, guidelines and documents (based on statistical methods), which have been used by various international organizations. They have also been accepted by NATO and the United Kingdom's Ministry of Defence, and have been cited by the Canadian Defence organization. The Division's current emphasis is on probabilistic methods for reliability computation to build consensus for "uncertainty-based physical modeling," a much more accurate way of predicting reliability. In 1992, the G-11 Committee expanded its focus to include the automotive industry and received the "JA" designation signifying the standards for both aerospace and automotive applications. In March 2003, Dr. David Gorsich, U.S. Army, National Automotive Center (NAC), and Professor K.K. Choi, University of Iowa, formed a new committee to analyze the uncertainties in system designs for military vehicles. Army vehicles include tanks, trucks, personnel carriers, High-Mobility Multipurpose Wheeled Vehicles (HMMWVs), helicopters and planes.

GEN Paul J. Kern, CG, Army Materiel Command, stressed the need for the Army to improve the reliability of systems to sustain warfighters during a G-11 Standards Workshop in Detroit, MI, last October.

The 3-day workshop included informational briefings on Soldiers' in-theater needs. GEN Kern stressed the need for the Army to improve the reliability of Army systems to sustain warfighters. He stated that analyzing uncertainties within mission scenarios will ensure the objective is obtained and reduce the element of risk to our Nation's Soldiers. Kern also stressed that the Army's reliability record needs improvement and complimented the U.S. Army Tank Automotive Research, Development and Engineering Center's (TARDEC's) NAC for working to establish G-11's Reliability Applications Committee to develop standards and methodologies for evaluating the reliability and durability of current and future Army systems. Kern stressed that using historic deterministic modeling methods to evaluate systems is important, but future work should concentrate on stochastic and probabilistic methods as well.

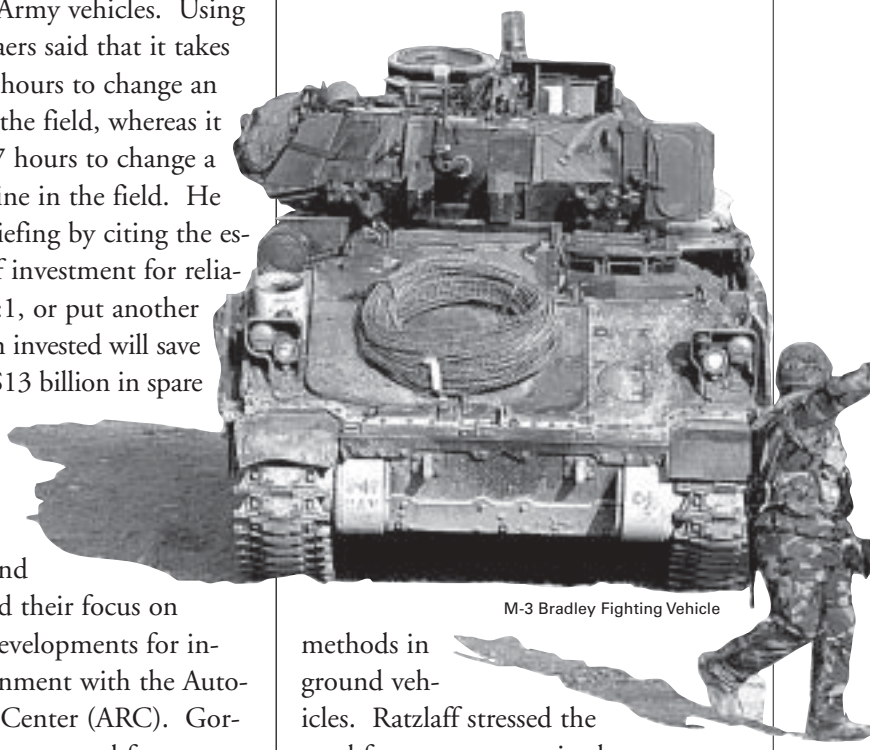

M-1A1 Abrams Tanks

MG Thompson addressed TARDEC's modeling and simulation (M&S) capabilities by citing its developing ability to consistently predict and design reliability, durability and sustainability into Army systems. Thompson stressed that current Army system reliability is not acceptable and that sustainability requires reliable and maintainable components. He further stated that from 1985 to 1995, 41 percent of Army systems met the reliability requirement. This percentage decreased dramatically to only 20 percent of Army systems between 1996 and 2000 and the trend appears to be downward. Thompson remarked that Army system RMSL requirements must be addressed during initial design stages. Further, to improve reliability, he said engineers should consider using reliability-based design optimization and/or robust design optimization methods. Thompson concluded by saying, "Standardization of M&S methodologies through SAE's G-11 is crucial to reducing the Army's operational and supportability costs and meeting the Future Force requirements."

BG Lenaers further emphasized the Army's need to improve current and future systems. The combination of Quartermaster and OD — which is the bulk of the Army's personnel logistic footprint — is larger than the sum of all the combat arms branches combined. He stated that 90 percent of the 117,000 soldiers he commands work directly with the maintenance of Army vehicles. Lenaers stated that reliability affects 58 percent of life-cycle costs, including system maintainability. He explained why engineers must build reliability and maintainability requirements into Army vehicles. Using an example, Lenaers said that it takes about 1.5 to 2.0 hours to change an M113 engine in the field, whereas it requires about 37 hours to change a HMMWV's engine in the field. He concluded his briefing by citing the estimated return of investment for reliability equals 130:1, or put another way, $100 million invested will save the Army about $13 billion in spare parts over a 7-year period.

Dennis Wend, NAC Director, and Gorsich presented their focus on dual-use M&S developments for industry and government with the Automotive Research Center (ARC). Gorsich stated that current and future ARC projects include researching and developing probabilistic and stochastic modeling methodologies, safety modeling: the human-centered modeling and simulation, linking physics models to acquisition decisions and databases that work with maintenance decisions/purchases and enhancing performance with embedded models and metamodels. ARC research projects are quad-concept based — teams are comprised of industry and government participants as well as one faculty principal and one student/graduate researcher to investigate and research areas of interest to both government and industry. The quad concept ensures that dual-use technology is developed. Gorsich concluded by discussing TARDEC M&S team's current capabilities and his future vision for developing and applying probabilistic and stochastic methods to improve the reliability of Army systems.

The final keynote address was given by Barry Ratzlaff from DaimlerChrysler. He presented the industry perspective on using reliability and probabilistic methods in ground vehicles. Ratzlaff stressed the need for more experts in these areas to research probabilistic methods to develop templates so that the probabilistic methodologies and tools could


M-3 Bradley Fighting Vehicle

become useable by nonexpert probabilistic method engineers. He noted that the industry must develop new models, refine the models not yet ready for production and train new engineers to better understand the meaning and implication of variation.

The G-11 Ground Vehicle Division is looking for technical volunteers to address key areas affecting RMSL for the Army and industry. A key area of focus is statistical and physics-based probabilistic methods used to quantify the reliability of complex systems. Currently, work is underway to evaluate probabilistic technologies and to develop guidelines for preparing inputs for probabilistic analyses. Other activities include investigating real-world applications for probabilistic methods, using probabilistic methods in diagnostic capabilities and determining the need for universities to offer courses in probabilistic methods.

Integration between hardware and software, as well as environmental factors, affect the overall system reliability.

Reliability is a key performance parameter when developing complex systems. Integration between hardware and software, as well as environmental factors, affect the overall system reliability. Committee members are focusing on understanding and addressing the current definition of reliability — including system-of-systems, software and their interactions — to determine how their relationship affects system reliability in general. Their goal is to develop solutions and guidelines to maximize the reliability of a system and standardize the definitions. Currently, the Reliability Committee is working on case studies, defining and clarifying terminology, data requirements/availability and validation/verifications in integrated testing and simulations. To learn more about the G-11 Committee on Reliability, contact Gorsich at **gorsichd@tacom.army. mil**, Dr. Greg Hudas at **hudasg@ tacom.army.mil** or Kuper at **robert.kuper@us.army.mil**.

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BOB KUPER is the Executive for Reliability and manages the Army Transformation Improvement Program at the U.S. Army Armaments Research, Development and Engineering Center. He serves as Vice Chairman of the Society of Automotive Engineers G-11 Division and also chairs the Reliability Committee. Kuper received his B.S. degree from the U.S. Military Academy and has completed graduate work at Steven's Institute of Technology and the New Jersey Institute of Technology. In addition, he graduated from the Defense Systems Management College's Advanced Program Management Course and is Level III certified in program management and systems planning, research, development and engineering.

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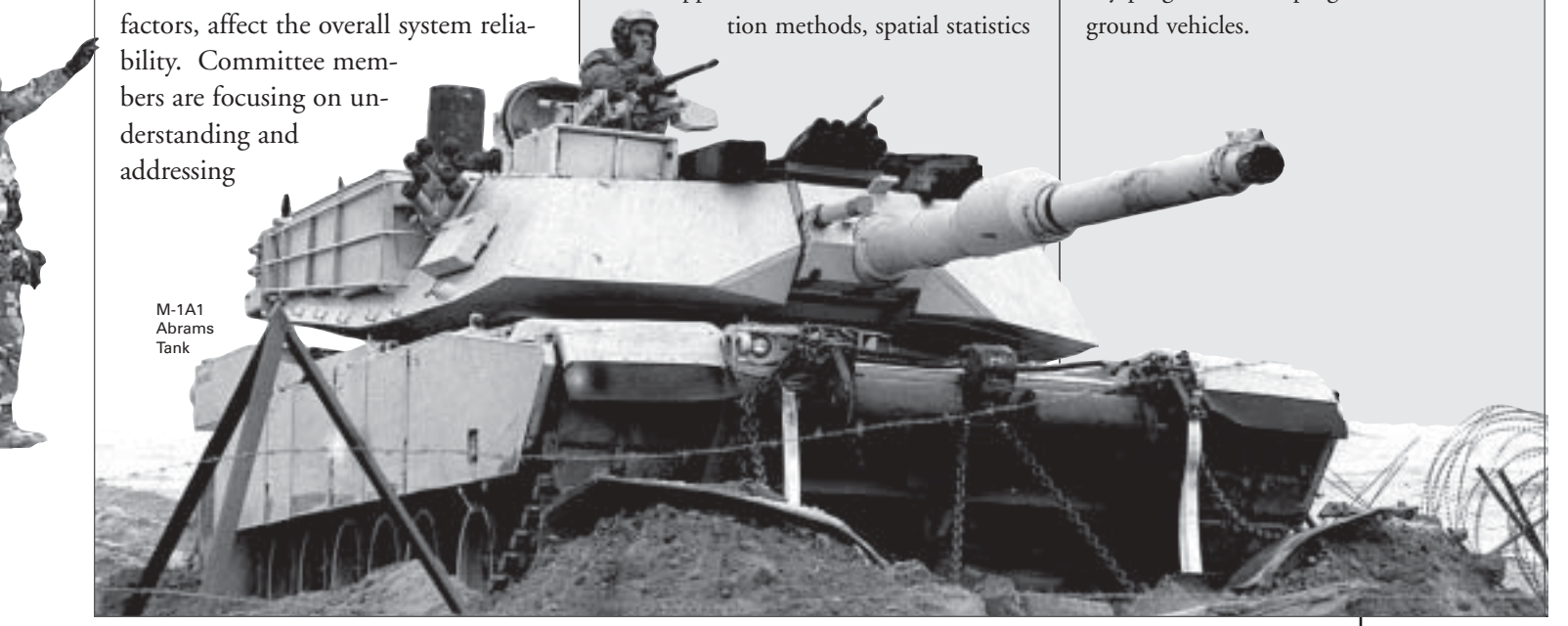


M-1A1 Abrams Tank

Army Consolidates Microsoft® Software Purchases

Cynthia K. Dixon

BEST BUSINESS PRACTICES

The Army's recently implemented Microsoft Enterprise License Agreement (MS ELA) consolidates software purchases, licenses and upgrades across the Army and will save the Army millions of dollars over the next 6 years. This contract results from an Office of the Army Chief Information Officer (CIO/G-6) initiative begun in 2001 to improve Army Enterprise Infostructure environment management and oversight.

SPC Philip Amiot, 82nd Airborne Division's Long Range Surveillance Detachment, uses an AN/PSC-5 Spitfire UHF Manpack Terminal and a laptop computer to send still images to satellites. Amiot is taking part in a live-fire exercise at a range outside of Bagram Airfield, Afghanistan. U.S. Army photo by SPC Jeremy Colvin, 55th Signal Co.

In May 2003, collaboration among the CIO/G-6, the Army Small Computer Program (ASCP), the Army Contracting Agency (ACA), the Information Technology E-Commerce and Commercial Contracting Center (ITEC4) and the Network Enterprise Technology Command (NETCOM) resulted in the award of an Enterprise Software Consolidation order (MS ELA) to Softmart® Government Services Inc., Downingtown, PA. The award was based on a best-value evaluation of offers from eight DOD Enterprise Software Initiative (ESI) vendors. The MS ELA is centrally funded for desktop and certain enterprise server software licenses, including upgrades.

The award, valued at $471 million, allows for standardization of MS versions Armywide and provides the Army with substantial cost avoidance over the contract period. The Army will get products at a 2003 price or less for the next 6 years. These product prices are expected to increase for other consumers over the same period as new MS software versions are introduced.

Benefits

In the past, each Army post, camp and station (or elements within) negotiated its own software licensing agreements. When a requirement made it necessary to move the Army to a different MS version, some organizations had funding to buy the new software versions and others did not. This meant that the Army was never on the same version, and in some cases, on a very old version. The new agreement allows the entire Army to migrate to the MS version that meets current requirements. With the MS ELA, all Army users are eligible to move to the latest approved MS software version. This award provides for operational deployments anywhere and anytime, enables Windows NT 4.0 replacement, provides means to active directory migration, lowers total cost of ownership, improves security environments, enables server consolidation and simplifies license tracking and budgetary planning.

The MS ELA covers all Active Army — military, civilian and contractors supporting Army programs — the Army Reserve (USAR) and the Army National Guard (ARNG) personnel. Joint organizations such as U.S. Central Command, and Army educational institutions, such as the U.S. Military

Academy and other Army.edu organizations, are not covered. Organizations contractually obligated under other MS software contracts will migrate to the MS ELA when that software contract ends.

Policies and Restrictions

A new Army policy issued in February 2004 establishes the Army's MS ELA software inventory as the single source for Army organizations to purchase or obtain MS products. This applies to the Active Army, the USAR and ARNG, ensuring the Army will not pay twice for MS software products.

How does this affect the purchase of desktops, laptops and servers? Desktops and laptops should be purchased with a basic operating system and servers should be purchased without an operating system (see the ASCP Web site at **https://ascp.monmouth.army.mil** for a list of authorized operating system (OS) versions). The operating system for servers, upgrades of OS for desktops and laptops and MS software applications will be provided to hardware vendors by Softmart. Army organizations are prohibited from procuring MS software products that are included on the Army ELA other than desktop and laptop initial OS from hardware vendors.

Software Categories and Prices

The MS ELA covers more than just Enhanced Desktop software. There are additional provisions for MS products used in business applications, such as MS Visio and Project. Requirements for these products must be programmed and funded by the requiring activity. All products include upgrades for 6 years. The price for available software varies among the categories listed below. A complete list of all software products is located at the ASCP Web site.

Category 1 — Enhanced Desktop Products

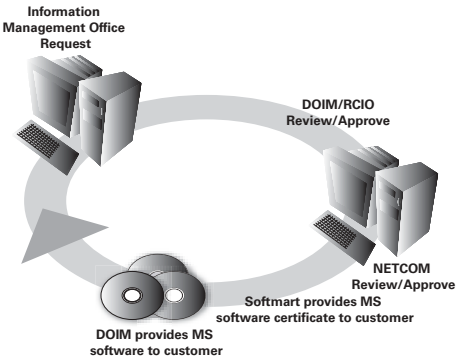
- Upgrade to OS.
- Office Professional (Word, Excel, PowerPoint, Access and Outlook).
- MS Publisher.
- Visio Viewer.
- Windows Client Access License (CAL).
- System Management Server (SMS) CAL.
- Exchange Server CAL.
- Sharepoint Portal Server CAL.
- Terminal Services CAL.

Category 2 — Functional Business Software Products

- FrontPage
- MapPoint
- Data Analyzer
- Visio Professional
- MS Project

Category 3 — Enterprise Server Software Products

- SQL Server.
- Exchange Server.
- Windows Server.
- BizTalk Server.
- Microsoft Operations Manager Operation and Application Management.
- Microsoft Developer Network (MSDN) Enterprise.
- Sharepoint Portal Server.
- SMS.



Software Ordering Process

To Order/Obtain Products

1. Login to ASCP **it e-mart** via Army Knowledge Online (AKO) (e-Commerce) or directly to **https://ascp.monmouth.army.mil/.**
2. Proceed to login via AKO mail account to Microsoft Enterprise License Request and complete ordering information.
3. Softmart processes form and approval.
4. Approvals are completed electronically by cross-referencing user data with the Authorized Distribution List consisting of Directorate of Information Management (DOIMs), Regional Chief Information Officers (RCIOs), Community of Interest Networks, and program executive offices for actual equipment fieldings.

MS ELA Contract Points of Contact

Contracting Officer
Robin Baldwin
Contracting Officer, ITEC4
(703) 325-3306 DSN 221-3306
Robin.Baldwin@us.army.mil

ASCP Ordering Process
Adelia Wardle
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Adelia.Wardle@us.army.mil

Brad Allen
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Bradley.Allen@us.army.mil

NETCOM (Technical)
William Kagawa
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William.Kagawa@netcom.army.mil

CIO-G6 Management
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(703) 602-7374 DSN 332-7374
Cynthia.Dixon@us.army.mil

Alfredo Guzman, NETCOM
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Cellular (703) 477-4892
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CPT Monica Sneed, Commander of Alpha Detachment, 126th Finance and Accounting Co., places a transaction into her computer at Bagram Airfield in support of *Operation Enduring Freedom.*

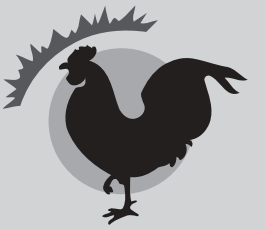
5. NETCOM is final approval authority for Category 3 purchases.
6. ITEC4 releases orders requiring customer funding once they have processed the order.
7. Softmart provides License Certificate Numbers via e-mail to the requester.

ASCP has posted information regarding the MS ELA to include a list of frequently asked questions on its Web site. Additional information is available on the AKO Knowledge Collaboration Center under Army CIO/G-6, NETCOM/9th Army Signal Corps, Enterprise Systems Technology Activity and ELA folder. A complete listing of all DOD ESI Agreements mandated by the *Defense Federal Acquisition Regulation Supplement (DFARS) Part 208* is provided on the DOD ESI Web site at **http://www.don-imit.navy.mil/esi/** and is definitely worth a visit. ASCP is the Army's appointed Software Product Manager for DOD ESI agreements.

CYNTHIA K. DIXON is an Information Management Specialist, CIO/G6. She holds a B.S. in computer information systems from Grambling State University and an M.S. in information systems from the University of Mary Hardin-Baylor.

What Can the Rooster Do for You?

Jaxon Teck



If your program hasn't already reached Milestone C, valuable logistics information required for decision making and useful ideas for a better product are now available. But what do you ask for, so early in a program?

People may snicker when telling you there are only two phases to logistics analysis during acquisition — Phase I, it's too early to tell. Logistics analysis must wait until there is a design. Phase II, alas, it's now too late to change. The design is too far along to change economically.

If this scenario seems all too true, don't despair — help is on the way. Early logistics analyses are now deliberately funded by Milestone B (yes, Bravo) to reduce life-cycle costs.

In addition, some logistics issues require analysis *before* engaging in traditional efforts that improve maintainability and before optimizing support for a given design. You want a range of estimated total costs for maintenance and supply to determine the affordability of the product. You also want to know which specific aspects will greatly reduce costs if given more design attention. Well, the Rooster knows!

RoosterLOG™ — The Early Voice of Logistics™

RoosterLOG logistics services from the Logistics Research and Engineering Directorate (LRED) at Picatinny Arsenal, NJ, achieved some innovative results. The following three examples show how to tackle early logistics analysis for make-or-buy decisions, competing architectures, design choices and even contractor-off-the-shelf alternatives, perhaps with packaging improvements. Early logistics analysis is also useful for choices between competing companies or even between countries with similar equipment.

XM29 Rifle Logistics Cost Savings

XM29 Rifle support costs were cut in half before there was a design. At the beginning of the XM29 Rifle program, there were five different architectures for the integrated airburst weapon system including decisions concerning barrel design/configuration and fire control integrated into a single-shell housing (with lowest weight). This is how logistics analysis supported the architecture decision, before there was a design. Using innovative tactics, the log team:

- Changed the search for an exact number pertaining to a specific design,

The Joint Lightweight 155mm howitzer system is designed for 21st century contingency operations. It provides 24-hour, all-weather fire support using the entire 155mm family of munitions including the new Excalibur global positioning system guided projectiles and the MACS in support of Army and Marine maneuver forces.

"How much will this cost?" to a less exact estimate, "Can we afford this?"

- Performed standard level-of-repair analyses to show relative cost comparisons between proposed architectures.
- Focused on the differences between architectures to determine cost-effectiveness.
- Gathered consensus guesses when there were no test data for the new system.
- Used ranges of likely reliabilities when estimates were unreliable.
- Leveraged decision-maker attention by showing that current systems may cost more than realized.
- Used a bar chart to compare the new weapon to current systems.

From the analyses, the log team's lessons learned determined that:

- It's not "too early to tell, then too late to change." The most-liked XM29 Rifle architecture (least weight) was dropped partly because its sustainment costs were nearly twice that of the next best choice and, therefore, not affordable.

XM29 Integrated Airburst Weapon

- The design influence for supportability and logistics was in the contract and started right away. The loaded database is very useful for different purposes. (Suggest a DOD-approved software package such as the Logistics Support Activity's Computerized Optimization Model for Predicting and Analyzing Support Structures — more commonly known as LOGSA's COMPASS.)

Ask for our PowerPoint briefing that shows how cost-saving analyses were presented for program management decision making. There is also a 1-page paper showing additional tactics and more lessons learned.

'Kick-Butt' Logistics

Kick-butt logistics improves combat power. You can develop striking power when more equipment is ready and working. In addition, you can plan for staying power when equipment

survives high operations tempo and keeps working. Kick-butt logistics leveraged leader attention early enough to make a difference. At a program review after Milestone B, the prime contractor highlighted current program risks. Briefing charts showed *cost* risks, *schedule* risks and *performance* risks. When the briefing was completed and open for questions, the program manager asked, "Where is the supportability column?" After the meeting, the contractor asked the Supportability Integrated Product Team to add logistics risk assessment to the traditional categories. Using innovative tactics, the log team:

- Defeated habits of mind with repetition. Whenever the Integrated Logistics Support Manager was at a meeting where the phrase, "cost, schedule and performance" was mentioned, he added "and supportability."
- Added logistics as an equal, separate category on the risk assessment chart used for briefings. This is done even in the absence of logistics risks. Remember, habits of mind.
- Brought logistics risks to leader attention early, even before the program was ready for another formal risk assessment. Waiting only makes resolution harder.

From these analyses the log team's lessons learned determined:

- It's never too early to identify specific risks to the program when solutions are possible and cheapest.
- Sometimes a risk is obvious to the team, but still needs a clear explanation for others. Test the explanation and potential consequences before going public.

> Kick-butt logistics improves combat power. You can develop striking power when more equipment is ready and working. In addition, you can plan for staying power when equipment survives high operations tempo and keeps working.

It's important to highlight logistics and supportability risks early to help build combat power. The actual risk assessment process used is available in a 2-page paper with a Microsoft® PowerPoint briefing. The paper includes step-by-step instructions. The briefing illustrates examples of common logistics risks and potential outcomes. However, only the highest risks are highlighted for top-level action.

Leveraging Product Value

Product value was leveraged with innovative packaging. Packaging played an early role in the acquisition of the new Modular Artillery Charge System (MACS) for the 155mm howitzer. The Army is phasing out traditional "multibag" charges — used since the 1800s — from its 155mm artillery and replacing it with Picatinny-developed rigid-case, modular propellant charges, each about the size of a large coffee can.

With the MACS, cannoneers in the field do not have to cut away excess powder bags to fire the correct distance. Therefore, burning or disposing of toxic excess powder is a thing of the past. Instead, cannoneers build the charge by selecting the right number of modular charges. MACS packaging enables several benefits in addition to the basic modular design:

- The charges are loaded twice as fast as the previous bag charges.
- The internal extraction sleeve is used to load charges into the gun.

- Charge separators and container blow-out panels reduce the effects of unintended ignition.

MACS cost savings are:

- Storage and transportation requirements decrease up to 42 percent because all the modular charges are used.
- Every MACS container is opened without tools, and each has an extraction sleeve that doubles as a handling device, eliminating the need for special tools.
- Every container has separators between the charges that double as an extraction tool to lift charges out of a hot tube, without requiring special tools for extraction.
- Unit trainers can safely teach the MACS because it is easy to use and easy to train.
- The external containers can be recycled several times.

From the analyses, the log team's lessons learned resulted in:

- Early packaging design and engineering that enhanced performance.
- A better product, fielded faster and cheaper without changing basic performance.

The MACS training video shows how the improved packaging advances product performance. Ask for a copy of the 28-minute video at **MACSmail @pica.army.mil**.

So what can The Rooster do for you? The examples described above are just a few of the innovative solutions developed by RoosterLOG logistics services. More information is available by contacting LRED at **RoosterLOG@pica.army.mil**. LRED supplies individuals or teams to support specific DOD efforts. Those solution specialists involve the whole directorate for useful input. Teams and individuals also consult with product developers in all services to suggest an array of possible innovations. Ask about our Flash Consulting Service for a low-cost, quick look.

JAXON TECK (USAR, Ret.) is a Logistics Management Specialist in LRED, matrix with the XM29-XM8 Rifle program. He earned a B.S. from Cornell University and an M.B.A. from New York University. He is Level III certified in life cycle logistics/acquisition logistics.

Logistics — Back to Basics, but With More Speed and Precision

CSM Tyler Walker II

You don't have to go halfway around the world to a combat zone to appreciate logistics. You can just go home to recognize that the basics we all expect and need — food, clothing and shelter — really matter. They mean survival. Disasters, such as floods, fires and earthquakes, really shed a spotlight on basics, regardless of whom or where they strike. In September 2003, as Hurricane Isabel approached the Nation's capital, the behavior of thousands of people could be tracked as they went to grocery stores to gather food and then battened down their homes and businesses to ensure they would be sheltered from the turbulent effects of wind and rain. A month later, as the Santa Ana winds swept a firestorm across much of Southern California, people sought shelter in stadiums and local schools while firefighters from across the state battled to save the land and their homes.

An important part of the communications and logistics equation is knowing where our equipment is throughout the supply chain. Radio frequency (RF) tags were one of the ways AMC did that during *OIF* and *Operation Enduring Freedom*. While nothing is perfect, RF tags dramatically improved asset visibility and helped get the right materiel to the right units.

Often, war's effects are similar to effects from natural disasters, underscoring our reliance on basic needs. As our lighter, more deployable Army faces international crises that erupt like lightning, it's apparent that we need to be faster in getting the basics to our warfighters. Much of that strength comes from the U.S. Army Reserve (USAR) and contractors. So let's take a look at the basics, where they are and maybe where they need to be.

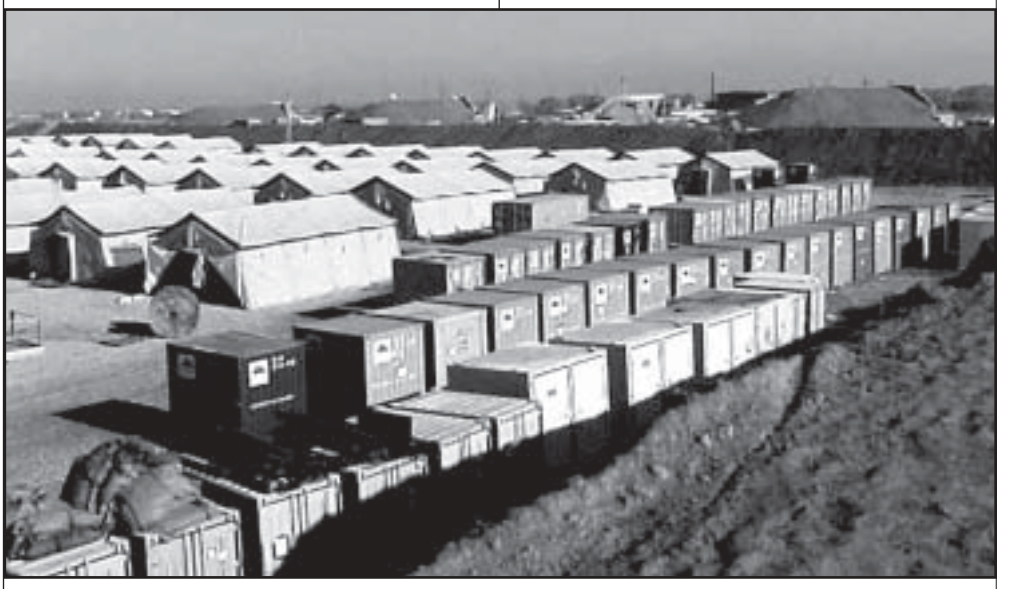
Without a doubt, food is at the top of the list. The scientists and nutritionists in our labs have studied food and the physiological needs of every human living and working in harsh environments in highly active operations. To get the nutrients they need, soldiers have to eat a lot of food — at least two Meals, Ready-to-Eat (MREs) per day. If we could make those rations lighter, we could substantially cut the weight of a soldier's basic load. Food is one thing from the soldier's daily basic needs that we must lighten without sacrificing quality and nutrition.

We all know how MREs have improved over the years, in variety and quality. Future soldiers will be getting the First Strike Ration, food in a pouch made of high-energy chow that is designed to replace three MREs during the first three days of operations. It will weigh 50 percent less than daily ration MREs. Special Forces troops liked them so much, they special ordered as many as the Food Engineering Lab at Natick could supply, earning the Soldier's "seal of approval." But it's well known that despite their exceptional quality, ready-to-eat meals can get old after a while. Additionally, it's hard to find a cook in the Active Army these days, so we are becoming increasingly dependent on contractors on the battlefield providing fresh-cooked meals.

Contractors are now setting up and managing Soldier field dining halls. The Logistics Civil Augmentation Program (LOGCAP) uses a team approach to provide services for which the Army no longer has organic resources, thereby relieving soldiers of mundane daily chores so they can concentrate on their primary field duties. Contractors supply the closest thing to home cooking you can find in the field. In Iraq, they set up more than 30 dining facilities with the goal of preparing at least two hot meals every day for every soldier in Iraq. The Army Materiel Command (AMC) oversees all LOGCAP contracts. Many soldiers and civilians have met AMC USAR logisticians in Southwest Asia, sent there to act as liaisons between contractors and combatant commanders.

Individual soldier equipment and clothing, including boots, are as important as each individual soldier. AMC engineers are working to get new products that withstand the elements. Boots can affect oxygen consumption, fatigue and marksmanship, in addition to lower leg and ankle injuries. Therefore, clothing and equipment must be designed to protect our warfighters and help them do their jobs more efficiently. The U.S. Marine Corps selected an Army-developed product — the new Infantry Combat Boot — because of its improved heat insulation, shock attenuation, pressure distribution, water penetration, flex resistance and dynamic stiffness to enhance performance, safety, comfort and durability.

Another important soldier equipment item that proves its worth every day is the special Interceptor body armor being issued to frontline soldiers. The number of soldiers' lives saved by this



Force Provider, sometimes called "city in a box," is just one of the ways that the Army Materiel Command provides some of the basic necessities of life to soldiers — even in the most extreme conditions. Shipped to some of the most remote areas around the world, each set of sea containers holds enough equipment to comfortably house 550 people — put enough of them together and you have a small city with showers, mess halls, post offices, fuel points, running water, lights, chapels and morale, welfare and recreation facilities.

Whether MREs or hot meals from a field kitchen, food is one of those basics that AMC provides not just to Soldiers, but to U.S. Marines as shown here.

amazing piece of equipment is now well known. It has stopped powerful AK47 ammunition many times, allowing soldiers to continue the fight and get home safely. I even met a soldier who lived after being hit by a rocket-propelled grenade. Soldiers face the prospect of being placed in harm's way every day. We accept that. It's good to know technology is on our side.

Early in the Afghanistan conflict, the Taliban retreated to their mountain hideouts and U.S. soldiers went in after them. What they found were hundreds of caves and wells dug deep into the mountains where Taliban fighters had stashed guns and ammunition to keep on fighting. At first, soldiers ventured down those wells not knowing what might be below them — enemy soldiers, weapons caches, booby traps or maybe nothing at all. Commanders came to AMC and asked for something that would help them look into the wells before sending Soldiers in. Within just a few weeks, AMC engineers and the Rapid Equipping Force had developed and delivered special minicameras that could be lowered into the wells to give soldiers a 360-degree view of the environment below. That's the kind of responsiveness AMC's labs and research centers strive for every day — to get the technology Soldiers need into the field, fast.

Shelter is another basic need for soldiers in the field, especially in underdeveloped regions where even basic things like a dry, solid floor, a roof, running water and electricity can be rare or nonexistent. We are all now familiar with the miserable conditions Soldiers and Army civilians faced in the early months of *Operation Iraqi Freedom (OIF)*. They found shelter in abandoned buildings and bombed out government and public facilities — and those who found those dilapidated shelters were the lucky ones.

Force Provider, also known as a "city in a box," was designed to give Soldiers the shelter they need, when and where they need it. A set of standard 20-foot containers, 80 to 104 depending on the type of power source supported, have been shipped by sea and surface to some of the most rugged and remote places on Earth. These highly mobile minicities have everything from beds to baths, laundry rooms, chapels, recreation centers, sanitation and enough power for the 550 troops supported by each set. AMC has sent several Force Provider sets to Iraq to meet basic Soldier needs. Several lessons learned from logistics support during combat operations in Iraq tell us that we must be ready for anything. Field logisticians earned a reputation for being innovative, adaptive and forward thinking for anticipating combatant commanders' needs. The incredible speed of operations during *OIF*, while unexpected, depicts chaos on future battlefields and how the Army must plan to operate in underdeveloped areas and degraded urban environments. No longer will field logisticians be able to supply forward. They will need to shoot, move and communicate like the combat arms Soldiers they support. The watchword in today's military environment has to be "every soldier is an infantryman."

And speaking of communicating, logistics soldiers must have the same communications capabilities as their combat customers if they are to be more responsive. We found out from *OIF's* high operations tempo that to get the right parts and equipment to the right places when needed, logistics units must communicate better. The truth be told, if there was one area that was "broken" during the fighting in Iraq, it was communications. But we're working on that too and, in the future, we will know where the shortages are and how best to fill them quickly and safely. We also know that preparing for the last war does not lead to success in the next one. As logisticians, we can't afford to miss the lessons learned from these recent operations. And we must never lose focus on the basics.

CSM TYLER WALKER II is AMC's Command Sergeant Major. Before joining the Army, he was in the U.S. Marine Corps where he attended basic training and Advanced Infantry Training. He attended Central Texas College and is a graduate of the U.S. Army First Sergeant Course and U.S. Army Sergeants Major Academy.

The Balanced Scorecard and Army Strategic Readiness System

COL James L. Stevens (USAR, Ret.)

BEST BUSINESS PRACTICES

Balanced Scorecard (BSC) methodology provides leaders a tool to break out organizational strategy into a balanced set of measurable objectives that are easily communicated to the organizational action level. The methodology grew out of efforts in the 1990s by Dr. Robert Kaplan and Dr. David Norton to build a strategic performance model that would go beyond the narrow profit focus traditionally used by most private sector organizations to shape organizational strategy. In their model, first published in their 1996 book *Translating Strategy Into Action*, Kaplan and Norton promoted a broader based strategic focus designed to ensure the health and growth of the organization over the near and far term.

Specifically, their model gives equal focus to the following three other aspects of organizational performance in addition to profit: customer, internal processes and people/organizational learning and development. Figure 1 depicts the private sector model's four essential elements. After promoting their private sector methodology with great success, Norton and Kaplan adapted this model for government use. The government model is essentially the same as the private sector one except that the "Financial Perspective" is changed to "Fiduciary Perspective." Instead of a profit motive, government focus is on fiscal responsibility, as depicted in Figure 2.

The methodology grew out of efforts in the 1990s to build a strategic performance model that would go beyond the narrow profit focus traditionally used by most private sector organizations to shape organizational strategy.

Numerous government organizations have now initiated or completed strategic models based on BSC methodology. In part, this effort was inspired by several congressionally mandated government reform acts in the 1990s that required federal agencies to strategically plan how they will deliver supplies and services and to measure their organizational performance. More recently, the President's Management Agenda and the *2001 Quadrennial Defense Review* have added emphasis to this effort for DOD activities. In December 2002, DOD issued a *Management Initiative Decision (MID 901)* that specifically identified the BSC methodology as the "framework for establishing executive-level performance goals and tracking results." Arguably, the Army has been one of the most ambitious and aggressive promoters of this methodology.

Strategic Readiness System (SRS)

Beginning in late 2001, DA leadership went far beyond the fundamental BSC effort by developing a fully automated BSC architecture and successfully linking it to Army Knowledge Online (AKO). SRS, the Army's BSC version, is being promulgated throughout the Army with plans to cascade the system down to brigade/battalion level. SRS was initially brought online in July 2002 and has subsequently grown and matured much more quickly than even its promoters had envisioned. As a result, documentation and Armywide training are just now beginning to catch up with the proliferation of the system. The Army G-3 (Operations) Readiness Office — tasked with responsibility for developing SRS — has completed an SRS implementation directive that gives specific guidance. In the interim, organizations

Figure 1. Private Sector Organizations

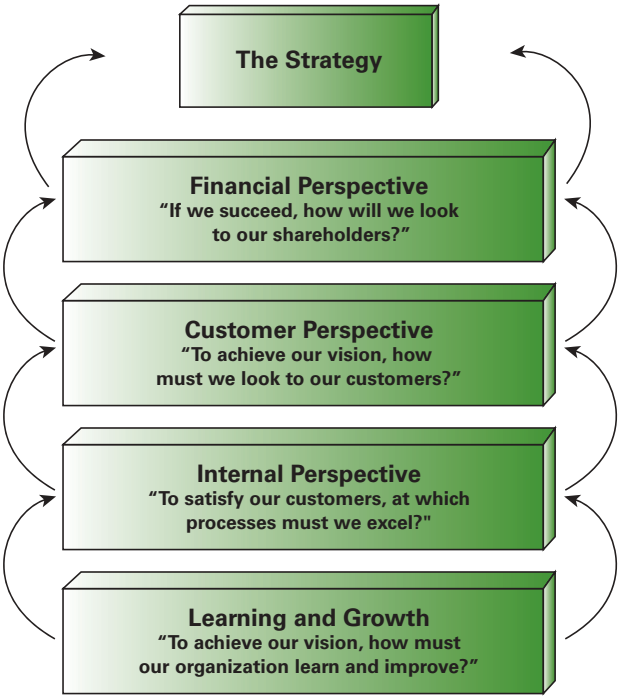
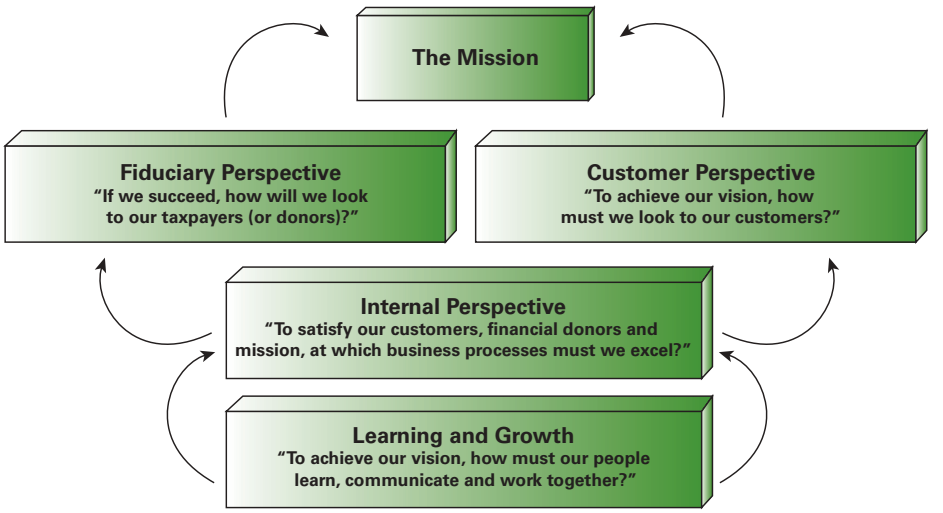


Figure 2. Government and Nonprofit Organizations



such as the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) that are engaged in building their BSC rely primarily on formal training sessions and personal coaching by the SRS staff. Figure 3 depicts the top picture or "strategic map" for the DA-level scorecard and Figure 4 depicts the ASAALT scorecard as they currently appear in SRS.

The various "bubbles" in Figures 3 and 4 contain the titles of specific strategic objectives derived from the organizational mission and strategic vision. In BSC theory, successfully performing these objectives essentially equates to successfully executing the organizational strategy. The strategic bubble's colors — red, green or amber — indicate the organization's current performance level objective. Gray bubbles are objectives that are not completely defined, have not yet been activated in SRS, or are outdated. Beneath each embedded objective is one or more metric statements and selected performance targets that determine the objective's color. Anyone with AKO access to SRS can review the underlying metrics and targets along with other pertinent objective information via a series of drop-down menus and narrative boxes. Figure 5 also illustrates the metrics and targets associated with an ASAALT customer-level objective.

Measurement data for the objective metrics in this example are drawn from the Major Acquisition Program Report that resides in the Acquisition Information Management database. In addition to the basic measurement indicators, more detailed information about specific acquisition category 1 and 2 programs is also available if the viewer wishes to "drill down" using the drop-down menus and narrative boxes. Ultimately, additional links will provide even more detailed options. As these links are built, this architectural effort will become a powerful information and communications tool.

Arguably, the measures established to color SRS objectives provide only a top-level view of actual objective performance. Metrics will be developed to provide the most reliable indicators of objective performance. Additionally, we must identify the most pertinent

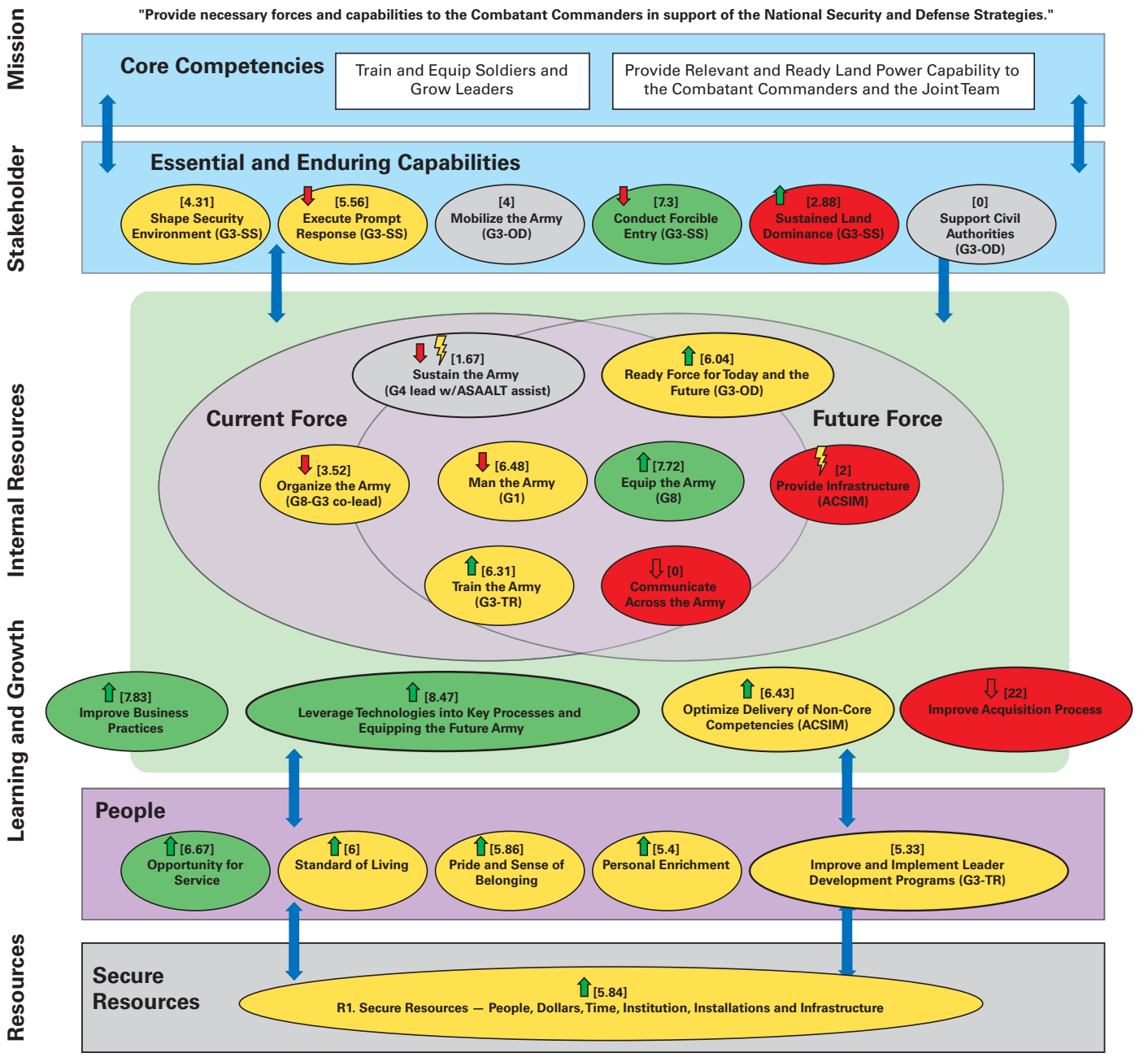


Figure 3. DA Scorecard

databases for giving leaders a more comprehensive picture of objective performance when needed. To further good knowledge management efficiency, these databases then must be linked into SRS in such a way as to provide focused "one-stop shopping" for information most pertinent to specific performance objectives.

The SRS Operations Center

To drive Army BSC efforts, the Army Chief of Staff (CSA) established an SRS Operations Center within the DA G-3 Readiness Office. This activity is charged with overall responsibility for developing and administering SRS. The program is directed by COL Robert Cox with executive oversight provided by a General Officer Steering Committee (GOSC) chaired by Director of Army Staff LTG James J. Lovelace Jr. Each major command and major Army staff office was also directed to establish an SRS Operations Center to provide leadership, coordination, training and methodology guidance to subordinate activities. The

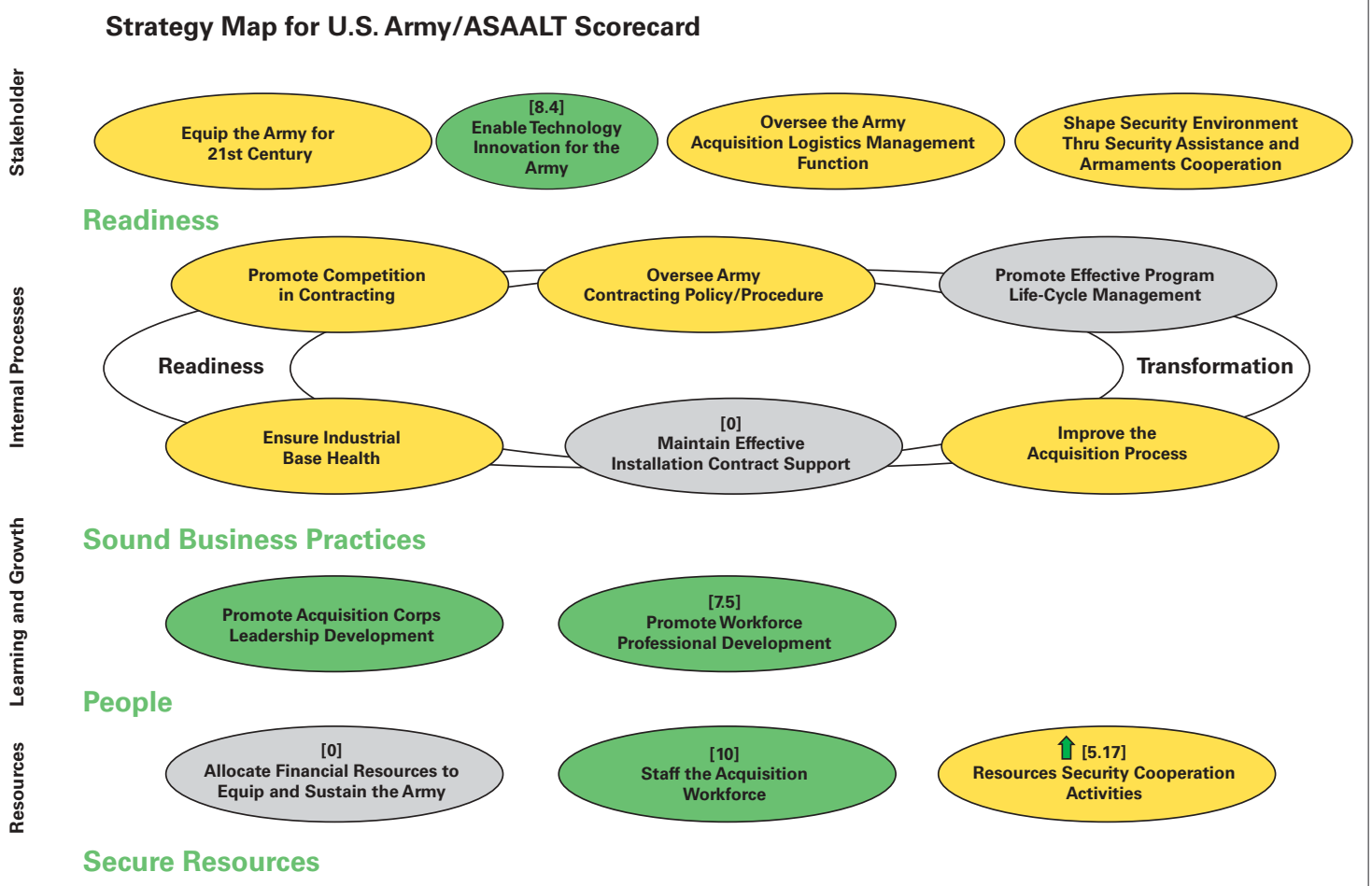


Figure 4. ASAALT Scorecard

ASAALT SRS Operations Center was established in early 2003 and is currently led by COL Ron Anderson. The ASAALT SRS GOSC member is Donald Damstetter, Deputy Assistant Secretary for Plans, Programs and Resources.

In addition to developing and administering primary and subordinate activity BSCs, DA staff-level operations centers also must coordinate building appropriate metrics for DA scorecards. For example, ASAALT has responsibility for providing all or a portion of the metrics for four of the Army's 21 strategic objectives. These objectives include: "Sustain the Army" (one of four metrics), "Equip the Army" (one of 3 metrics), "Enable Technology" (all 4 metrics) and "Improve Acquisition With Industries" (two metrics).

Cascading

The Army plans to promulgate SRS all the way down to brigade and battalion level with each BSC tailored to the level and strategic mission of the individual activity, yet coordinated and linked to support — in a synergistic fashion — the Army's overall strategic mission. This process, known as "cascading," is a unique feature and special strength of the SRS architecture. When all the planned linkages are in place, SRS will provide leaders and action officers at all levels with greatly increased access to useful databases and organizational information. As a result, data integration will be enhanced, and readiness and performance assessments will become more dynamic and timely. In ASAALT, cascading has begun at the Deputy Assistant Secretary levels and will soon be pushed out to program executive officer and program manager activities.

The Army plans to promulgate SRS all the way down to brigade/battalion level with each BSC tailored to the level and strategic mission of the individual activity, yet coordinated and linked in such a way as to support the Army's overall strategic mission.

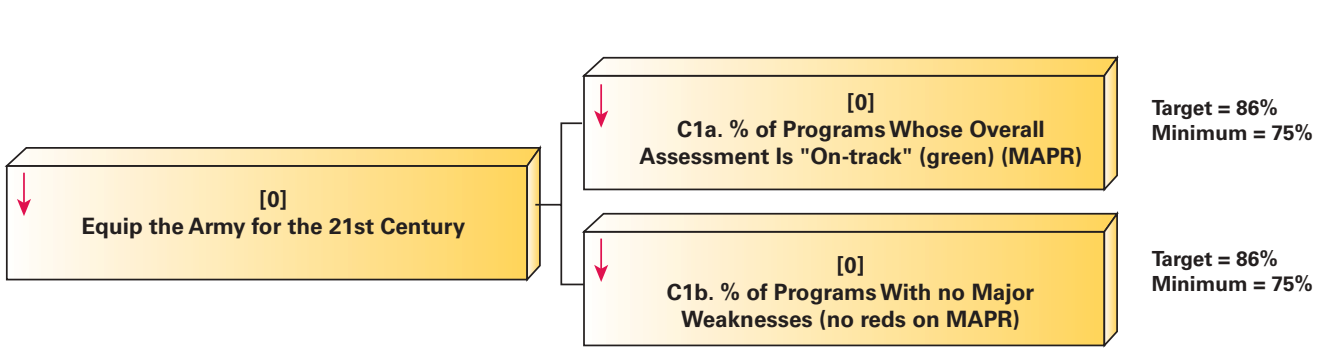


Figure 5.

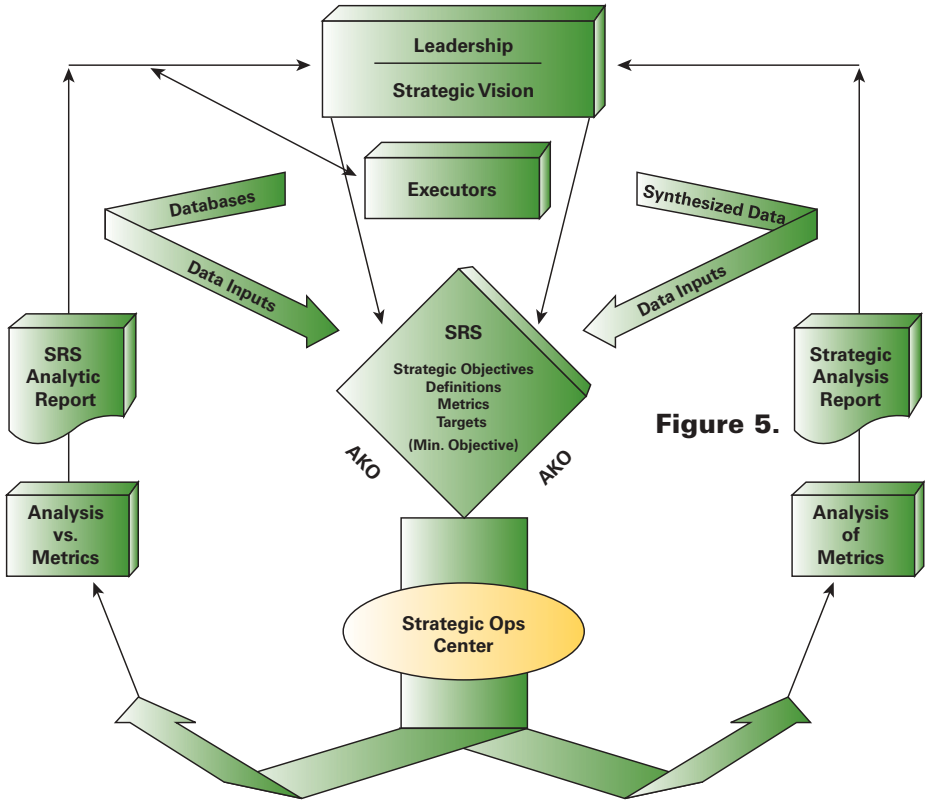


Figure 6.

Performance Analysis Using SRS

SRS will provide strategic information from multiple, diverse databases. Leaders can then apply this information to better understanding of specific performance areas. SRS promotes melding of *lead* (predictive) and *lag* (current level) metrics to produce a more dynamic picture of performance — both "what has happened" and "what is likely to happen." SRS operations centers will play a key role in coordinating and facilitating this new analysis approach. The DA Operations Center is building analysis templates and formal training to support the new process. School-trained experts in these analysis techniques will be called "SRS Analysts." The DA G-3 Readiness Office is piloting the SRS analysis approach with a new readiness review procedure designed to replace the CSA's *Monthly Readiness Review*. The new format, called the Strategic *Readiness Update*, will provide a much more diverse and dynamic view of Army readiness posture and emphasize interactive discussion and analysis versus status reporting. The analytic process will also enable and encourage routine review of the performance metrics and targets being used in the performance evaluation process. This part of the analysis is the second leg of what Norton and Kaplan have referred to as the BSC "double feedback loop." It is a key feature of the methodology that permits the organization's strategic architecture to flex and adjust to changes in the strategic environment. Figure 6 illustrates the flow of information from sources through the analyst and back to leaders and stakeholders.

The Norton and Kaplan BSC methodology has proven to be a phenomenally successful management tool for the measurement and enhancement of organizational performance. It is now being widely used in both the private and public sectors and has been mandated for

use in DOD. The Army is at the forefront of DOD's BSC SRS effort. The SRS team is working directly with the Balanced Scorecard Collaborative, the firm founded and led by Drs. Norton and Kaplan, to more fully develop the methodology's potential through use of automation and database linkages that will ultimately be available on AKO. The SRS vision is to create an overarching, highly accessible Army information system that will provide leaders and staff with the ability to continuously assess all aspects of Army mission and readiness in near real-time.

COL JAMES L. STEVENS (USAR, Ret.) is the Site Manager for the ASAALT SRS Operations Center under the Trawick/Caliber contract. He earned a B.A. in English from Morehead State University and an M.S. in management from the University of Central Texas. He is also an Army War College graduate.

The Probability of Success Metric

LTC Bob Ordonio and Edmund Blackford

BEST BUSINESS PRACTICES

"The general who wins a battle makes many calculations in his temple before the battle is fought. The general who loses a battle makes but few calculations beforehand. Thus do many calculations lead to victory, and few calculations to defeat ... It is by attention to this point that I can foresee who is likely to win or lose."

Sun Tzu, *The Art of War*

Predicting program success has always been difficult. Some programs succeeded through inspiration, luck and determination while others struggle through their inception and never get off the ground. In 2002, Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT)/ Army Acquisition Executive (AAE) Claude M. Bolton Jr. directed that a method be developed that allowed "an accurate, comprehensive method of assessing a program's probability of success, and a process or briefing package that would allow this assessment to be clearly and concisely conveyed to Army leadership as quickly as possible once developed."

The ASAALT staff implemented an interim Probability of Success (P(S)) metric in June 2002. This method used a Point Estimate method to calculate the probability using an equal-weighted average of the evaluation factors. The evaluation factors include technical, schedule and funding factors. Currently, acquisition category (ACAT) I and II programs are required to submit a Point Estimate P(S) metric via the Monthly Acquisition

Program Review (MAPR) within Acquisition Information Management (AIM) services.

Simultaneous to implementing the Point Estimate method, the AAE requested the Defense Acquisition University (DAU) develop a method that would calculate the P(S). DAU, in conjunction with industry, academia and individuals who have served as program managers (PMs), determined that in addition to the traditional cost, schedule and performance metrics, other information was required to determine a program's P(S). DAU then formed an integrated process team to develop an alternate P(S). The DAU method provides a flexible and comprehensive calculation that includes programmatic and external factors. Additionally, the DAU method provides a more readable metric that includes coloration and an associated numeric rating and, ultimately, proves to be more robust in representing the program's health.

> Three internal quantitative factors — requirements, resources and execution — and two external qualitative factors — program fit and advocacy — are used to determine the program's overall health.

To validate and verify the DAU method, the ASAALT staff piloted the P(S) metric with Program Executive Office (PEO) Intelligence, Electronic Warfare and Sensors (IEW&S). The Aerial Common Sensor and Phoenix Battlefield Sensor System programs participated in the pilot programs. After the two programs at Fort Monmouth, NJ, successfully piloted the P(S) metric in 2003, the AAE selected the DAU method for implementation. The AAE's intent was to have all ACAT I and II programs submit a P(S) metric by second quarter FY04. Programs will then submit their P(S) metric on a quarterly basis thereafter.

As the acquisition community continues to automate many of its processes, oversight of program life cycle and budget occupy a majority of the information technology efforts. The ASAALT staff selected PM Acquisition, Logistics and Technology Enterprise Systems and Services (ALTESS) in Radford, VA, to accomplish the mission to automate the P(S) metric. Since some of the data used for P(S) is already entered through other applications in AIM such as Web Army RDA (research, development and acquisition) Budget Update Computer System (WARBUCS) and the Monthly Acquisition Position Reports, PM ALTESS reduced the PM's workload by using the existing data rather than having the program office enter redundant data. Single data entry

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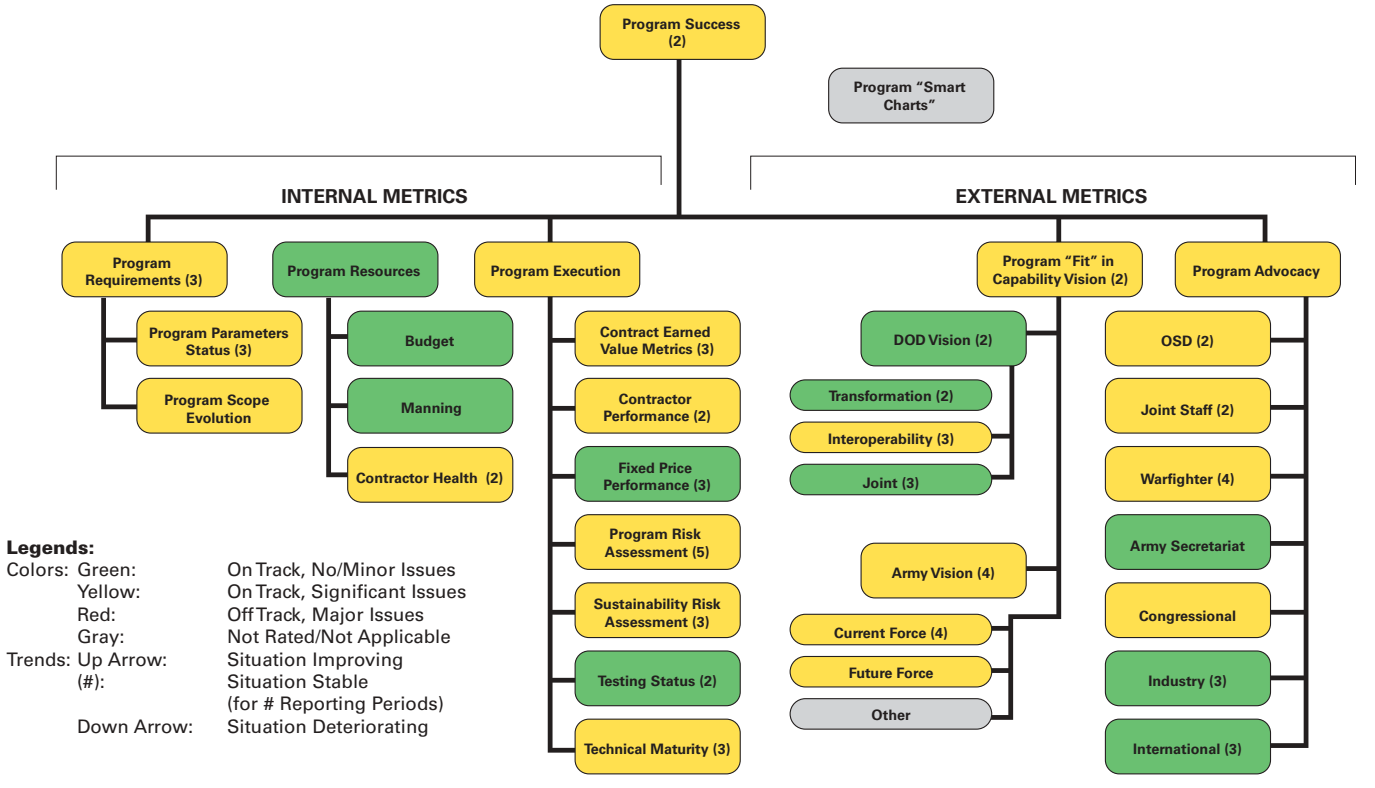

An Army in Transition –

the only constants are good leadership, good Soldiers and civilians and change

ASC
ACQUISITION SUPPORT CENTER

U.S. ARMY ACQUISITION, LOGISTICS AND TECHNOLOGY

WHAT IS THE ASC?

The U.S. Army Acquisition Support Center (ASC) is a field-operating agency directly supporting the Army Acquisition Executive/Assistant Secretary of the Army for Acquisition, Logistics and Technology (AL&T) and the Director of Acquisition Career Management. ASC provides:

- Oversight for the Army Acquisition Corps (AAC) and the AL&T Workforce by ensuring the professional development of the entire workforce as mandated in the *Defense Acquisition Workforce Improvement Act of 1990.*
- Major command-level support to program executive offices in the areas of resource management, human resources management and force structure.
- Policy, guidance, support and services regarding acquisition issues and initiatives.
- Proponency functions that include doctrine, training, education, force design, policy and programs.

ASC ACQUISITION SUPPORT CENTER

PREPARING FOR THE FUTURE

JANUARY

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1: New Year's Day 19: Martin Luther King Jr. Birthday (Observed)

DATES TO NOTE

8	Regional Training, ASC, Ft. Belvoir, VA
12	*Army AL&T* Editorial Advisory Board Meeting
12-15	Pay Pool Managers Meeting, New Orleans, LA
13-15	ASAALT Strategic Planning Offsite, Packard Center
13-16	COL/GS-15 AAC CMD Selection Board
15-30	OSD GO/FO Review and Recertification Army Billets
21-22	MPC Pilot Class, BRTRC Training Facility
27-28	MPC Pilot Class, Huntsville, AL

FEBRUARY

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16: Presidents Day

DATES TO NOTE

Site Visit, Jacksonville, FL, and Savannah, GA	3-6
MG Army Selection Board	3-6
ASC Training Day	5
SSC Civilian Selection Board, HRC	10-13
ACM Meeting	17-19
DAU Contracting Conference, Huntsville AL	18-19
LTC Army Promotion Board	24-Mar. 26

MARCH

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20: Spring Begins

DATES TO NOTE

1-31	SR SRVC College (SSC)/Command and Staff College Slatings, HRC
1-26	LTC Army Promotion Board
3-5	AUSA Winter Symposium and Exhibition, Fort Lauderdale, FL
8-9	Regional Training, Huntsville, AL
9-12	SBLM (04-2) Selection Board
13-15	Site Visit, Ft. Polk, LA
15-19	COL/GS-15 and LTC/GS-14 Acquisition Command Slatings, HRC/ASC
17-18	PEO EIS Industry Days
19	YG05 CDG Board Announcement Released
22-26	MAPL Review with DACM
30-31	Regional Training, Huntsville, AL
30-May 3	Major/Captain Selective Service Continuation Boards, HRC

APRIL

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4: Daylight Saving Time Begins 6: Passover Begins 11: Easter

DATES TO NOTE

Regional Training, Ft. Benning, GA	2
SES Midpoint Counseling	5
SSC Army Selection Board	6-30
ACM Site Visit, Vicksburg, MS	12-14
MAJ Army Promotion Board	13-May 13
AAC Transformation Working Session Kick-off	14-15
ACM Site Visit, Mobile, AL	15-16
Meet the MILDEP, ASC/NCR	16
CDG Program Information Workshop, Huntsville, AL	19
CP-14 Site Visit, Picatinny Arsenal, NJ	20
ACM Site Visit, Ft. Monroe, VA, and Ft. Eustis, VA	20-22
CLP Event, ASC, Ft. Monmouth, NJ	21
CP-14 Site Visit, CECOM	21-22
Acquisition Excellence Conference and Trade Show, Jacksonville, FL	21-23
CLP Event, ASC, Ft. Belvoir, VA - Creative Problem Solving and Decision Making, Central Contracting Command	22
CLP Event, ASC, Ft. Belvoir, VA - Networking in the Organization, DCCW	27
CLP Event, ASC, Ft. Belvoir, VA – Coping with Chaos and Change, PEO EIS and NCR	29

MAY

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9: Mother's Day 15: Armed Forces Day
31: Memorial Day (Observed)

DATES TO NOTE

4	Acquisition Education Fair, Ft. Belvoir, VA
4-6	Global INFOSEC Partnership Conference
4-26	Chief Warrant Officer 3/4/5 Promotion Selection Board, HRC
10-14	MILDEP Review of all CSL Positions
11-13	TechNet 2004 Trade Show, Washington, DC
12	CLP Events, ASC, Ft. Monmouth, NJ - Excelling for First-Time Supervisors
18	Applications for Commercial Business Environment Seminar due to SFAE-CON
18-19	Force Protection Symposium, Norfolk, VA
23-25	Army PARC Conference, Orlando, FL
25	Secretary of the Army Contracting Awards, Orlando, FL
25-26	Regional Training, Huntsville, AL
26	CLP Event, ASC, Ft. Monmouth, NJ - How to Become a Great Communicat
27	CLP Event, ASC, Ft. Monmouth, NJ - How to Supervise People

JUNE

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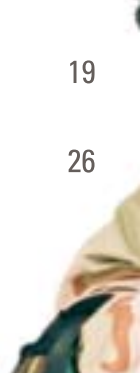
14: Flag Day 20: Father's Day 21: Summer Begins

DATES TO NOTE

CP-14 Intern Coordinators Workshop, Nashville, TN	1-4
CLP Event, ASC, Ft. Monmouth, NJ - Business Process Analysis, Innovation and Design	1-4
AUSA Fifth Annual Space and C4ISR Symposium, Long Beach, CA	3-4
CLP Event, ASC, Ft. Monmouth, NJ - Building, Leading and Managing Project Teams	7-11
AAC Accessions Board	11
CFD (YG94)	15-26
CLP Event, ASC, Ft. Belvoir, VA - Critical Skills for Next Generation Leader, National Guard Bureau and NCR	15, 22, 29
YG05 CDG Board Announcement Closes	18
Regional Training, Huntsville, AL	22
Contingency Contracting Workshop, Ft. Bragg, NC	22
AAC/OPD Day at TACOM	22
4th Annual Future Combat Vehicles Conference, London, England	22-25
SBLM (04-3)	22-25
ACM Site Visit, Ft. Hood, TX	28-30
PEO Aviation Change-of-Charter, Redstone Arsenal, Huntsville, AL	30



JULY

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4: Independence Day 5: Federal Holiday

DATES TO NOTE

Annual National eCYBERMISSION Competition Awards Banquet, Washington, DC	1-2
The Commercial Business Environment- A Primer for DOD Managers	11-23
Regional Training, Huntsville, AL	13-15
CLP Event, ASC, Ft. Belvoir, VA - ACM and Certifying Officials Workshop	13-16
President Reagan Established the Blue Ribbon Commission of Defense Management or "Packard Commission" in 1985	15
ASC NCR Site Visit, Korea and Japan	19
Regional Training, Huntsville, AL	20
CLP Event, ASC, Ft. Belvoir, VA - Step Up to Leadership	22
COL Army Promotion Board	27-Aug. 30

AUGUST

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DATES TO NOTE

2-5	ACM Site Visit, Corpus Christi, TX
5	ACM Site Visit, Tulsa, OK
9	Regional Training, Huntsville, AL
9-12	Acquisition Senior Leaders' Conference, Louisville, KY
11	Regional Training, Colorado Springs, CO
23-24	Regional Training, Huntsville, AL
24-Sept. 21	Command and Staff College Selection Board, HRC
30-Sept. 2	Army Test and Evaluation Days, Huntsville, AL

SEPTEMBER

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6: Labor Day (Observed) 16: Rosh Hashana
22: Autumn Begins 25: Yom Kippur

DATES TO NOTE

U.S. Army Senior Human Resources Managers Conference	6-10
DAWIA signed into law in 1991	11
Regional Training, Huntsville, AL	13-14
ACM Site Visit, Texarkana, TX	13-16
Meet the MILDEP, Picatinny Arsenal, NJ	15
ODCSOPS Network Centric Operations 2004 Symposium, Atlantic City, NJ	18-24
CDG Workshop	28-29
YG02 CDG Graduation	29
YG05 CDG Orientation	29
Redesignation of U.S. Army Acquisition Executive Support Agency to the U.S. Army Acquisition Support Center	30

OCTOBER

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11: Columbus Day (Observed) 31: Daylight Saving Time Ends

DATES TO NOTE

13 The Army Chief of Staff approved the creation of the AAC, 1989
19 Anniversary of *Defense Procurement Reform Act of 1984*
25-27 2004 AUSA Annual Meeting, Washington, DC

NOVEMBER

DATES TO NOTE

5 President George Bush signed the *National Defense Authorization Act for FY91*

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2: Election Day 11: Veterans Day 25: Thanksgiving Day

DECEMBER

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8: Hanukkah Begins 21: Winter Begins 24: Federal Holiday
25: Christmas Day 26: Kwanzaa Begins 31: New Year's Eve/Federal Holiday

DATES TO NOTE

5-13 LTC/GS-14 AAC CMD Selection Board
31 Cutoff date for FY04 Secretary of the Army Contracting Awards nominations

ARMY AL&T

U.S. ARMY ACQUISITION, LOGISTICS & TECHNOLOGY

2004

WHAT IS THE AAC?

The U.S. Army Acquisition Corps (AAC) is a uniformed and civilian workforce dedicated to researching, managing, developing, testing, evaluating, contracting, fielding and sustaining the Army's warfighting systems and equipment to support the Army's transformation from the Current to Future Force.

As the Army adapts to meet the omnipresent threats of global terrorism, urban warfare and an increasingly complex battlefield, AAC professionals are harnessing tomorrow's technological advances today to provide world-class, network-centric systems that support a campaign-quality Army with a Joint and Expeditionary mindset.

The AAC is the premier integrator and developer of strategically responsive, highly supportable warfighting, intelligence and communications systems that provide combatant commanders and their Soldiers unprecedented capabilities to fight with greater lethality, survivability and sustainability — regardless of where the battlefield or mission takes them.

ASC ACQUISITION SUPPORT CENTER

PREPARING FOR THE FUTURE

Continued from Page 46

also ensures cohesive and standard data submission across all applications.

The DAU P(S) Metric

The DAU method represents the overall P(S) as depicted in the figure. In this view, the 5 Level 1 factors and the 21 Level 2 metrics are represented in a work breakdown structure format. This view provides the P(S) metric for the program, color rating of the Level 1 factors and the Level 2 metrics along with trend data for the factors and metrics. The intent of this "windshield" is to provide the viewer an all-encompassing view of a program's health and an evaluation of its likelihood of success.

Three internal quantitative factors — requirements, resources and execution — and two external qualitative factors — program fit and advocacy — are used to determine the program's overall health. Internal factors are traditional program evaluation metrics that address cost, performance, schedule and risk and are largely within the PM's control. External factors are "environmental" factors that measure conditions critical to program success but usually fall outside the PM's direct control. Each metric is assigned an associated value with the factor's value equaling the total of the metrics aligned with the factor. The overall P(S) will equal the sum of the Level 1 factors.

Internal Metrics

Program Requirements. There are two Level 2 metrics in the requirements Level 1 factor. The *Program Parameters Status* metric is designed to evaluate the program's status in meeting the performance levels mandated by warfighters.

The *Program Scope* metric is designed to illustrate the degree of program risk inherent in overall program scope growth, from the time (pre-program initiation) where program scope was first determined to the present.

Program Resources. For the resources Level 1 factor, there are three Level 2 metrics. The *Budget* metric is designed to show the degree of risk inherent in the current budget state, both in current execution and looking forward through the Future Years Defense Program. It is similar in most respects to typical budget status charts used in program reviews. Where this metric departs from the typical budget representation is in the use and evaluation of budget sufficiency for each program appropriation. *Sufficiency* is defined as the degree to which the amount and phasing of each appropriation within a program retires programmatic risk. The *Manning* metric is intended to show key aspects of program office staffing. Manning is critical to the ability of any program to execute its responsibilities.

> *Sufficiency* is defined as the degree to which the amount and phasing of each appropriation within a program retires programmatic risk.

The *Contractor Health* metric provides an evaluation of the state of the contractor's business and its team to the PM, the PEO and AAE. This metric is broken into two areas. The first area, *corporate indicators*, identifies some of the more important metrics such as price-to-earnings ratio and history of stock dividends that the commercial world uses to evaluate contractor health. Additionally, the company's status in the defense industrial base for the particular program area, and any significant events with companywide impact, are identified and discussed. The second area, *program indicators*, speaks specifically to the assigned program/project team. This portion of the metric provides an evaluation of how well the contractor has set up the team executing the program along with any significant issues and challenges faced by the contractor.

Program Execution. The execution factor consists of seven Level 2 metrics as follows:

- The *Contract Earned Value* metric lays out cost-plus contract performance from an earned value perspective.
- The *Contractor Performance* metric provides the contractor's track record on developmental, cost plus-type contract vehicles by looking at the prior performance information history for the contract(s) in question, and the history of award fee increments provided to the contractor as compared to the amounts specified in the award fee plan.
- The *Fixed Price Performance* contracts require their own evaluation scheme. The fixed price performance Level 2 metric for fixed price contracts includes a Defense Contract Management Agency (DCMA) plant representative evaluation, a production/delivery profile graphic and a progress payments status.
- The *Program Risk Assessment* metric determines the program risk assessment covering all three internal factors. It is designed to provide a concise, 1-page summary of the key risks identified by the PM.
- The *Sustainability Risk Assessment* metric calls out the major areas in sustainability — which include, but are not limited to, the major elements in the program's logistics support analysis — to create the metric evaluation.
- The *Testing Status* metric is key to any program, both as an indicator of product capability and as a prerequisite for milestone approvals and budget release. This metric summarizes the program's

testing status along with identifying any significant testing issues for acquisition leaders.

- The *Technical Maturity* metric provides analyses of multiple major programs and shows the level of technical maturity possessed by each program at key stages of program conception, development and production. It is an excellent predictor of whether or not the program will meet established cost and schedule goals.

External Metrics

Program Fit. The first of the two external Level 1 factors is program fit within the capability vision. How well a program is supported in the larger service and the Office of the Secretary of Defense arenas is in large part determined by how well its product supports the specific capability vision(s) it is designed to meet.

Program Advocacy. The final Level 1 factor is program advocacy. *Advocacy* is defined as actual, tangible support for a program on the part of a senior advocate in a position to affect the priority of the level of resources received by a program.

Future versions of the P(S) business process will tailor metrics with consideration to the program's current lifecycle phase. As the next generation AIM is developed, particular emphasis will be placed on tighter integration of source applications reducing the PM's workload. Assessment and development of an enterprise-level solution is being refined by DCMA and DAU.

LTC BOB ORDONIO is a Senior Analyst in the Program Assessment and Analysis Directorate, Deputy Assistant Secretary for Plans, Programs and Resources, Office of the ASAALT. He earned a B.S. from the University of Virginia, McIntire School of Commerce, and an M.S. in computer science from the Naval Postgraduate School.

EDMUND BLACKFORD is a member of the Business Improvement Division for PM ALTESS and a retired Army Signal Corps Chief Warrant Officer. He has a B.S. in organizational communications from Radford University.

Converting Legacy Drawings to 3-D Models

Dr. Raj Iyer and Pad Cherukuri

The engineering data for many Army combat and combat support vehicle systems remains mostly paper-based. Current vehicle systems will continue to be part of the Army Active or Reserve Component inventory or as part of the foreign military sales programs well into the 21st century. These systems need easily retrievable and stable product documentation for engineering support and maintainability. In April 1995, DOD set forth a management strategy for automated document conversion. This strategy centers on converting documents to an electronic or digital format and managing documents throughout their life cycle. The Army needs the capability to convert various documents to intelligent, editable 3-D solid models. This article discusses the U.S. Army Tank-automotive and Armaments Command's (TACOM's) initiatives to convert raster drawings to 3-D models and the resulting benefits and economic impacts.

Raster to 2-D Conversion

TACOM selected the M113 Family of Vehicles (FOV), high mobility multipurpose wheeled vehicle (HMMWV) (Figure 1), M1 and trailer systems, among others, for bulk conversion in FYs 99, 00 and 01. The part selection criteria used included a business case, administrative lead time and procurement lead time reduction, Armywide conversion value and decrease in weapon system ownership cost. As a result of this conversion program, 9,500 engineering drawings for M113A3 FOV, 6,500 HMMWV drawings, 3,800 M1 drawings and TACOM and Defense Logistics Agency spare parts and trailers were digitized into 2-D computer-aided design (CAD) files by the end of calendar year 2002.

2-D to 3-D Conversion

The TACOM conversion effort did not stop with converting raster drawings to vector-based CAD drawings. One such solution is a commercial-off-the-shelf software called FlexiDesign™ from Imagecom Inc. The software is designed to automatically convert the 2-D CAD drawings to intelligent parametric 3-D CAD models.

TACOM has begun converting the 2-D CAD drawings to fully parametric feature-based 3-D models. The initial conversions resulted in a 3-D CAD solid model in the Pro/ENGINEER® format. A decision matrix is used to decide which drawings will be converted to 3-D. Some criteria used to select candidate parts follow:

- Future production quantities.
- Remaining life cycle.
- Potential for design changes.
- Technical data package availability and quality.
- Mechanical content.
- System density.

The 3-D models generated by FlexiDesign are intelligent 3-D models in Pro/ENGINEER 2001. Thus, the part is now represented as features such as holes, slots, cuts, fillets and chamfers. These features are individually editable within the CAD system. Furthermore, FlexiDesign creates the 3-D models in a neutral file format called Universal Feature Object (UFO). The UFO file can be converted to other 3-D CAD systems such as Catia®, Unigraphics or SolidWorks using the appropriate UFO-CAD plug-ins available. The flexibility to generate 3-D models in a variety of CAD systems is especially useful when procuring parts from suppliers. The 3-D model can then be sent to a supplier in the desired format and directly read by that supplier. In turn, this reduces the cost of manufacturing and procuring the part. Figure 2 illustrates a sample 2-D CAD drawing of a relay-circuit breaker box bracket from the M113 FOV that was converted to a parametric 3-D model in a Pro/ENGINEER format using the above process. The part was successfully converted to a 3-D model in about 20 minutes using FlexiDesign with little or no human intervention.

Potential Benefits

Combat vehicle systems are consistently being designed, redesigned and upgraded to maximize battlefield performance. Design work continues to be done from cradle-to-grave and during an increasingly long in-service life. All drawings — prior to these conversion project efforts — were stored in hard copy or as scanned raster images. Cost savings can be achieved if these hard-copy documents are converted into 3-D CAD-based electronic documents that will be used for new designs.

The benefits also include reduced storage and maintenance costs for the technical data, shorter turnaround times in spare and repair parts procurement reduced inventory levels, fewer labor hours consumed in the reprocurement process and elimination of the negative environmental impacts currently faced in reproducing paper drawings.

Further, since combat vehicle and support systems are still used in the Active and Reserve Components, fleet readiness and combat capability can be improved

Figure 1. Soldiers of the 3rd Special Forces Group drive their HMMWV through a river on the way to the Daychopan region of Afghanistan. Army Special Operations Soldiers are playing a key role in *Operation Enduring Freedom* and the global war on terrorism. U.S. Army photo by SGT Horace Murray.

Figure 2. A sample 2-D CAD drawing of a relay-circuit breaker box bracket from the M113 FOV that was converted to a parametric 3-D model.

while achieving cost reductions in managing and supporting the Army's systems. Storing engineering data in a homogenous electronic data format can provide significant improvements to the Army's ability to manage data within its repositories; change, update or modify the data by engineering support activities; distribute engineering information for parts acquisition purposes and to manufacture parts by component vendors. In this role, the Army, like industry, can capitalize on advanced technology to reduce total ownership costs.

Accomplishments

The TACOM conversion team has exceeded the planned targets for drawing conversion goals by prudently managing and successfully converting 19,500 drawings into digitized 2-D format. In most cases, this was accomplished under budget. In addition, these digitized drawings are being made available to vehicle manufacturers for their respective uses in reducing the acquisition, engineering and logistics costs through the Automated Configuration Management System.

TACOM fully supports DOD's vision and acquisition reform strategy to convert to a paperless environment. Consequently, TACOM maximized its conversion funding by initiating bulk document conversion and data management projects. This will help ensure that data are available in the proper formats throughout product life cycles, and process and infrastructure changes are being made to universally share intelligent forms of digital data.

DR. RAJ IYER is a Computer Engineer with the U.S. Army Tank Automotive Research, Development and Engineering Center's (TARDEC's) Engineering Business Group. He received his Ph.D. in electrical engineering from the University of Texas, has authored more than a dozen publications and had more than a decade of academic and industry experience before joining TARDEC.

PAD CHERUKURI is a Senior Engineer managing the M113 and M1 raster-to-vector conversion programs. He has a master's degree from Wayne State University, Detroit, MI, an honors degree in mechanical engineering from Andhra University, India, and is a Registered Professional Engineer in Michigan and Ohio.

TACOM

Moving Technology Forward — Mobile Parts Hospital Manufactures Replacement Parts in Kuwait

Meg Williams

Soldiers in theater in Iraq identified a need for Squad Automatic Weapon gun mounts on their HMMWVs and the MPH Rapid Manufacturing System supported force protection by fabricating the mounts on short notice.

"We must constantly work to discover what we can bring forward from the future to the current force to increase our capability — now."

GEN Peter J. Schoomaker
Army Chief of Staff

The Mobile Parts Hospital (MPH) operating in support of *Operation Iraqi Freedom* is a real-world example of bringing technology forward to increase Soldiers' capabilities now. The MPH's mobile manufacturing system

The MPH RMS team manufactures pintle assemblies and attaching locking pins for 5.56mm SAW gun mounts on HMMWVs. These gun mounts allow a 180-degree turning radius.

produces parts rapidly at or near the point of need in the battlespace.

"Deploying the MPH with its advanced manufacturing capability to the front lines in Kuwait is evidence of how fast we are moving to develop and field future technologies as we continue to transform America's Army," said GEN Paul J. Kern, Army Materiel Command (AMC) Commanding General.

HMMWV outfitted with a SAW gun mount.

The MPH is a research and development program managed by the National Automotive Center (NAC), which falls under the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC), part of AMC's Research, Development and Engineering Command (RDECOM).

The MPH consists of two distinct system-of-systems (SoS):

- A self-contained, C-130 transportable mobile-manufacturing SoS that can efficiently fabricate standard and unique parts at or near the point of need. The equipment components of the Rapid Manufacturing System (RMS) being used in Kuwait are a lathe manufacturing module and an engineering work station that makes reverse engineering possible.
- A CONUS-based fixed manufacturing SoS that supports the deployed mobile-manufacturing SoS and the national supply base. An Agile Manufacturing Cell contains a machining center similar to the one in use in Kuwait in addition to other components with enhanced manufacturing capability. A Communication and Control Center (C3) provides data storage for parts specifications, a communications link to the RMS system in Kuwait and technical experts. The parts database is managed by Wind-Chill™ product data management software. The C3 uses current infrastructure resources and has a two-way satellite system with audio, video and data exchange capabilities to communicate among the RMS in Kuwait, the Agile Manufacturing Cell and the Army's established logistics systems.

"Deploying the MPH with its advanced manufacturing capability to the front lines in Kuwait is evidence of how fast we are moving to develop and field future technologies as we continue to transform America's Army," said GEN Paul J. Kern, AMC Commanding General.

In late summer 2003, with GEN Kern's direction, the Forward Repair Activity (FRA) at Camp Arifjan, Kuwait, requested that the MPH be brought to Kuwait via an Operational Needs Statement. The MPH arrived at Camp Arifjan and began operations in October 2003. Housed in the container it was shipped in, the MPH sits on a concrete pad outside the FRA.

As of March 2004, the RMS has manufactured 1,618 piece parts. It has fulfilled requests to manufacture bolts, brass studs, pulleys and much more. These parts are used in repairs to M88/1790 engines, M2 Bradley engines, HEMTT 8V92TAs and HMMWV engines and differentials.

"Since the MPH arrived in Kuwait, it has been working 16-hour shifts to keep up with demand for parts," said Todd A. Richman, MPH Project Manager. "Its biggest

Kevin Green (left), RMS manufacturing technician, hands the needed collar and pin for a D7 dozer made by the RMS team to SGT Beauregard.

customers are the 368th Engineering Battalion, the 514th Maintenance Company and the FRA. MPH also supports the 1083rd Transportation Company and the 3rd PERSCOM Maintenance Office just to name a few."

SAW Machine Gun Mounts

The RMS also supports fabrication of items not typically stocked or readily available through the supply system. One such request resulted in the production of a unique item to support a force protection need. Soldiers in theater identified a need for gun mounts for their HMMWVs. The RMS was able to fabricate the mounts on short notice without detailed designs. Kevin Green, an RMS-Kuwait Manufacturing Technician, recounted how MPH supports Soldiers in an e-mail he sent from Kuwait.

> "Since the MPH arrived in Kuwait, it has been working 16-hour shifts to keep up with demand for parts," said Todd A. Richman, MPH Project Manager.

"Today was a good day," Green wrote. "A Soldier came to the MPH to get us to make some parts for his hummer. He drives the gun truck in the Heavy Equipment Transporters unit that takes supplies to the troops in Iraq. He said he goes to Basra nightly and the convoy gets ambushed a lot, so they are beefing up the hummer to deal with the problem. He wanted us to make new gun mounts for two 5.56mm Squad Automatic Weapon (SAW) machine guns. Since it was time for me to get off, I told him to come back the next day. I thought I saw tears in his eyes. Obviously, this Soldier was both brave and scared at the same time. We stayed late and made his parts."

The entire MPH team was instantly motivated to produce the parts needed to complete the retrofitted HMMWV. The Soldier went to get some sleep and the RMS team stayed to design and manufacture two pintle assemblies and attaching locking pins. The MPH team further modified the assembly to enable a 180-degree turning radius for the swivel on the pintle assembly. The swivel action on the pintle assembly enables the SAW machine gun to protect Soldiers on either side of the vehicle.

The entire pintle assembly, consisting of six parts, was designed, manufactured and delivered within 5 hours. The soldier picked up the parts the next morning, installed them and went on to execute his mission on time and with the additional firepower capable of deterring and repelling enemy attacks on board his retrofitted HMMWV. Another soldier, one of the main gunners for the M249 Machine Gun, commented on the performance of the retrofitted HMMWV SAW mounts swivel action, saying it was like spraying a water hose back and forth, hitting all targets in site.

In his e-mail, Green continued, "I looked in the Soldier's eyes as he thanked us for the gun mounts and the reality of this deployment hit me like a rock. It is very possible that by installing this retrofit system we are saving American lives. This Soldier needed us to help him. I was proud to be able to contribute to our brave Soldiers."

Agile Manufacturing Cell

The MPH works closely with the FRA to determine which parts will be made on site in the RMS and which parts will be manufactured at the Agile Manufacturing Cell, which is located in Detroit, and shipped to the FRA in Kuwait when they're completed. The Agile Manufacturing Cell has access to a wider range of raw materials and can manufacture increased quantities and larger-sized parts. Enhanced manufacturing capabilities range from high-speed machining and welding to heat treating and plating.

The MPH Program continues to push technology to benefit the Soldier and will apply these technological advances to the fielded RMS module in the near future. Another piece of fabricating equipment, a Directed Material Deposition® (DMD) machine, is being transformed and evaluated. A DMD machine uses a patented process called Laser Engineered Net Shaping® developed by Sandia National Laboratories. This machine can create a fully dense metal part from a computer-aided design model that is converted to a standard triangulation language file. After the part is built with this process, it can be sent to a machining module for final finishing and dimensioning.

A DMD machine uses a patented process called Laser Engineered Net Shaping® developed by Sandia National Laboratories. This machine can create a fully dense metal part from a computer-aided design model that is converted to a standard triangulation language file. After the part is built with this process, it can be sent to a machining module for final finishing and dimensioning.

NAC worked with prime contractor Alion Science and Technology Corp. and partners Focus:HOPE of Detroit, MI, and CAMP of Cleveland, OH, to bring the MPH concept to fruition. Alion, a research and development company based in McLean, VA, led the team that developed the initial plan for MPH development 4 years ago. Focus:HOPE is a civil and human rights organization with an advanced manufacturing operation that provides experiential education for engineering students. The MPH's Agile Manufacturing Cell and the C3 are operating from Focus:HOPE's Detroit campus. Kevin Green, a Focus:HOPE colleague, is deployed to Kuwait on the MPH operations team.

CAMP was founded as the Cleveland Advanced Manufacturing Program and is a nonprofit organization that delivers engineering, business and training services to manufacturers and other technology-based partners. CAMP's for-profit subsidiary, the Performance Improvement Corp. (PIC), was chartered to work on DOD and other government programs. PIC provides advanced engineering support to the MPH including candidate part selection, 3-D modeling and N-STEP part translation and verification. All of these partners have worked closely together on the MPH Program with the intention of transitioning MPH technology to an Army project or program manager.

The MPH's ultimate goal is to increase the combatant commander's effectiveness. The MPH demonstrates every day that it is a valuable force enabler for the deployed Current Force. It began manufacturing parts within hours of being set up in Kuwait and has, to date, produced nearly 1,600 parts that were not in stock in the battlespace. These capabilities increased the operational readiness of units and reduced time needed to procure spare parts. Being able to manufacture parts at or near the point of need also reduces the Army's logistics transportation requirements and associated forward footprint.

The MPH works closely with the FRA in Kuwait to determine which parts will be made on site. Kevin Ksiazek (left), Alion Science and Technology, and Kevin Green (right), Focus:HOPE, are machinists deployed to Camp Arifjan, Kuwait, in support of the MPH. They work with Army civilian Jason Haney from Anniston Army Depot, AL.

MEG WILLIAMS is the Senior Editor/Writer for *Army AL&T* Magazine and provides contract support to the U.S. Army Acquisition Support Center (ASC) through BRTRC's Technology Marketing Group. She has a B.A. in English from the University of Michigan and an M.S. in marketing communications from Johns Hopkins University.

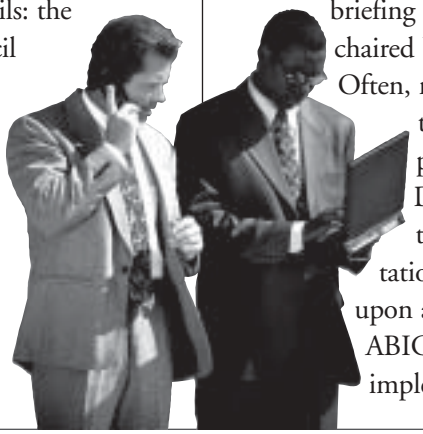
Cultivating Process Improvements From Army's Grass Roots

Suzanne Kirchhoff

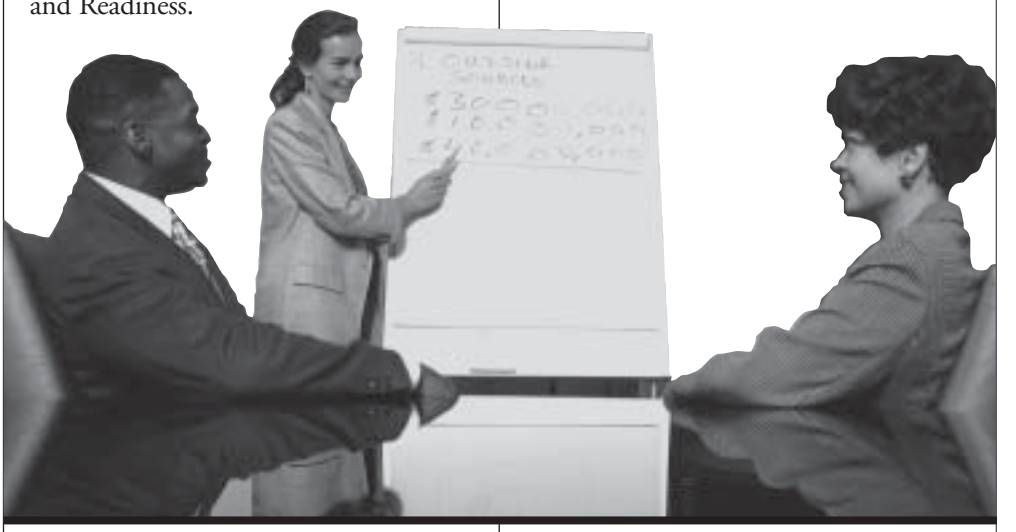
BEST BUSINESS PRACTICES

Have you ever had an idea that you thought would improve an Army or DOD business process, but never did anything about it? What if you knew that the Secretary of the Army (SECARMY) could review and approve your idea only 45 days after the submission deadline? Things happen when you submit suggestions to the Army Business Initiative Council (ABIC). The ABIC team processes proposals that provide efficiencies and cost avoidances by promoting savings. Ultimately, achieved savings can be retained and reallocated within the submitting organization, and it all starts with your proposal.

On June 18, 2001, Secretary of Defense Donald Rumsfeld announced the creation of two new councils: the Senior Executive Council (SEC) and the Business Initiative Council (BIC), the latter of which reports to the SEC. The BIC is chaired by the Under Secretary of Defense (Acquisition, Technology and Logistics).



Principal BIC members include the military service secretaries, Vice Chairman of the Joint Chiefs of Staff, Under Secretary of Defense, Comptroller and Chief Financial Officer and Under Secretary of Defense for Personnel and Readiness.



Army BIC

To efficiently gather and forward initiatives from the Army to the DOD BIC, the Army developed its own BIC process. Led by Executive Director Donald C. Tison, the ABIC process begins with the submission of initiatives to a Web site; proceeds with submission assignment, review and staffing by one of the six functional area boards; and concludes every 90 days with a decision briefing at the ABIC meeting chaired by the SECARMY. Often, new initiatives apply to Army-specific processes rather than DOD processes. In these cases, implementation plans can begin upon approval from the ABIC. For DOD-wide implementation, ABIC-approved initiatives are forwarded to the DOD BIC functional boards for consideration and approval by the BIC principals. From ABIC commencement through the Cycle 5 decision meeting, the ABIC and/or the BIC principals have approved 67 initiatives originating from the Army.

Policy and Congressional Action

Don't let the prospect of legislative or policy obstacles keep you from submitting a BIC initiative. The ABIC has policy and legislative analysts who can assist with composing and circulating policy directives and legislative language for statutory changes. For example, the ABIC has prepared and submitted an FY05 legislative proposal to authorize a "Cell Phone Subsidy." If passed, this legislation will authorize monthly stipends to employees who were previously authorized and issued a government cellular phone to conduct official business calls. By encouraging employees to use a personal cellular phone in lieu of a government-issued cellular phone, the government will no

longer be required to issue, track and account for government-issued cellular phone equipment, and employees will no longer have to account for official calls or carry two cellular phones.

With the approved legislation, authorized employees will be able to use their personal cellular phones and receive monthly stipends to offset the cost of official calls. This will lead to improved quality of life because authorized cell phone users will be able to select their level of service without concern about impact to the government. In addition, the cycle time to secure and activate a phone will be reduced, and performance will be improved from a customer perspective.

The initiative submission deadline for Cycle 9 is Aug. 12, 2004!

The ABIC has policy and legislative analysts who can assist with composing and circulating policy directives and legislative language for statutory changes.

Submitting a BIC Initiative

To submit a BIC initiative, you must have senior executive service or general officer approval for your idea. For smaller organizations, a senior level official — O-6 or GS-15 — in that agency can also approve BIC initiative submission. Typically, each organization has one designated BIC point of contact (POC). To find out who your BIC POC is, or if your organization even has one, check the BIC Web site at **http:// www.asafm.army.mil/rabp/bic/intro/pocs/pocs.asp#macom** or contact the ABIC Support Team at (703) 601-4196. If your organization must designate a BIC POC, the ABIC Support Team can provide assistance.

Your BIC POC is authorized to submit initiatives directly to the Army's BIC submission Web site. The deadline for initiative submission is 45 days into each cycle, with four cycles per year, each lasting approximately 90 days. For example, the Cycle 7 submission deadline was in December 2003, with the SECARMY's decision meeting for initiative approval in February 2004. The initiative submission deadline for Cycle 8 was April 12, 2004, and the Cycle 9 deadline is Aug. 12, 2004!

Send Your Process Improvement Ideas Today

When submitting a BIC initiative, information covering the following areas must be submitted to the Web site in paragraph or bullet format:

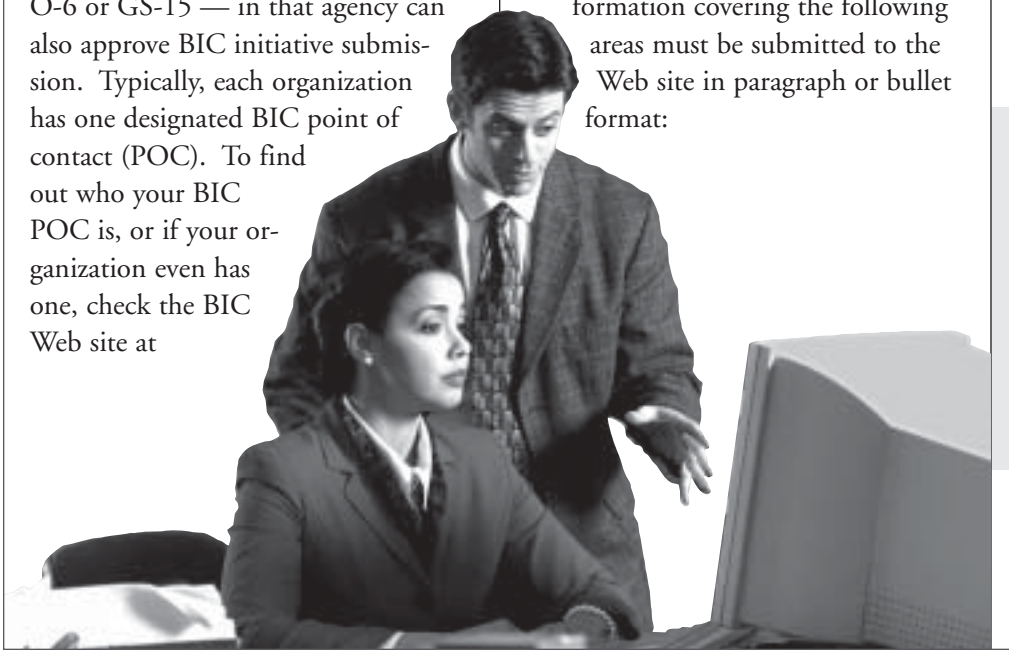
- Description
- History/current situation
- Pros (+)
- Cons (-)
- Risks
- Metrics
- Cost/benefits
- Costing methodology
- Required policy/congressional action
- Executive summary

The following six functional boards at HQDA review and evaluate proposals and assist the ABIC in selecting initiatives for implementation:

- Acquisition management
- Information technology
- Installations and logistics
- Manpower and personnel
- Resource management
- Test and evaluation

The BIC is looking for ideas in these areas as well as others. The SECARMY encourages you to be an agent of change. Write down your business process transformation ideas and submit them to your BIC POC today.

For more information regarding ABIC, log on to Army Knowledge Online. On the left side of the screen under the heading **Army Communities**, click on **Financial** and then click on **Business Initiative Council**.



SUZANNE KIRCHHOFF is a Senior Analyst with Science Applications International Corp., supporting the ABIC Acquisition Management Process/Functional Board. She holds a B.A. in personnel administration from the University of Kansas and an M.S. in technology management from the University of Maryland University College.

Physics-of-Failure and the Improved Ribbon Bridge — Modeling and Simulation Ensure Program Success

James R. Horchner and MAJ Dennis N. Haag (USMC, Ret.)

BEST BUSINESS PRACTICES

A physics-based computer-modeling analysis technique — Physics-of-Failure (PoF) — is used to identify the root causes of failures in mechanical and electronic systems. PoF modeling and simulation (M&S) recently enabled the Improved Ribbon Bridge (IRB) to meet a critical fielding suspense to support *Operation Iraqi Freedom (OIF)* and save an estimated $2 million in program costs. The IRB is a floating, modular system that can be used for bridging and rafting. The IRB aluminum modules can be connected together to form a continuously supported shore-to-shore roadway or connected to form rafts that can be used to ferry loads across water obstacles.

The Product Manager (PM) Bridging, located in the Program Management Office Force Projection (PMO FP) was responsible for developing, testing and fielding the new IRB. During the research, development and engineering process for bridging systems — one of the most costly and time-consuming tasks in bridge durability testing — extensive field trials can involve thousands of vehicular crossings, can take up to a year to conduct and cost more than $2 million. As part of the bridge development, IRB contractor General Dynamics Santa Barbara Sistemas GmbH planned to conduct fatigue life testing as partial design verification. During the tests, the critical IRB components would be load cycled in specially designed laboratory test apparatus to prove

their durability. The IRB test and evaluation (T&E) community realized that significant savings could be achieved if the contractor test data could be used to replace some of the durability test's extensive field crossings. To accept the contractor test data, the Army Test and Evaluation Command would require that the laboratory test be viewed as M&S and that a sound verification, validation and accreditation (VV&A) effort be conducted to ensure that the load simulation was valid.

The PM formed an M&S integrated product team (IPT), and work on a Simulation and Support Plan (SSP) began. The U.S. Army Tank Automotive Research, Development and Engineering Center was tasked to perform the V&V activities and the U.S. Army Materiel Systems Analysis Activity (AMSAA) was selected as the accreditation agent responsible for performing the detailed accreditation analysis.

This bridge was set up for the IRB Developmental Testing at Aberdeen Test Center, Aberdeen Proving Ground, MD.

This 572-foot floatbridge over the Tigris River near Baghdad is the longest built since WWII. It was built through the concerted efforts of three multi-role bridge companies: the 502nd, Hanau, GE; the 814th, Fort Polk, LA; and the 74th, Fort Hood, TX.

The durability test concept that emerged from the T&E and M&S IPTs relied on a combination of actual crossings and physical simulation (i.e., M&S) to gather the necessary data to address the bridge durability requirement.

The bridge designer predicted the dynamic forces that act on bridge components during crossings. Laboratory test apparatus were designed to apply the

predicted loads to the selected components. Test apparatus included computer-controlled hydraulic actuators to apply the load and various fixtures to ensure that the application of the load on the component was similar or equivalent to that in an assembled bridge.

The V&V efforts focused on establishing the simulation's scientific merit and correlating the data with actual bridge crossing strains induced in the critical components. Unfortunately, because of the compressed development and testing schedules, the laboratory fatigue tests were conducted before the actual crossings. This sequence of events presented a degree of risk. Actual critical component stresses and strains would not be known until crossing tests were conducted. If the component loads (loads used as input for the simulation) were underpredicted by the bridge designer, the M&S effort might be an undertest and be rendered unacceptable. To help prevent the possibility of an undertest, the test durations were extended. If the loads applied in the simulation undertested the components, then the additional cycles would compensate. However, in the case of a severe undertest, the additional cycles might not be sufficient to induce the necessary total fatigue to ensure M&S validity.

Test apparatus included computer-controlled hydraulic actuators to apply the load and various fixtures to ensure that the application of the load on the component was similar or equivalent to that in an assembled bridge.

To mitigate this risk, a backup plan was developed that would implement PoF analysis methods if the M&S proved inconclusive. The accuracy of PoF modeling tools can be increased when used in conjunction with measured data to formulate life predictions of components undergoing cyclic loading such as bridge crossings.

The strains that were induced in the critical components during the M&S were compared to the strains that occurred during actual vehicle crossings. Most strain comparisons were favorable, with the exception of the bridge lower lock component. The lower lock device serves to hold the bridge modules together during operations. The failure of this component during operations could have catastrophic consequences. The degree of undertest was significant and even the additional cycles conducted were insufficient to compensate. A detailed PoF analysis was initiated to determine the robustness of the lower lock design.

For the PoF analysis to be acceptable to the T&E community, it would need to meet a high standard of conservatism. Furthermore, if the analysis did not reveal that the lower lock component was capable of meeting the IRB durability requirement, an expensive redesign and component retest would be required. It was estimated that this scenario could delay the program 1 year and cost more than $2 million. The PoF approach, being a form of M&S, would also require VV&A. These responsibilities were assigned to the U.S. Army Aberdeen Test Center, Aberdeen Proving Ground, MD.

The PoF analysis used finite element modeling (FEM) of the lower lock component and the dynamic strain data that were collected from the component during bridge crossings. Combining the FEM with actual measured data provided detailed information about the peak strains that were induced at the potential crack initiation location within the component.

To predict fatigue life using PoF tools, it is necessary to know the induced strain magnitude, strain range, mean strain, number of applied strain cycles and the material properties. The component material properties were available from the contractor. The strain

magnitude, range, mean and number of cycles for each crossing could be determined from the FEM and field crossing data. The data were compiled using special PoF fatigue life prediction software to determine the likelihood of component failure during service life.

The most conservative life prediction technique is the stress-life fatigue analysis approach. This methodology uses analytical techniques to relate the strain cycles occurring in the component to

the known fatigue data for the particular material and the manufacturing process used to form the component (e.g., heat treatment, cast, forged, etc.).

Fatigue data are available in Wohler S-N diagrams where stress (S) is plotted against the number of stress cycles (N). The stress-life analysis prediction for the component was 31,400 Military Load Class (MLC) 70 crossing cycles. An MLC 70 crossing is approximately

Combat engineers move an IRB into place on the Tigris River during *OIF*.

equivalent to a 70-ton tracked vehicle crossing the bridge. The durability requirement for the IRB is 12,344 MLC 70 crossings. Since the predicted life of 31,400 MLC 70 crossings is significantly larger than the 12,344-threshold requirement, it would seem that the component possesses ample durability. However, the Wohler S-N based 31,400 MLC 70 crossing prediction indicates 50-percent survival. Fatigue data has associated with it significant scatter. To be certain that the weakest bridge produced will still meet the user requirements, it is necessary to estimate the statistical spread of the data corresponding to the life prediction. This determines if any portion of the fielded bridge population might experience failures before the durability requirement is reached.

To accomplish this, a standard deviation that would correspond to the lower lock fatigue life population is assumed. Making an assumption about the value of a standard deviation might appear to introduce risk. However, for evaluation purposes, it is only necessary to estimate a standard deviation that would be greater than the actual component's standard deviation. A standard deviation overestimate would increase the apparent data scatter and result in conservative life predictions. The estimate is made by referring to published fatigue life data for various structural components. In this case, the European Convention for Construction Steelwork fatigue guide for steel and aluminum structures was used to estimate the standard deviation. The maximum value presented was selected to ensure conservatism. Incorporating the standard deviation estimation gives a probabilistic context to the life prediction. The results show that 100 percent of the bridges can be expected to meet the user's 12,344 MLC 70 requirement and that the first failures of the weakest bridges will not occur until more than 20,000 MLC 70 crossings have occurred.

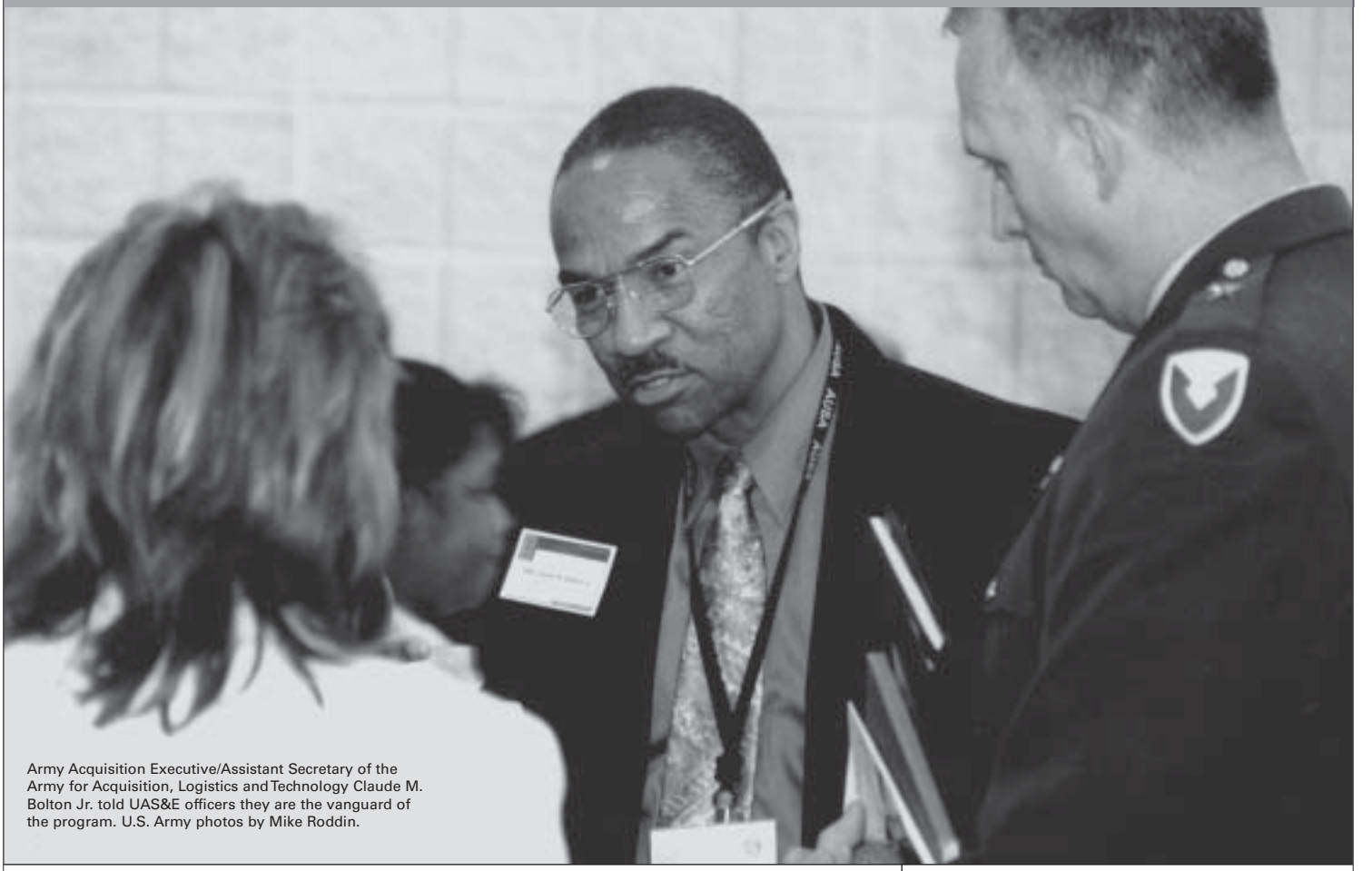
> The most conservative life prediction technique is the stress-life fatigue analysis approach. This methodology uses analytical techniques to relate the strain cycles occurring in the component to the known fatigue data for the particular material and the manufacturing process used to form the component.

The PoF assessment's convincing nature was sufficient to avoid the need for a retest. An urgent IRB materiel release in support of *OIF* was executed with the assurance that bridge durability was not in question. The direct cost avoidance of the retest was estimated at approximately $1 million, with an additional $1 million attributed to the indirect costs that a program delay would have incurred. This example shows how the prudent use of PoF M&S technology can ensure program success while reducing program risk and costs.

JAMES R. HORCHNER is the PoF Applications Team Leader at AMSAA, Aberdeen Proving Ground. He received a B.S. in mechanical engineering from Pratt Institute and an M.S. in engineering from the University of Pennsylvania. Horchner is an Army Acquisition Corps (AAC) member and is Level II certified in test and evaluation.

MAJ DENNIS N. HAAG (USMC, Ret.) is the Assistant Product Manager for the Multi-Role Bridge Systems, PM Bridging, PMO FP. He has a B.S. from Central Michigan University and an M.B.A. from Fairleigh Dickinson University. Haag is an AAC member and is Level III certified in program management. He attended the Defense Systems Management College for Program Management and was a recipient of the prestigious Packard Award for Acquisition Excellence for former program management work.

Uniformed Army Scientist and Engineer Program Holds Roundtable at the 2004 AUSA Winter Symposium & Exhibition*



Army Acquisition Executive/Assistant Secretary of the Army for Acquisition, Logistics and Technology Claude M. Bolton Jr. told UAS&E officers they are the vanguard of the program. U.S. Army photos by Mike Roddin.

The Uniformed Army Scientist and Engineer (UAS&E) Program members conducted a roundtable March 4, 2004, during the Association of the United States Army Winter Symposium and Exhibition in Fort Lauderdale, FL, to obtain guidance and direction from senior Army acquisition leaders.

BG Charles A. Cartwright, the Deputy Commanding General for Systems of Systems Integration, hosted the event, with introductory remarks from the Honorable Claude M. Bolton Jr., Army Acquisition Executive (AAE) and Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT).

GEN Paul J. Kern, Commanding General, Army Materiel Command (AMC); LTG Joseph L. Yakovac Jr., Military Deputy to the ASAALT; and MG John C. Doesburg, Commanding General, U.S. Army Research, Development and Engineering Command also made presentations.

COL Mary Fuller, Director, U.S. Army Acquisition Support Center, kicked off the UAS&E Roundtable with welcoming remarks.

"You are the vanguard for this program — you are the future," Bolton told the UAS&E officers assembled. "I want you to know that I fully support this program."

GEN Kern elaborated on the need for UAS&E members to be great communicators in the Army acquisition processes. "The challenge before you today is that you need to speak the language that your customers speak," Kern explained. "The UAS&E program means that you understand both science and operation. The organizational process is one of the pearls of the Army."

GEN Paul J. Kern, Commanding General, AMC, told UAS&E officers that the Army needs people with their capabilities to make the future happen.

"You will need to not only sell ideas, but also convince people that these ideas will work," Kern continued. "We need to understand the physics of the systems we use, like the electromagnetic eye. We need people who can understand the physics, the programs and their capabilities. We need to be able to bridge the gaps. We need you to be able to help us to fill in the gaps in communication."

MG Doesburg asked those assembled to think about how the UAS&E program can be structured so that it takes into consideration issues such as career paths for young captains. "How can we build a program that your successors can be successful in as well as you?" asked Doesburg. "My ultimate goal is to have someone in this crowd be my replacement and BG Cartwright's replacement. Someone who can integrate technology on a systems-to-systems approach to enhance technology for the warfighter."

During the roundtable, UAS&E Program members and senior leaders discussed:

- The role of the Uniformed Science Advisor.
- Defining the UAS&E Career Path.
- Identifying the Ph.D. requirement for Army acquisition.
- The UAS&E role in Current to Future Force transition.

"Developing future courses of action for the UAS&E Program was one of our main goals for this roundtable," remarked MAJ Jonathan D. Long, ASC S&T Officer. "Technological advancement is the key to a more lethal, more strategic, full-spectrum force with a Joint and expeditionary mindset," Long explained. "In sharing our ideas with, and obtaining guidance from our senior leaders, we are able to improve and move forward with a program that will result in placing advanced technological capabilities into the hands of Soldiers at a more rapid rate." Current initiatives being supported by UAS&E Program members include:


MG John C. Doesburg, Commanding General, RDECOM, told UAS&E members that recommendations from the roundtable would be presented to senior leadership.

- UAS&E Science Advisor support to the AMC Field Assistance in Science & Technology Team and Combatant Commanders.
- The Army Science Conference scheduled for Nov. 24 - Dec. 2, 2004.
- Future support to the Army Science Board.
- Supporting the virtual eCYBERMISSION **http://www.ecybermission.com/**.

The AAE/ASAALT approved the UAS&E Program in August 2003 and Oct. 1, 2003, the first 33 officers were inducted into the program at the U.S. Military Academy, West Point, NY. Current information on UAS&E positions, certification standards, leader briefings and program archives is available in the UAS&E Knowledge Collaboration Center on Army Knowledge Online.

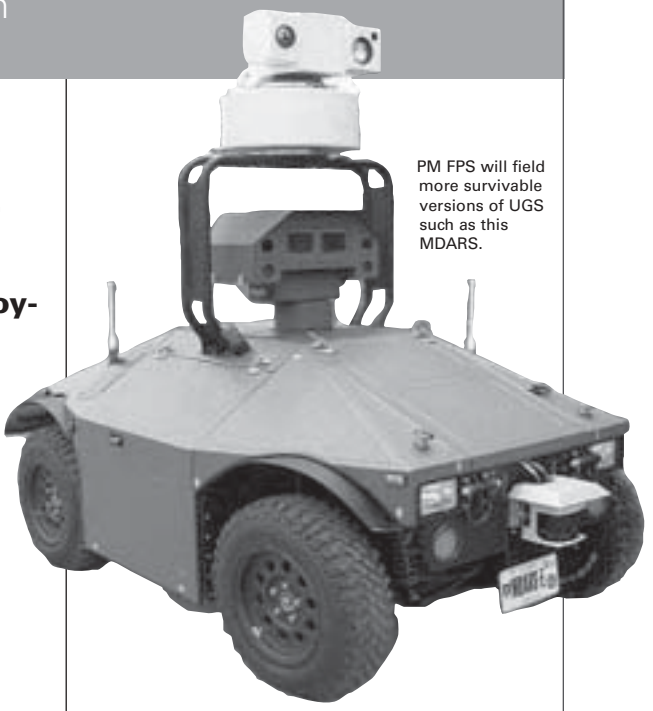
For more information about UAS&E, contact MAJ Jonathan D. Long at (703) 805-1239, or DSN 655-1239. E-mail him at: **jonathan.long1@us.army.mil**. For additional information about the UAS&E Program, visit **http://asc.army.mil/programs/uase**.

* This article was compiled by the U.S. Army Acquisition Support Center's Strategic Communications Division staff.

Tactical Force Protection for the Total Army

LTC Eugene F. Stockel and Jon Moneyhun

We are a Nation at war. Wherever American forces are deployed, they become lucrative targets for those who intend to do us harm or undermine our will to continue to carry the fight to the enemy. In this post-9/11 era of multiple worldwide deployments, enhanced tactical force protection (TFP) is an absolute necessity to conserve and protect our Soldiers, operation bases and equipment. The enormous strains that emerging security requirements and the global war on terrorism (GWOT) are placing on available forces make it imperative that we leverage our superior technologies to enhance TFP capabilities while also reducing manpower requirements.



PM FPS will field more survivable versions of UGS such as this MDARS.

The Army's ongoing evolution to smaller, more capable expeditionary forces will further increase our reliance on force protection technology to sustain and protect our forces across the full spectrum of combat, stability and support operations. Product Manager Force Protection Systems (PM FPS) is at the forefront of these efforts. PM FPS' mission is to provide affordable, scalable, modular, tailorable and logistically supportable force protection capabilities to tactical forces deployed worldwide. We must provide our Soldiers with the best force protection available whenever they deploy into harm's way. Force protection encompasses a wide array of capabilities. PM FPS is focused on delivering enabling capabilities to reduce manpower requirements while further enhancing tactical units' security posture. A unit at 100-percent security is not fixing, refueling, maintaining, resting or cooking — it is focused on self-preservation instead of creating conditions favorable to mission accomplishment. Sustaining high levels of security over time enormously taxes a unit's combat effectiveness and has a corrosive effect on individual morale and well-being. TFP capabilities employing unmanned ground sensors (UGS), cued imagers, robotic assessment and response represent the future. By synthesizing these capabilities, commanders can sustain desired levels of security while reducing manpower requirements.

> The enormous strains that emerging security requirements and the global war on terrorism are placing on available forces make it imperative that we leverage our superior technologies to enhance TFP capabilities while also reducing manpower requirements.

In fact, these technologies can become combat multipliers because their continuous availability, consistency and reliability provide an essential complement to the Soldier sentry. Additionally, these technologies will reduce Soldier risk and enable commanders to focus more manpower on core warfighting missions.

The TFP Challenge

The need for TFP exists throughout the battlespace and across the spectrum of operations, as demonstrated in *Operations Enduring* and *Iraqi Freedom*. The requirement for affordable TFP capabilities is exemplified in a recent exchange with a forward-deployed force protection officer in which he indicated that he had a 19-kilometer perimeter with escort requirements and needed TFP technology to reduce manpower requirements. This situation is replayed wherever U.S. forces maintain a forward presence in a potentially hostile environment. Army Chief of Staff GEN Peter J. Schoomaker alluded to the challenge that wide-area security missions and

TFP pose when he said, "Soldiers must learn how to perform ground functions — jobs of infantry and military police. Every unit should be able to conduct its own force protection."

On today's noncontiguous battlefield, all units require force protection capabilities while performing their missions. Levels of proficiency for conducting TFP vary widely from combat support/combat service support units conducting maintenance and logistics functions, to combat units closing with and destroying the enemy. We must provide combatant commanders standardized TFP capabilities that get the job done while minimizing risk to Soldiers. Addressing the TFP challenge requires investment in research and development (R&D) to deliver affordable, scalable, modular and sustainable force protection equipment. This can be accomplished through an evolutionary acquisition strategy of capability upgrades in the near-, mid- and far-terms that leverage the Army's command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) investments in UGSs, unmanned ground vehicles (UGVs) and surveillance radar and imaging technology.

Force Protection Equipment and Systems Imperatives

To make the TFP vision a reality, we must ensure that FPS is:

- Affordable. Tactical security must be good enough to get the job done. The Army cannot afford to buy high-end force protection for the entire force when low-end technology will get the job done just as effectively.
- Modular. Plug-and-play systems are necessary so that commanders can tailor their units' structures based on mission, enemy, troops, time and terrain.
- Scalable. Scalability enables commanders to employ the same hardware for both small and large requirements.
- Supportable. FPS must be maintainable by Soldiers in the field with limited contractor logistics support.

Force protection today is manpower- and labor-intensive because Soldiers must physically man checkpoints, perimeters and listening and observation posts and conduct patrols or overwatch barriers. Night vision devices, tactical sensors, imagers, ground surveillance radars and barriers are current FPS equipment being used by Soldiers. This equipment must be integrated with an added autonomous capability to fully exploit the potential these individual technologies provide. The technology exists today but requires further R&D, testing and evaluation to be fielded as a fully integrated system-of-systems.

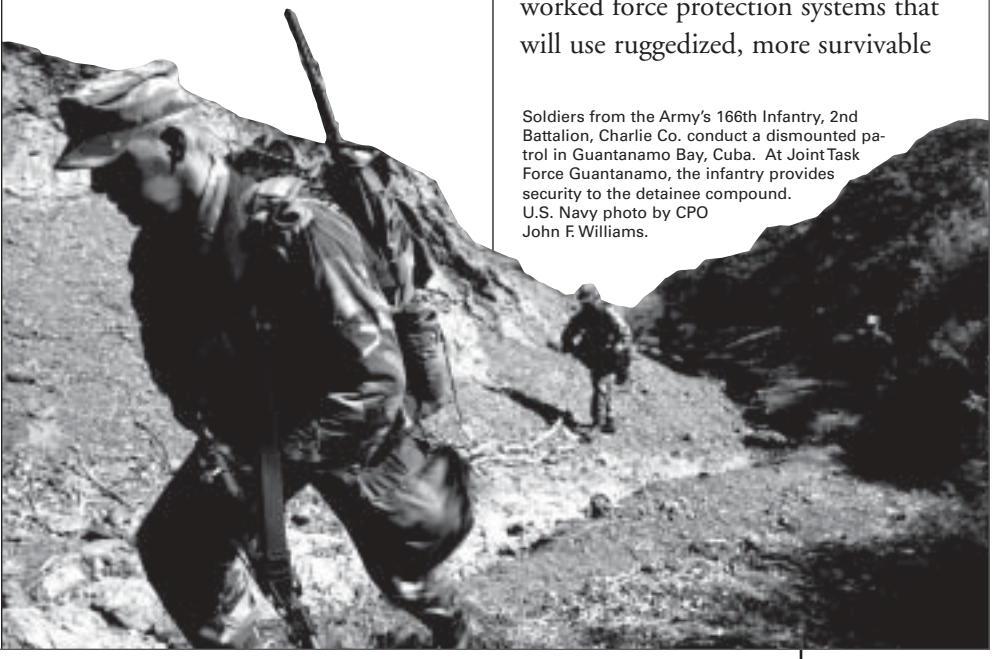
> "Soldiers must learn how to perform ground functions — jobs of infantry and military police. Every unit should be able to conduct its own force protection."
>
> GEN Peter J. Schoomaker

Near-Term Force Protection

Near-term TFP will be provided by integrating available systems such as the Battlefield Anti-Intrusion System (BAIS) and a yet-to-be-developed trailer-mounted sensor system integrating surveillance radar to perform as a cuing sensor for mast-mounted imagers. The BAIS replaced the obsolete Platoon Early Warning Device II and provides a reliable early detection, identification and warning capability to small tactical units. The trailer-mounted imaging and radar system is a low-cost battlefield surveillance means. These capabilities provide enhanced force protection, limited connectivity and a reduction in the manpower required for TFP. PM FPS is aggressively working integration issues and partnering arrangements with various program managers to provide this capability for the Current Force during FYs 05-06.

Midterm Force Protection

During FYs 07-12, PM FPS will field more scalable, modular, flexible, networked force protection systems that will use ruggedized, more survivable



Soldiers from the Army's 166th Infantry, 2nd Battalion, Charlie Co. conduct a dismounted patrol in Guantanamo Bay, Cuba. At Joint Task Force Guantanamo, the infantry provides security to the detainee compound. U.S. Navy photo by CPO John F. Williams.

versions of integrated UGS such as BAIS, autonomous UGVs such as the Mobile Detection Assessment Response Systems (MDARS) and remotely operated unmanned weapons systems. Block upgrades to the MDARS UGV platform will provide an autonomous capability to patrol, detect, assess and respond to tactical security threats. Advanced imaging sensors with targeting capabilities, improved UGS and unmanned aerial vehicles (UAVs) will all be networked to deploy, detect, monitor and report enemy intrusions.

Future Force Protection (FY12+)

Beyond FY12, TFP will be the fully integrated systems architecture that will plug into the Future Force's C4ISR systems architecture. A single soldier will be able to control multiple force protection unmanned systems/sensors to detect, assess and respond to enemy activity in a fully autonomous mode. Robotics platforms such as MDARS will employ smaller UGVs in military operations on urbanized terrain and other tactical operations to search for enemy snipers, booby traps and unexploded ordnance. UAVs will provide aerial force protection over vast battlefield areas and will be linked to UGVs on the ground. Unmanned systems will be used to autonomously respond to enemy security intrusions with both lethal and nonlethal force. This futuristic approach is designed to protect the force, reduce TFP manpower requirements and allow Soldiers to focus on their wartime mission requirements.

We have a long way to go to stop the force protection threat that our Soldiers face every day. The strategic pause ended after September 11, 2001. Our Nation is at war, and we are transforming the Army to become more lethal, deployable, agile, versatile, responsive and sustainable regardless of where the mission takes us. To accomplish this, we must provide the best available force protection technology and systems to Soldiers today while we continue developing and refining the total TFP package for the future. The Army is investing heavily in GWOT. We must do everything possible to reduce the risks associated with combat operations. TFP provides Soldiers with an affordable and operationally effective means to protect themselves while also reducing casualties and conserving manpower.

LTC EUGENE F. STOCKEL is the PM FPS, located at Fort Belvoir, VA. He holds a B.S. from the U.S. Military Academy and an M.B.A. from George Mason University. In addition, he has attended the U.S. Army Command and General Staff College and the Advanced Program Manager Course at the Defense Systems Management College.

JON MONEYHUN is a Senior Analyst with Titan Corp. supporting PM FPS. He has a B.S. in business administration from Marshall University and a master's in science of administration from Central Michigan University. He is a retired Army lieutenant colonel and is a graduate of the U.S. Army Command and General Staff College and the Defense Systems Management College Program Management course.

PM-FPS
Product Manager, Force Protection Systems

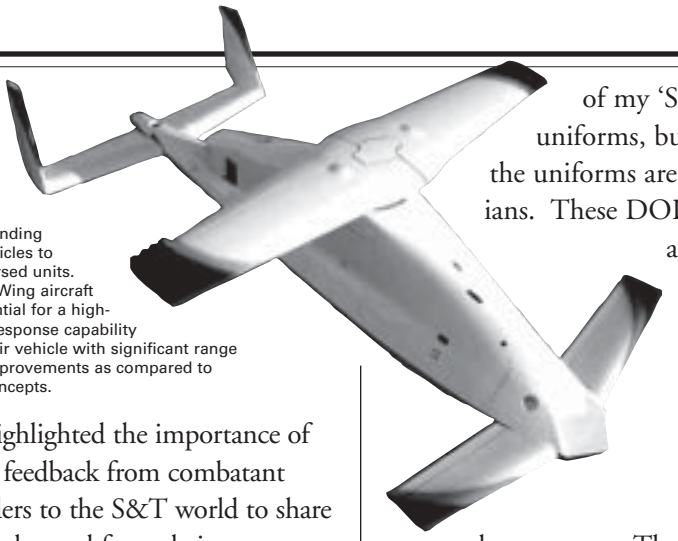
Army Science and Technology — Working for Soldiers

MAJ Dennis Ellison and Meg Williams

The Association of the United States Army Winter Symposium and Exhibition, held in Fort Lauderdale, FL, March 3-5, 2004, devoted its first day to "Science and Technology (S&T) for the Current and Future Force," marking S&T's strategic importance to warfighting now and in the future. Following are highlights from the presentations and panel discussions.

GEN Paul J. Kern, Commanding General, U.S. Army Materiel Command (AMC), discussed how AMC is working to integrate S&T efforts into better materiel for Soldiers — from improved batteries and sensors and lighter protective gear to increased human performance through better training.

Kern discussed how AMC is working more jointly, integrating feedback from sources other than the Army and searching worldwide for leaps in technology.



The Army, Navy, Air Force and Marine Corps need affordable, survivable, vertical take-off and landing (VTOL) air vehicles to support dispersed units. Canard Rotor/Wing aircraft offer the potential for a high-speed, rapid-response capability from a VTOL air vehicle with significant range and stealth improvements as compared to other VTOL concepts.

He also highlighted the importance of funneling feedback from combatant commanders to the S&T world to share the lessons learned from their successes and failures in field and urban operations environments. AMC has initiated agreements with other countries to capture advancements their technologists have made in S&T. Through AMC's Research, Development and Engineering Command, research and development is being coordinated in the Army's own laboratories as well as at partnership universities. The Rapid Equipping Force (REF) and the Agile Development Center both have teams working with combatant commanders to get products into the field faster.

"Our single purpose is to get the right technology into the hands of Soldiers as quickly as we possibly can," Kern emphasized. "We know that today our processes take too long and we're working with all these organizations and with the testing community to compress the cycle time from 2 to 10 years to 6 months."

"Equipment and gear must pass one overarching test. Does it work for Soldiers? Human engineering must be considered at the beginning of the design process. We have to design for the Soldier first," said Kern. "How we react with them, not just in the field but also in the development cycle, determines how we retain our Soldiers."

Kern also spoke of his staff's pride in working for deployed Soldiers. "Most of my 'Soldiers' wear uniforms, but underneath the uniforms are DOD civilians. These DOD civilians are supporting laboratories, the field and the optempo. The feedback we're getting from them when they come back from deployment is absolutely phenomenal," Kern remarked.

Further, Kern advised that the future will bring new equipment such as the XM-8 rifle and improved batteries, truck robotics, the TSV-1X (the high-speed catamaran the Army leases to move equipment and materiel) and new protective gear. He mentioned the Lead Systems Integrator as a new way of purchasing items for the Army.

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"Success is not measured in dollars and contracts," Kern cautioned. "Success is measured in terms of Soldiers coming back and telling us that we got it right."

Rebalancing the Army

GEN Kevin P. Byrnes, Commanding General, U.S. Army Training and Doctrine Command (TRADOC), described the strategic thought behind the Army's redesigned transformation plan. Key to these changes is that the Army is at war. "When the Nation goes to war, the operational side of the Army leads change," said Byrnes. "We are incorporating lessons learned from Iraq and we are accelerating processes."

Being at war has required the Army to balance its investment in the Current Force with its investment in the Future Force. "Previously, we were taking some risks in the Current Force," Byrnes explained. "We were cutting our recapitalization programs and

The TSV-1X, shown above, is one of two high-speed catamarans being tested as a logistics support platform as part of the Army's transformation plan.

This UGCV prototype is designed for endurance, obstacle negotiation and transportability. These prototypes may include unique mobility configurations (traditional wheeled/tracked to organic-mimicking, i.e., walking/crawling), exceptional drive trains, advanced structures and composites, terrain and soil analysis, sensory exploitation and interaction with robotic control architectures.

slowing down our modernization effort. Now we have troops in harm's way every day and we're no longer going to risk the Current Force."

The rebalancing required the Army to look at technology investments that industry, allies, universities and Army research labs had made and whether these technologies were mature enough to bring them to the Current Force. That includes hardware, software, training and leader development. The force will become increasingly joint, network-centric and more modular. These modernized conventional capabilities will first be seen at the battalion level in 2010 and at the brigade level in 2012.

Future Force development will concentrate first on maintaining conventional superiority and maintaining state-of-the-art information technology. At the same time, the Army realizes that its enemies will not always be aligned to traditional state boundaries. There are conflicts that are tribal in nature and span thousands of years.

The operational concept that drives Future Force transformation is how the joint force commander will employ the land force and how the combatant commander will adjust spatial battle space variations in the future while conducting simultaneous operations across the full spectrum of conflict.

"This is how we see the future — the injection of combat forces across the battlespace," Byrnes continued. "We can't afford the time to build up a few selected ports that can handle ships and large aircraft. We have to be able to insert our force into the white space and be able to attack the enemy's center of gravity and key nodes. We can't afford a sequential, long-duration operation. This operational concept really drives the design of Future Combat Systems [FCS]."

FCS consists of 19 systems, foremost among them the network. The Army's network development effort is called Land WarNet. The Army is working with a joint committee to develop linkages and connectivity that all combatant commanders will use.

Other information technology priorities are high-performance computing and modeling and simulation (M&S). Inherent challenges of these new technologies are being able to produce the software needed, software protection, finding a trusted foundry to complete this work and information assurance. "We want to distribute code that runs only on the machines we want it to run on," explained Dr. Charles J. Holland, Deputy Under Secretary of Defense for Science and Technology. "Our adversaries will be coming after our network and we will have to spend a lot of energy on our technology and 'red-teaming' to understand the challenges we will face."

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Transformational Technologies

Army Research Laboratory (ARL) Acting Director John Miller defined transformational technologies as those that enable transformation capability — technologies applied to new systems that result in transformational capabilities. The ARL is studying applications in the following areas:

- Biotechnology: Command and Control (C2) Network for FCS and viral agents for very controlled applications.
- Robotics: perception, intelligence and C2 and human marine interfaces.
- Advanced Computing: automated target recognition.
- Power and Energy: new sources.
- Pervasive Situational Awareness: flexible displays, bioinspired networks and disposable sensors.
- 3-Dimensional LADAR (laser and radar): can see through camouflage and foliage.
- Lightweight Survivability Armor: flexible armor and lightweight vehicular armor.
- Precision Lethality: advanced energetics, dynamic retargeting and an electromagnetic gun.

The A160 Hummingbird is a UAV with VTOL ability. The A160 concept is being evaluated for surveillance and targeting, communications and data relay, lethal and non-lethal weapons delivery, assured crew recovery, resupply of forces in the field and special operations missions in support of Army, Navy, Marine Corps and other DOD needs. It is being developed as a DARPA/Army FCS Program component.

- Micro Adaptive Flow Control: technology that enables control of large-scale aerodynamic flows using small-scale actuators.
- Unprecedented Mobility: LADAR vision, autonomous tactical behavior and cooperative unmanned ground vehicles (UGVs) with unmanned aerial vehicles (UAVs) painting the scene and providing new mapping data for UGVs.

Nanotechnology is another transformational technology being used to create materials and weapon systems with unprecedented utility. Institute for Soldier Nanotechnologies Director Dr. Edwin L. Thomas, Massachusetts Institute of Technology, spoke of research being conducted on protective gear that could safeguard Soldiers from bullets, blasts and nuclear, biological and chemical weapons. He also said that nanotechnologies built into protective gear could be used to monitor Soldier performance and help with wound triage and emergency treatment.

Even the motion picture industry is getting involved by helping the Army transform its training and simulation scenarios. Dr. William R. Swartout, Director of Technology at the University of Southern California's Institute for Creative Technologies (ICT), outlined the three-way collaboration with Hollywood, the Army and academia that is developing more effective and compelling simulation to facilitate training. ICT creates training exercises that develop Soldiers' decision-making skills using artificial environments. One ICT project, "Critical Leadership Analysis Systems," uses the case study approach to provide leadership skills to company-grade officers and their Soldiers. ICT's "Mission Rehearsal Exercise" provides M&S training in which Soldiers must confront dilemmas and make decisions under stress. A third ICT training scenario, "Full Spectrum Warrior," engages Soldiers in squad-level urban maneuvers based on Microsoft® Xbox technology.

"ICT uses the capabilities of the virtual world to better train our Soldiers for situations they have never seen before, such as new cultures and foreign languages," explained Kern.

Dr. Gary R. Graham, Deputy Director of the Defense Advanced Research Projects Agency's (DARPA's) Tactical Technology Office, said DARPA has worked together with the REF on force protection for convoys in *Operation Iraqi Freedom*. The REF has equipped convoy vehicles with a DARPA-led technology called "Boomerang." This vehicle-mounted shooter detection and location system helps alert convoy drivers to the exact location of incoming bullets. This enables Soldiers to quickly find the source and return fire.

Graham also outlined three transformational technology projects DARPA is researching. They are:

- High-Energy Liquid Laser Area Defense System (HELLADS): The HELLADS program is developing a high-energy laser system that weighs considerably less than current laser systems. HELLADS will be integrated onto tactical aircraft and UAVs, thereby increasing

Figure 1. HELLADS

engagement ranges compared to ground-based systems. See Figure 1.
- Canard Rotor/Wing (CRW): An affordable, survivable air vehicle capable of VTOL that supports dispersed units in littoral and urban areas.
- WALRUS: A heavy-lift air vehicle with 500 tons of lift capability. This vehicle is envisioned to transport a unit of action from "fort to fight."

Graham also showcased these FCS-enabling technologies developed by DARPA:

- Jigsaw: A LADAR sensor that can produce high-resolution 3-D data by combining information from multiple sensors and perspectives. This sensor provides "the eyes" for FCS platforms.
- A160 Hummingbird: A UAV with VTOL capability and a 2,000-mile plus range. The A160 concept will be evaluated for surveillance and targeting, communications and data relay and lethal and nonlethal weapons delivery.
- Unmanned Ground Combat Vehicle (UGCV): The UGCV program is developing vehicle prototypes that can negotiate obstacles, transport material and exhibit advanced endurance performance.

Global War on Terrorism (GWOT)

COL(P) Joseph L. Votel, Deputy Director, Information Operations, Office of the Deputy Chief of Staff, G-3, explained how S&T is helping to mitigate problems with improvised explosive devices in the field. Votel praised the acquisition community's REF for quickly getting tools into the hands of Soldiers. "S&T, combined with our training and intelligence communities, will help address the GWOT," Votel said.

COL Tom Stautz, Agile Development Center Director, U.S. Army Research, Development and Materiel Command, also praised the REF for its timely procurement of items such as slat bar armor for the Stryker, an expedient armor kit for the Humvee and the Phraselator, a compact device that translates phrases from one language to another.

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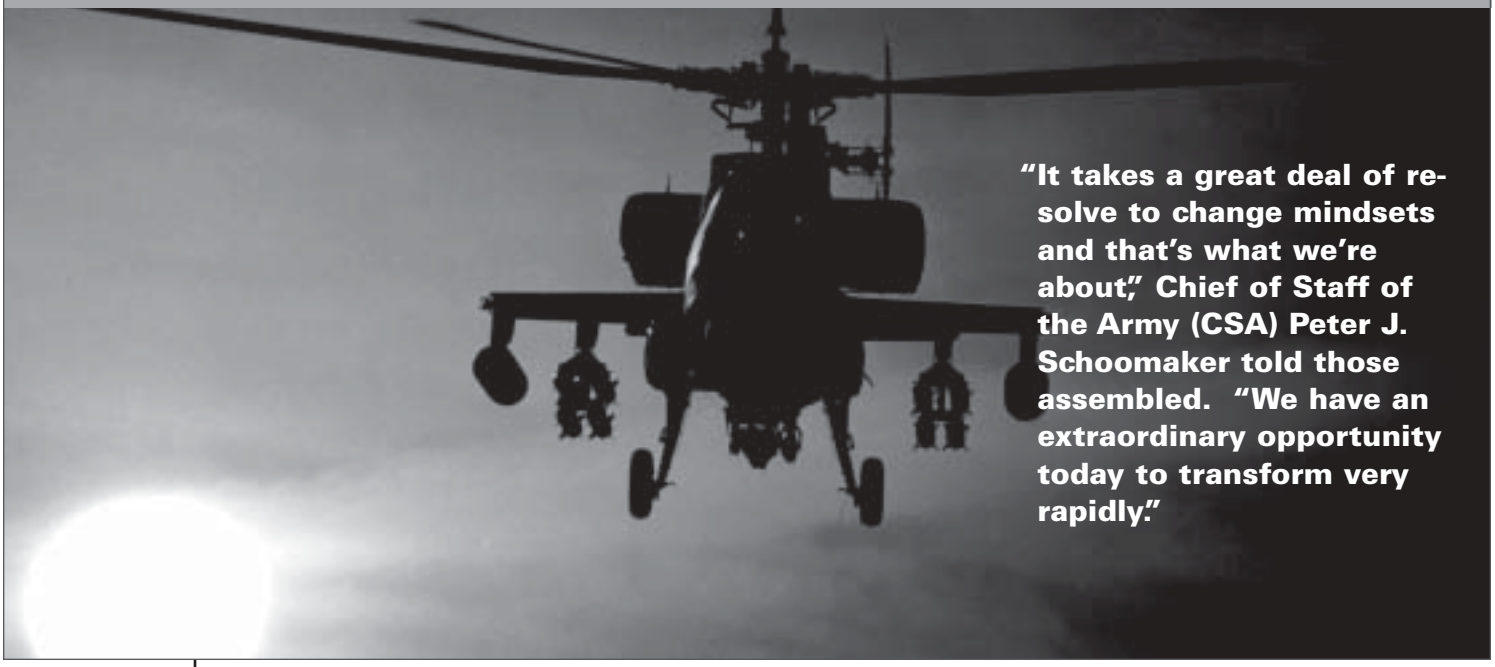
MEG WILLIAMS is the Senior Editor/Writer for *Army AL&T* Magazine and provides contract support to ASC through BRTRC's Technology Marketing Group. She has a B.A. in English from the University of Michigan and an M.S. in marketing communications from Johns Hopkins University.

Transforming During Wartime — Making Tough Decisions for Army Aviation

MAJ Dennis Ellison and Meg Williams



"It takes a great deal of resolve to change mindsets and that's what we're about," Chief of Staff of the Army (CSA) Peter J. Schoomaker told those assembled. "We have an extraordinary opportunity today to transform very rapidly."

Fighting a war and simultaneously transforming the Army were underlying themes during the Association of the United States Army (AUSA) Winter Symposium and Exhibition, March 3-5, 2004, Fort Lauderdale, FL. General officers who spoke pledged that the Army would be victorious in both areas and the urgency in their voices hung in the air more heavily than the salt spray from the Atlantic Ocean.

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Comanche Program

The CSA described progress on the 17 Army Focus Areas, one of which was particularly top-of-mind — Army aviation. Transformation had come swiftly and decisively to Army aviation when the Army announced Feb. 23, 2004, that it was canceling the RAH-66 Comanche helicopter program at the recommendation of Task Force (TF) Aviation.

CSA GEN Peter J. Schoomaker

"TF Aviation's intention was to look at what it would take to make the aviation program whole, not to end the Comanche program," Schoomaker said. "We want to make the aviation program whole and be able to sustain and upgrade our current investments."

BG Edward J. Sinclair, Commanding General, U.S. Army Aviation Warfighting Center, Fort Rucker, AL, gave an extemporaneous presentation on Army aviation earlier in the week at the AUSA Winter Symposium. He pointed out that the CSA had directed TF Aviation to conduct a holistic review of Army aviation, and TF Aviation responded with 115 items needing to be addressed.

Transformation had come swiftly and decisively to Army aviation when the Army announced Feb. 23, 2004, that it was canceling the RAH-66 Comanche helicopter program at the recommendation of Task Force Aviation.

TF Aviation proposed that money intended to purchase 121 Comanches and outfit them with Aviation Survivability Equipment (ASE) be transitioned to take care of these 115 problem areas. That money, approximately $14.6 billion, would be used to:

- Purchase 796 new aircraft, including 80 new "L" and "M" model UH-60 Black Hawks.
- Modernize 1,400 other aircraft, including upgrading the Apache attack helicopters to Block III and upgrading Chinooks used by the U.S. Army National Guard and Army Reserve units to the Fox model.
- Outfit current aircraft with ASE.
- Purchase training munitions. Current stock will be depleted by 2007 at the current rate of use.
- Provide greater resources to Army unmanned aerial vehicle (UAV) programs, including purchasing UAVs to be used in Joint strategic initiatives.
- Transition to a multifunctional aviation brigade.
- Improve training, enhance flight simulators and increase flying hours.

"Overall, we're looking at two types of aviation platforms — intratheater aircraft and utility aircraft," Sinclair said. He further explained that there would be 8 UH-60 Black Hawks and 12 Chinooks in each aviation brigade to support each unit of action (UA). A major, a captain and several noncommissioned officers would lead these brigade aviation elements.

Killing the Comanche program was done based on assurances that the Comanche resources would flow back into other Army aviation programs. "The $14.6 billion will make the aviation force whole and survivable and we will invest in UAVs and the technology base for the future," Schoomaker explained. "We received a commitment from the Secretary of Defense and [he] said that the Army would be allowed to keep that money. We spoke to President Bush about it and have achieved his sincere commitment. So far on Capitol Hill, we've received commitments from committees, and Senator Ted Stevens said that he personally would support that money going into Army aviation."

Modularity

Schoomaker talked about other Army Focus Areas as well. He noted that the Army has asked Congress for 30,000 more personnel and said that the Army plans to expand its 33 Active brigades to 48 brigade combat teams (BCTs) and reorganize the 15 enhanced brigades in the National Guard and Reserve into 34 BCTs. This will give the Army 77 modular BCTs that are ready to deploy when needed.

"This is a matter of using the million people we have in uniform to greater effect," said Schoomaker. "You might have seen that we have deployed 7 percent of Reserve units more than once in the last 14 years and that 93 percent of those Reserves have been deployed once or not at all in the last 14 years. We must make better use of that for which we are already paying."

Force Stabilization

The Army is moving 290,000 people a year, of which 90,000 are discretionary moves. The Army plans to take control of discretionary moves and stabilize people in units, especially at the larger installations. Professional development could be better staged, providing training for junior Soldiers through noncommissioned officer grade and junior officer corps through field grade for longer time on station. Developing young Soldiers and officers at the same location allows their families stability, their spouses to work and leadership strength to flourish. Schoomaker told AUSA attendees that there is an opportunity for the Army to transform itself now. "Transformation will take place during a time when there will be political pressure to lessen the defense portion of the U.S. budget," said Schoomaker. "Yet, the Army has momentum as it fights this war, and we must use it to reset the force and convert to the UA and unit of employment. The window of opportunity is open, but it might close faster than we realize."

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Did You Know?

The 2004 Acquisition Senior Leaders' Conference is scheduled for Aug. 9-12, 2004, in Louisville, KY. This is an invitation-only conference. Throughout the week, attendees will interact with more than 300 senior acquisition professionals from Army Aquisition Corps headquarters offices, Army program offices, acquisition organizations, the Joint environment and elsewhere. The theme for this year's conference is *"Army Acquisition Corps — Supporting the Fight, Improving the Force, Building the Future."*

The conference will highlight technology transfer initiatives throughout Army acquisition programs and platforms that have received technology insertion that led to improved capability. International and joint capabilities will also be showcased. On Aug. 12, 2004, attendees will venture to nearby Fort Knox, KY, for live-fire exercise, equipment static display and demonstration area.

If you are interested in participating in either the demonstration or live fire at Fort Knox, or if you are planning to exhibit at the conference hotel, contact demonstration coordinator MAJ Jonathan Long at (703) 805-1239/DSN 655-1239 or via e-mail at **jonathan.long1@us.army.mil**.

If you have questions, contact Joan Sable at (703) 805-4357, DSN 655-4357 or **joan.l.sable@us.army.mil**.

From the Acquisition Support Center Director

Although it's only April, the acquisition community has already experienced plenty of changes in 2004, and there are lots more on the immediate event horizon. As Army Transformation becomes a huge factor in how the Acquisition, Logistics and Technology (AL&T) Workforce does business, acquisition professionals will need to assimilate new processes and procedures into their short- and long-term strategic planning.

The *National Defense Authorization Act for FY 04* amended the *Defense Acquisition Workforce Improvement Act (DAWIA)* to give the Secretary of Defense (SECDEF) greater flexibility in managing the AL&T Workforce. Specifically, the amendment gave the SECDEF the flexibility to establish different experience, education, training and tenure requirements for acquisition positions; establish a single acquisition corps; and streamline obsolete and outdated *DAWIA* provisions.

Defense Procurement and Acquisition Policy (DPAP) Director Deidre A. Lee established a *DAWIA* Streamlining Steering Team, co-chaired by the DPAP Chief of Policy and Defense Acquisition University (DAU) President, and a Streamlining Working Group to develop an implementation plan. Working Group membership includes a representative from each service component, DAU and the functional advisors. With guidance from the Steering Team, the Working Group is developing the framework to streamline the Acquisition Career Management Program and implement the *DAWIA* initiatives with the issuance of revised guidance. The Army's representative to the Working Group is from the Acquisition Support Center (ASC) and has established contacts in the program executive offices, acquisition commands and other organizations to facilitate staffing within the Army. Staffing will commence after the Under Secretary of Defense (Acquisition, Technology and Logistics) and the Service Acquisition Executives have been briefed.

It's not too early to mark your planning calendars for this year's Acquisition Senior Leaders' Conference. The "invitation-only" conference will be held Aug. 9-12, 2004, in Louisville, KY. Plans in the works include a general information session, breakout working groups and a field trip to nearby Fort Knox, KY. For the latest conference information, go to the ASC Web site at **http://asc.army.mil/portal.cfm**.

This year's Accessions Campaign process is in full swing. The Accessions Board is slated to convene in June 2004 to decide which applicants (captains/majors) will receive positions in the Army Acquisition Corps (AAC). Last year's Accessions Board drew 163 applications. This year, more than 550 applicants had already applied for board consideration as of press time. Needless to say, this year's board process will be very competitive. We are very excited about this year's prospective pool of talented Army officers. There is a nice spread of basic branches from among the applicant population that, ultimately, will help strengthen the AAC's backbone and the Army's "cradle-to-grave" acquisition process for the future.

I would like to point out that this issue of *Army AL&T* Magazine features three articles about a great partner of Army acquisition — the Acquisition, Logistics and Technology Enterprise Systems and Services (ALTESS). Commanded by LTC Fernando Torrent, ALTESS supports the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) with software integration and network operation services, and provides specialized application development to the AL&T Workforce. I urge you to read the ALTESS articles on Pages 6, 9 and 20, respectively, to learn more about ALTESS applications such as Acquisition Information Management and the Planning, Programming, Budgeting and Execution System.

ASC's Program Structure and Information Analysis Division orchestrated a very successful Military Acquisition Position List (MAPL) Review, held at the Office of the Project Manager for Intelligence and Effects, Fort Belvoir, VA, March 22-26. Military Deputy to the ASAALT LTG Joseph L. Yakovac Jr. chaired this year's MAPL Review. Approximately 45 people, representing more than 1,800 military acquisition positions within their commands and programs, attended the 5-day conference. A link to this information will be posted on ASC's Web site at **http://asc.army.mil** in early May.

As warm weather begins to descend upon us all, I'd like to take the time to wish everyone a happy and healthy spring. Whatever your upcoming plans are, be careful, be safe and have fun. Life is a celebration — be there to enjoy it!

COL Mary Fuller
Director
Acquisition Support Center

AHRC Notes

FY03 Colonel Promotion Board Results

The release of any promotion list by the U.S. Army Human Resources Command (AHRC) is always followed by an exhaustive data analysis to "map" the considered/selected population's characteristics. The following paragraphs summarize the Acquisition Management Branch's analysis of the Army Acquisition Corps (AAC) population for the FY03 Colonel Promotion Board.

Overall AAC Results

- 33 officers were selected for colonel (below zone (BZ) and primary zone (PZ) of consideration, no above zone (AZ) selection).
- Board members reviewed 52 AAC officer files in the PZ. From this population, 30 officers were selected for promotion, with a selection rate of 57.7 percent. This figure was above the Operational Support Career Field (OSCF) rate of 51 percent.
- Board members reviewed 34 AAC AZ officer files. From this population, no officers were selected for promotion. The OSCF rate for AZ was 3.7 percent.
- Board members reviewed 62 AAC BZ officer files. From this population, 3 officers were selected for promotion, with a selection rate of 4.8 percent. The OSCF rate for BZ selection was 3.8 percent.

Primary Zone Promotions

Of the 30 officers selected in the PZ, 28 (93.33 percent) were either current or previous centrally selected product managers (PMs) or acquisition commanders. Of these 28 officers, 25 had at least 2 command Officer Evaluation Reports (OERs) in their board files. Additionally:

- All officers had only DA Form 67-9 command OERs. The average number of command reports for PZ officers selected was 2.53 reports. Selectees had 2.06 above-center-of-mass (ACOM) command OERs and .466 center-of-mass (COM) command OERs.
- 12 of the 30 PZ selectees (40 percent) were not Senior Service College (SSC) graduates or selectees prior to the FY03 Colonel Promotion Board.
- Overall, officers selected had ACOM and COM+ files.
- 93.33 percent of PZ selectees served, or are currently serving, as a Command Select List (CSL) PM or acquisition commander.
- 2 officers were selected for promotion without CSL command.

Below-the-Zone Promotions

All BZ officers selected were current PMs or acquisition commanders. All BZ selectees had at least one ACOM command OER, with no COM command reports. All BZ selectees were also selected for SSC.

Trends for Selectees

Based on this analysis, officers competitive for promotion to colonel generally:

- Are serving or have served successfully as a PM or acquisition commander. Command performance evaluations include (on average) two ACOM ratings and less than half had one COM rating under the DA Form 67-9 OER system.
- Have an ACOM or COM+ file quality overall (i.e., performed well in whatever positions they held throughout their careers).

Who Was Not Promoted and Why?

Of the 22 PZ officers not selected for promotion to colonel, 7 were either current or former PMs/commanders.

- Officers not selected for promotion, regardless of whether they had been or were now PMs/commanders, had an average of two ACOM and four COM DA Form 67-9 OERs.
- The majority of officers not selected for promotion had COM+ or COM performance files overall.

Trends

Officers with straight COM OERs are not competitive for promotion to colonel. Officers with COM+ and ACOM files are competitive if they have performed very well (strong COM+ or ACOM) as a lieutenant colonel (LTC) PM/commander. Late selection for PM/command can lead to nonselection if officers do not have any, or significantly less than, the average number of PM/command OERs in their board files. Late selection is defined as being selected or activated from the alternate list on your third or fourth look for LTC PM/command (i.e., timing such that you could not expect to have near the average number of command reports before your PZ look for promotion to colonel).

General Observations

The file quality of officers selected for promotion continues to be strong. Not all successful PMs/commanders will get promoted because of the tough competition. Early selection for LTC PM/command can improve an officer's chances for selection because of the additional command evaluations available for the board's review, and assuming that the actual evaluations support promotion. COM evaluations should have substantive narrative comments provided by the senior raters, and senior raters should focus on officer potential.

Summary

Promotion to colonel is extremely competitive. Strong, documented duty and command performance is the key to selection for colonel. Officers (all zones) should personally review their Officer Record Brief and microfiche in preparation for promotion/selection boards to ensure their information is accurate and complete. Any photo that is more than 2 years old, does not show current awards and decorations or is not good quality should be retaken. Bottom line: Promotion to colonel is a very tough cut. Overall file quality in addition to ACOM/COM+ performance while in LTC PM/command is crucial for successful competition for colonel selection.

The chart below shows how OSCF performed in comparison to the other career fields.

	AZ	PZ	BZ	Defense Officer Personnel Mgmt.
Information Operations CF	5.6%	56.8%	3.2%	70.3%
Operations CF	3.9%	52.6%	3.2%	60.9%
Institutional Support CF	7.1%	52.1%	4.8%	64.8%
OSCF	3.7%	51.0%	3.8%	58.3%
AAC	0%	57.7%	4.8%	

Congratulations to the following FY03 AAC colonel selectees:

Besch, Thomas Murray
Billington, Robert
Bristow, James Steven
Brown, Joseph David
Chasteen, Gregory T.
Coffman, Thomas D.
Cook, David Alan
Dever, Douglas Allen
Doyle, Norbert S.
Flowers, Kenneth
Gallagher, Daniel J.
Hansen, Jacob Bernard
Harrington, Gale A.
Hazelwood, Donald A.
Hollingsworth, Larry
Hoppe, William C.
Hughes, Daniel P.
Jones, Luwanda F.
Jones, Raymond D.
Kidd, Scott Richard
Knudson, Ole Albert
Koster, John L.
Kunkel, George D.
Langhauser, Craig G.
Lipsit, Carl Alan
McNerney, Catherine
Miller, Christopher
Miller, Scot Charles
Mullin, Edward L.
Paquette, Derek J.
Pennycuick, Richard
Ross, Christopher M.
Wheeler, Kenneth A.

FY03 CGSC Selection Board Results

The FY03 Army Command and General Staff College (CGSC)/Intermediate Level Education (ILE) Board results were released Nov. 6, 2003. This article announces the Army Acquisition Corps (AAC) officers selected to attend CGSC and provides insight on board results.

Overall Acquisition Corps Results

The CGSC selection board members reviewed 191 AAC officer files. From this population, 65 officers were selected for CGSC. Cohort year group (YG) 93 selection rate was 34.3 percent (35 selected, first look) and Cohort YG92 selection rate was 33.7 percent (30 selected, second look). Twenty-one AAC officers were considered for revalidation, and all 21 were revalidated (100 percent). Revalidated officers are not included in the selection statistics below.

What Was the Trend for Those Selected?

The trends differ some between those receiving first and second looks. Selection for CGSC is primarily a reflection of how officers performed in their basic branch assignments. Most AAC officers have few, if any, Officer Evaluation Reports (OERs) from acquisition assignments when the CGSC board considers them. Many officers are still completing basic branch assignments, Reserve Officer Training Corps or U.S. Army Recruiting Command, Active Component/Reserve Component (RC) assignments or attending advanced civil schooling. Thus, AAC officers are judged against the same criteria as basic branch officers.

As with other boards, first and second lieutenant OERs have been purged from officers' files and were not reviewed by the FY03 CGSC board. The MOST IMPORTANT discriminator continues to be captain command-level OERs. Board members appear to use command reports as the measure of an officer's ability to succeed. The majority of the selected officers received "top block" command OERs. Senior rater narratives that quantify an officer's performance

— when the profile does not — appear to send a clearer picture to board members on the "true block check." (Comments such as best officer in a command, top 5 percent, my number 3 out of 10 helped pinpoint performance.) Additionally, senior rater narratives that focused on the officer's potential were generally more effective than OERs that focused on how the officer performed. Officers with overall center-of-mass (COM) files and "top block COM" command OERs were not selected for CGSC.

Performance in basic branch assignments, especially company command, appeared to be the board's focus. The message is clear — seek company command, do well, and maintain a high level of performance on all other assignments. Here are the statistics to support this year's board results:

There were 102 AAC YG93 officers considered for CGSC. From this total:

- 35 were selected (34.3 percent).
- 76.5 percent of the officers selected had 2 or more above-center-of-mass (ACOM) OERs while in command.
- 23.5 percent of the officers selected had 1 COM OER while in command.

There were 89 AAC YG92 officers considered for CGSC. From this total:

- 30 were selected (33.7 percent).
- 36.6 percent of the officers selected had 2 or more ACOM OERs while in command.
- 63.3 percent of the officers selected had 1 COM OER while in command.

The FY04 CGSC board should be the last CGSC board for AAC officers. Cohort YG93 will get its second look and the rest of our officers will complete CGSC through ILE. Officers whose files went before a CGSC board and were not selected can complete CGSC only through the nonresident/RC CGSC program. ILE is presently offered to officers who have been selected or are Cohort YG94 and later.

The names of the selectees and revalidated officers are listed below:

Name	Rank
Aleandre, Rodrigue	MAJ
Anderson, Joseph Scott	CPT
Anderson, Lisa Lee	MAJ
Ansley, Steven Roy Jr.	CPT
*Bailey, George Daniel Jr.	MAJ
*Beard, Kirby Dwayne	MAJ
*Bentzel, Thomas Frederick	MAJ
Besaw, Craig Stephen	CPT
Bledsoe, Elizabeth Ellen	MAJ
*Brown, Evan Jacob	MAJ
Brumlow, David Gregory	CPT
*Calhoun, John Clifton	MAJ
Carter, Don Carlo	CPT
*Cauley, Timothy Mark	MAJ
*Clark, Steven Bobby	MAJ
Cottoarroyo, Luis	CPT
Craft, Paul Grant	CPT
Crespo, Luis	CPT
Crosby, Troy Wayne	CPT
Davidson, Paul Gerard	MAJ
*Devine, Michael Joseph III	MAJ
Dills, Jack Eric	CPT
Ellis, Bruce Elliott	MAJ
Ellison, Kevin Lewis	MAJ
Evans, Jeffrey Goodman	MAJ
Feuerborn, Thomas Allen	MAJ
Ford, Christopher Michael	CPT
Foster, Michael Erwin Sr.	MAJ
Francis, Sabrina Elaine	MAJ
Furber, Daniel Lewis	MAJ
*Gaddy, Roland Morris Jr.	MAJ
Geisbert, Kevin Lee	MAJ
Gentry, Todd Michael	CPT
*Green, Lance Brandon	MAJ
Greig, Amanda Pearson	MAJ
*Grosenheider, Susan Marie	MAJ
Gruchacz, Brian James	CPT
Hoecherl, Joseph Arnold	CPT
Hoffman, Dean Meck IV	MAJ
Hollis, Fredrick Coaven	MAJ
Hopkins, Paul Terry Jr.	CPT
Huff, Tom Takashi	CPT
Jackson, Shannon Charles	CPT
Jackson, William David	MAJ
Jacobson, Kathleen Jeanette	CPT
Johnson, Mark Anthony	MAJ
King, Federica Lashon	MAJ
Klopotoski, Dean Tadak	CPT
*Laughlin, Kelly Dean	MAJ
Lowrey, Douglas Scott	CPT
Lucas, Shawn Patrick	CPT
*Lyttle, Brian John	MAJ
*MacGregor, Lee Jae	MAJ

Name	Rank
Malik, Yolanda D.	CPT
Mazure, Paul David	CPT
McGowan, Dennis Michael	CPT
Miceli, Robert Joseph	MAJ
Micklewright, Scott Dan	MAJ
Middleton, Robert Elijah	MAJ
Mills, James Christopher	CPT
*Nash, Kevin Michael	MAJ
*Neal, Mark Andrew	MAJ
Nerdig, Daniel Adam	CPT
Nicholson, Jennifer Ann	CPT
*Pearman, William Frederick	MAJ
Phillips, Jeffery Eugene	CPT
Phillips, Lewis Herschel	CPT
*Piatt, Eric Allen	MAJ
Price, Paul Edward	CPT
Ransom, Audrey	MAJ
Roberson, Rochelle Chantea	MAJ
Ryder, Ronald Lee	MAJ
Shea, Thomas Everett William	MAJ
Shuler, Paul David	MAJ
Stewart, Donald George	CPT
Stiner, Mark Thomas	CPT
Stone, Jeffery Clark	CPT
Stringer, David Blake	CPT
Sublett, Charles E.	CPT
Talbot, Mark Edward	CPT
*Thompson-Blackwell, Rosalyn	MAJ
Vanderschaaf, Reid Evan	MAJ
Vanriper, Steven Glenn	MAJ
Warnick, David Alan	CPT
*Williams, Kevin David	MAJ
*Wolons, David Scott	MAJ
Worshim, Charles III	MAJ

* Revalidated officers

\- One name withheld for security purposes.

Army Acquisition Corps (AAC) Accession Board Results

The U.S. Army Human Resources Command's annual Acquisition Candidate Accession Board was held in September 2003. The Director, Officer Personnel Management Directorate, has approved the following officers for accession into the AAC.

Name	Basic Branch
Anderson, John P.	SF
Anderson, Wyeth S.	OD
Antoniou, George T.	SF
Baker, Michael A.	AD
Beatrice, Gregory P.	FA
Bellusci, Heather O.	AV
Bess, Luke	AG
Bretney, David O.	IN
Brooks, Demetrius D.	TC
Brough, Angelique O.	AV
Brown, Kathy M.	TC
Brown, Michael L.	SC
Bruce, Bradley N.	AV
Campbell, William J. III	FA
Carter, Andrew T.	AV
Chaney, Kevin S.	AV
Clements, Kerry G.	IN
Cline, Kevin R.	AG
Cole, Aquiller E.	AG
Corey, William F. Jr.	AG
Cotman, Kevin L.	QM
Crossley, Michael C.	TC
Dance, Erika L.	AD
Davis, William A. III	MI
Deslauriers, Todd R.	AV
Donovan, Brian M.	AD
Dorrer, Marc C.	AV
Dring, Lawrence W.	OD
Duford, Cori J.	TC
Dunham, Kevin A.	IN
Duthu, James J.	AD
Everts, Eric J.	AD
Fallaria, Ray N.C.	EN
Farmer, Sylvia	EN
Ferguson, Jeremiah D.	SF
Fitzgerald, Michael P.	FA
Fleming, Michael S.	EN
Frutchey, Eric C.	IN
Fulmore, Carlton A.	SF
Gary, Rayfus J.	SC
Gatrell, Gregory S.	AG
Griggs, Timothy J.	OD
Grohmann, Eunju L.	QM
Guida, Spencer C.	AV
Guzman Correa, Raymond	AD
Hackenberg, Brian J.	EN
Haggerty, Richard T.	AV
Hall, John F.	AV

Name	Basic Branch
Harris, Rickey E.	SC
Hayward, Preston J.	TC
Hodge, Harold B. III	AR
Hoff, Russell V.	IN
Howard, Oscar L. Jr.	MI
Hurwitz, Johnathan M.	FI
Jefferis, Jason K.	FA
Jones, Humberto I.	QM
Jones, Keith Jr.	AG
King, Louis L.	SC
Lane, Calvin J.	AV
Langston, Charles N.	AD
Lisella, Joseph L.	MP
Marolf, Kyle R.	TC
Mastick, Matthew G.	FA
McClintock, Robert E. Jr.	IN
McCluskey, Derrick W.	EN
McDonald, Robert L. Jr.	FA
McIntyre, Kelley	QM
Metz, Christopher E.	OD
Miller, Douglas M.	FA
Moffitt, Jarrett S.	OD
Morrison, Jeffrey E.	IN
Naylor, James T.	AV
Ostby, Christopher C.	AV
Perez, Luis G.	SC
Plansky, George M.	TC
Pontes, William J.	AV
Poston, Laura N.	SC
Pressley, Eddie L.	QM
Preston, Ronnie H. Jr.	IN
Pridgeon, James A.	OD
Ramsey, Zara R.	OD
Retzlaff, Gary J. Jr.	AV
Rhoads, Travis M.	TC
Ringbloom, Kirk M.	AV
Rivera, Monique N.	SC
Rottenborn, Philip G.	QM
Russell, Terry S.	FA
Rutkowski, Michael E.	AV
Schneider, Maria D.	EN
Sharpnack, Margaret J.	FI
Shepard, Jonathon C.	QM
Sheppard, Talmadge C.	AV
Simms, Terry D.	AV
Sizemore, Sandra L.	EN
Smith, Patrick M.	TC
Smith, Quentin L.	SC

Name	Basic Branch	Name	Basic Branch
Smith, Sean M.	QM	Wiedenman, Nathan	AR
Taylor, Jack S.	AG	Williams, Leon O.	QM
Tolbert, Vincent J.	FA	Williams, Robert M.	MI
Trimble, William Jr.	IN	Williams, Xaviera C.	SC
Turner, Duane A. Jr.	AR	Willoughby, Paul W.	SC
Walsh, Joshua F.	FA	Wood, Camilla A.	SC
Weizer, Paul I.	AV	Yankovich, Michael F.	EN
Wernau, John J.	SC	Yu, Victor Y.	AR
White, Jeffrey R.	FA	Zopelis, James E.	AD

News Briefs

Lean Savings Returned to Letterkenny Army Depot

COL William A. Guinn, LEAD Commander, presents a ceremonial check for $990,000 to LTG Philip R. Kensinger Jr., SOCOM Commanding General, during a ceremony at Letterkenny Army Depot.

Savings realized by Letterkenny Army Depot (LEAD), Chambersburg, PA, through the application of lean principles on the Special Operations Forces (SOF) Ground Mobility Vehicle (GMV) modification program were returned during a ceremony Feb. 17, 2004, at Fort Bragg, NC. COL William A. Guinn, LEAD Commander, presented a ceremonial check for $990,000 to LTG Philip R. Kensinger Jr., Commanding General, U.S. Army Special Operations Command (SOCOM).

Letterkenny and SOF have been working jointly to modify special purpose high-mobility multipurpose wheeled vehicles that are transformed into the new fighting platforms called GMVs. SOF teams include Army Rangers, Army Special Forces Groups and U.S. Navy SEAL (sea, air, land) teams. Each team's vehicles are tailored to meet various operational scenarios and tempos. CPT John Anderson, 3rd Special Forces, offered his opinion on GMVs: "Our unit likes the modifications that LEAD has performed on the GMVs and, what's more important, their performance in the field. They take us anywhere now."

Depending on the service requirement, modifications included auxiliary fuel tank installation to achieve longer distances, multiposition gun mounts, grenade launchers and electronic rack mounting for communications augmentation as well as additional ammunition and missile stowage for these vehicles, which are used in Southwest Asia and other locations around the globe.

Lean manufacturing is a strategy geared toward identifying and eliminating waste in a process. Lean manufacturing techniques save money by producing lower costs, higher quality and shorter lead times. Using lean practices, Letterkenny employees streamlined the SOF GMV production line, and Guinn passed these savings back to the customer — SOCOM. Kensinger praised the LEAD workers for their prompt response to his command's needs. "Our confidence in Letterkenny is well-placed and we are proud to work with you in this effort," Kensinger said.

In presenting the ceremonial check, Guinn said, "It isn't often that a depot actually returns savings achieved through efficiencies. Indeed, as far as I know this is only the second time. Letterkenny was also the first to do so when we returned more than $1 million in lean savings from our PATRIOT program." Guinn concluded, "The implementation of lean principles is enabling LEAD to be the depot of choice for the SOF Group."

Maintenance Support Device Standardizes Army Test Equipment

Thuan Khong

In March 2003, Product Manager for Test, Measurement and Diagnostic Equipment (PM TMDE), in coordination with the Program Executive Officer (PEO) for Aviation; Project Manager for Aviation Systems; PM for Aviation Mission Equipment; and Miltope Corp., the Maintenance Support Device (MSD) prime contractor, kicked off an engineering change proposal effort to include the latest commercial technologies and capabilities in the MSD upgrades.

In support of *Operation Iraqi Freedom* the 155mm howitzer sends flames into the air as it fires. U.S. Marine Corps photo by Lance Cpl. Matthew J. Decker, 15th Marine Expeditionary Unit.

These upgrades included:

- Pentium III 700 megahertz to Pentium Mobile (M) 1.3 gigahertz processor.
- 256 megabyte (MB) to 512 MB Synchronous Dynamic Random Access Memory (SDRAM).
- 8 MB to 64 MB video RAM, nonamplified to amplified audio output.
- Embedded RS-485 interface.

Upgrades resulted directly from additional requirements of MSD customers and users — Aviation Mission Planning Systems (AMPS), Stryker Brigade Combat Teams (SBCTs) and PATRIOT.

In September 2003, PM TMDE fielded the upgraded MSD to support the SBCT at Fort Lewis, WA, and Fort Wainwright, AK; AMPS fielding; homeland defense and other DOD weapon systems. This marked the first time that PM TMDE fielded a product to Soldiers at the same time it was introduced to the commercial market.

The Integrated Family of Test Equipment's MSD is managed by PM TMDE (at Redstone Arsenal, AL) under the PEO for Combat Support and Combat Service Support (PEO CS&CSS). MSD is the third generation multipurpose Army Standard Automatic Test Equipment (ATE) used throughout DOD at all maintenance levels to test and diagnose complex electronics, engines, transmissions, central tire inflation systems and antilock brake systems in missile, aviation and vehicular weapon systems.

MSD supports Army transformation by significantly increasing higher readiness rates, supportability and sustainability of deployed forces, while simultaneously standardizing electronic and vehicular test capability, increasing unit deployability and reducing the force's logistics footprint. Without MSD, weapon systems maintainers would be forced to revert back to multimeters, oscilloscopes and paper instructional manuals. Any step backward directly impacts unit readiness, supportability and sustainability. Without MSDs, units will require more spare parts because of higher no-evidence-of-failure (NEOF) rates. This further burdens the supply system and ties up critical transportation assets. Lack of MSDs will result in longer repair cycle times because it will take longer to diagnose faults and more time will be spent waiting for parts that are actually not needed because of NEOF.

Weapon system maintainers use the MSD to execute system Interactive Electronics Technical Manuals/Electronics Technical Manuals and/or specific application software to troubleshoot the weapon systems quickly and reliably. The MSD is a ruggedized, self-contained, man-portable system that is also being used widely for command, control, communications, computers and intelligence applications such as high-frequency tracker and AMPS, and to upload/download mission data or software. This general-purpose TMDE has been in production since summer 2002 with more than 4,500 systems fielded to the Army, homeland defense, National Guard, Air Force and Navy facilities in CONUS and OCONUS in support of many current and future weapon systems. MSD enables the Army to standardize its electronic and vehicular test capability, eliminate proliferation of TMDE and reduce weapon system logistics costs.

MSD, like its predecessors, is a hardened laptop configuration tester with a Microsoft® Windows operating system, 13.3-inch

Soldiers launch a PATRIOT missile during an exercise. U.S. Air Force photo by TSGT James D. Mossman.

Sunlight Readable Milbrite display, a Pentium M processor and personal computer cards for connectivity (Digital Multimeter, IEEE-488, MIL-STD-1553 bus, etc.). MSD interfaces also include:

- Two RS-232/485 ports
- Two USB ports
- IEEE 1284 parallel port
- IrDA compliant infrared port
- SVGA port
- Internal 56K modem
- Internal 10/100Base T Ethernet

For vehicular test and diagnostic requirements, the MSD also includes the Internal Combustion Engine (ICE) kit. The ICE kit allows mechanics to diagnose engines, transmissions, central tire inflation systems and antilock brake systems through the J1939, CAN, J1708, J1850, GM-UART and Haldex data buses. On the analog-dependent platforms, ICE box, digital multimeter and various cables and fittings are used to diagnose faults by measuring direct current or alternating current voltage, amperage, resistance, pressure and frequency.

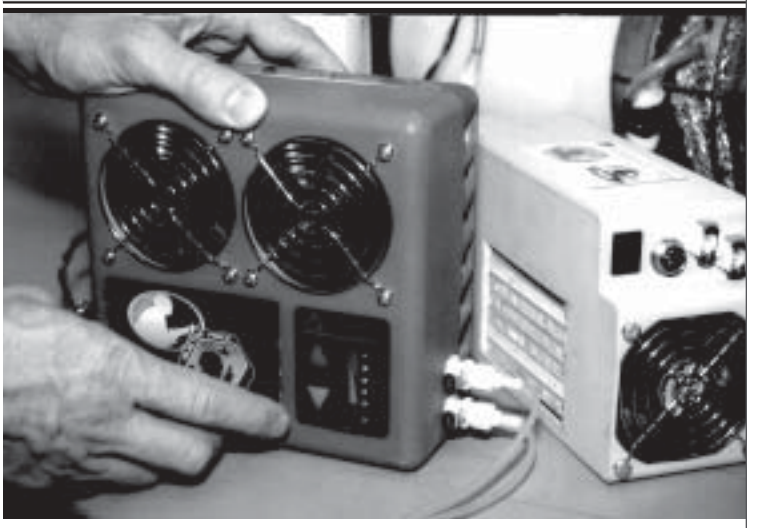
As the Army standard, the MSD — or its successor — will be the platform tester for Future Force combat repair teams. PM TMDE is continually looking at customer needs and industry solutions to make the most modern ATE capability available to Soldiers and weapon maintainers.

THUAN KHONG is an Assistant Product Manager for At Platform Automatic Test Systems, PEO CS&CSS, Project Manager for Measurement, Electric Power and Protection and PM TMDE. To continue the MSD discussion, contact the author at DSN 788-8591 or via e-mail at ***thuan.khong@us. army.mil****.*

Killion Named DASA(R&T)

Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) Claude M. Bolton Jr. recently announced the appointment of Dr. Thomas H. Killion as the Deputy Assistant Secretary of the Army for Research and Technology (DASA(R&T)) and Chief Scientist. Killion has served in the ASAALT Office as the Acting DASA(R&T) since Dr. A. Michael Andrews III left government service in June 2003. Prior to that, he served as the Office of the DASA(R&T) Director for Technology. Killion has also held key government positions with the U.S. Army, U.S. Air Force and the Defense Threat Reduction Agency. A native Midwesterner, Killion received his Ph.D. in experimental psychology from the University of Oregon. He has authored several research and technology publications and articles. His background and experience bring great assets to both the ASAALT Office and the Army.

Personal Coolers Become Smaller



Two working personal cooler prototypes weighing less than 5 pounds have been developed in the latest step to downsizing the system.

Every soldier will carry some high-temperature relief when a microclimate cooling system is incorporated into the upcoming Objective Force Warrior uniform. Microclimate cooling has been researched and developed at the U.S. Army Soldier Systems Center (SSC) in Natick, MA, since the 1980s. Research began with the Portable Vapor Compression System shaped like a vacuum cleaner canister weighing 27 pounds, leading up to several compact prototype systems weighing less than 5 pounds and resembling oversized bricks.

Engineers on the Chemical Technology Team are focused on having a system that weighs less than 4 pounds by 2008 and, ultimately, a system weighing less than 3 pounds by 2015 that will still provide the desired cooling to enhance soldier safety and performance.

"Cooling is a medical and safety issue," said Brad Laprise, a mechanical engineer at SSC. "Comfort is a by-product. You'll never

feel like you're in an air-conditioned room [with these systems], but the idea is to mitigate the soldiers' heat stress, allowing them to do their jobs safely and more effectively."

Cooling can also be a force multiplier because troops can work longer without taking frequent breaks as a result of high ambient temperatures. Cooling also reduces the logistics load by decreasing the amount of drinking water, said Walter Teal, a chemical engineer.

Various microclimate cooling systems are now used for different needs. In 1989, sailors aboard ships started wearing vests that held ice packs slipped into front and rear horizontal pockets. Explosive Ordnance Disposal technicians and those encapsulated in outfits protecting them from toxic agent exposure use the Personal Ice Cooling System, which pumps ice-cold water from a 2-liter bottle carried by the individual through a tube-lined cooling garment. M1 tanks and Bradley infantry fighting vehicles have built-in systems that circulate filtered and conditioned air through a Natick-designed vest worn by crewmen.

The latest microclimate cooling application will benefit Army helicopter pilots beginning in 2004, Laprise said. From the initial Portable Vapor Compression System to an intermediate unit weighing about 21 pounds, a 6.6-pound system called the Advanced Lightweight Microclimate Cooling System was developed. This eventually led to the Air Warrior Microclimate Cooling System program. Built into the helicopter, the system is worn in conjunction with a new stitchless cooling garment also designed at Natick.

During testing, pilots using the cooling system could safely extend their mission from 1.6 hours to no less than 5.3 hours, according to Teal. Still, what works for pilots in their aircraft isn't desirable for a dismounted soldier. Laprise said it's impossible to have one microclimate system for every purpose.

The personal coolers designed by Aspen Systems Inc. in Marlborough, MA, and Foster-Miller in Waltham, MA, are unique prototypes using the same technology as the Advanced Lightweight Microclimate Cooling System, but in a smaller package.

"These prototypes are stepping stones. The next step is to take the lessons learned from the Aspen and Foster-Miller units and go to something smaller," Teal remarked. "We know we are pushing the envelope of vapor compression, but we think there are things we can do to lower the weight and power use."

Vapor compression technology works the same way as a refrigerator or air conditioner. Basic components include a compressor, condenser, evaporator, thermal expansion tube, fan and pump working to move heat to the ambient environment. In the case of microclimate cooling, liquid is chilled and pumped through a vest lined with a network of tubing, thereby removing excess body heat.

The Foster-Miller prototype provides 110 watts of cooling at 95 degrees F ambient temperature and weighs 4 pounds. The Aspen prototype weighs 4.65 pounds and provides 120 watts of cooling under the same conditions. Both systems require 50 watts of power, but engineers hope to achieve similar cooling capacity with only 30 watts of power in the future.

Although 300 watts of cooling is ideal, at least 100 watts of cooling is needed to lower core body temperature according to recent studies and test results, Teal said. Lower cooling capacity is a trade-off for reduced weight.

Shrinking size an inch or two and trimming a few ounces here and there will work for the next phase, but Teal said breakthrough technology is needed to achieve the most compact cooler for Objective Force Warrior. "Taking off those last 2 pounds will take more effort than the first 22 pounds," he predicted.

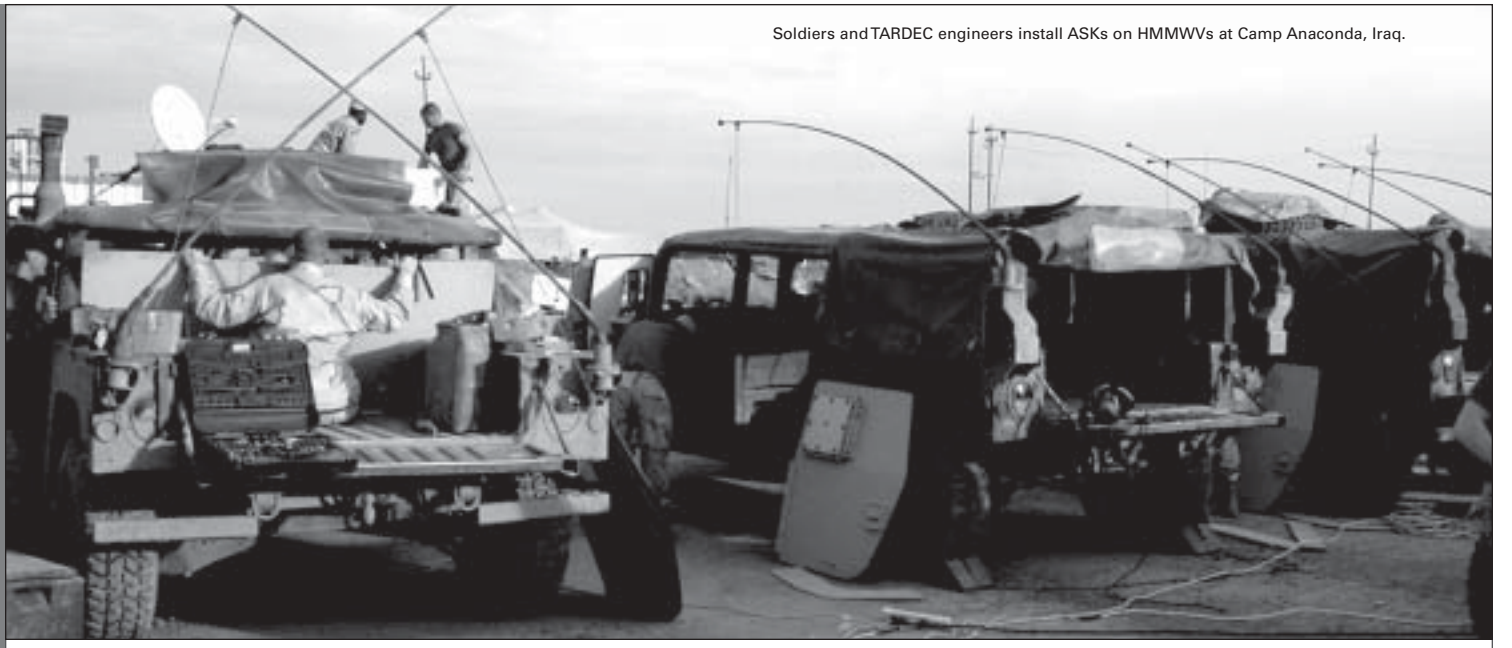
For more information about SSC, go to **http://www.natick.army.mil**.

TARDEC Teams to Fortify HMMWVs

Paul D. Mehney

Kicking up a cloud of dust, a convoy of high-mobility multipurpose wheeled vehicles (HMMWVs) rolled out of Camp Anaconda, Iraq, in early November 2003 — a relatively common occurrence at Anaconda, but something was different about this convoy. Soldiers stared at the vehicles as if they had never before seen a HMMWV. "Look at the doors," was a frequent comment. Indeed, the HMMWV doors on this convoy were different — they were armor.

Responding to Soldiers' comments that standard HMMWV doors (whether cloth or metal) did not protect the driver or



Soldiers and TARDEC engineers install ASKs on HMMWVs at Camp Anaconda, Iraq.

passengers from small arms or explosive device fragment threats, designers and engineers at the Research Development and Engineering Command's (RDECOM) Tank Automotive Research, Development and Engineering Center (TARDEC) and Army Research Laboratory (ARL) swung into action to provide a technology solution to the threat.

Testing of an armor door system began at Aberdeen Test Center (ATC), Aberdeen Proving Ground (APG), MD. The original prototype design was a 2-door kit providing maximum protection and producibility by making the left and right doors interchangeable. TARDEC engineers subsequently teamed with ARL to lend their expertise in design, integration and manufacturing.

On Oct. 10, 2003, TARDEC Design and Digital Mock-up Team engineers Mike Manceor and John Edry flew to ARL to talk to the designers and look at the prototype doors they had fabricated. They were keen to learn how the design could be enhanced to address vehicle integration, producibility and operational issues. The ARL design basically consisted of a flat, square-shaped door that had been rapidly prototyped, performance-tested and quickly shipped to Iraq. Well received and much appreciated by Soldiers, the doors were soon dubbed the Armor Survivability Kit (ASK).

Concurrent with ARL's ongoing activity, TARDEC initiated a detailed door design review and evaluated all associated vehicle integration efforts. According to Manceor, "A variety of factors were addressed, including door form and fit issues, door latch assembly safety concerns and the usability of the door's reinforced windows." Without compromising ARL's survivability standards, TARDEC engineers went to work using computer-based Pro/ENGINEER® computer-aided design (CAD) 3-D modeling to integrate form, fit and functionality issues into a redesigned door kit.

Realizing that Soldiers must quickly install the doors without any special equipment, TARDEC engineers looked at ways to fit the armor doors to the vehicle's contour. This would make the doors more functional and not compromise quick installation. Within days, TARDEC engineers had a door design that included bends matched to the HMMWV's shape — even weather strips were added to keep out environmental infiltration.

Another major concern was window usability; the initial design called for a reinforced door window. Once assembled, however, the window could only open a small amount, which prevented Soldiers from using it as a firing port. This problem was identified during ARL testing and was echoed in Soldiers' comments from the field. TARDEC designed and created a unique mechanism that allowed the reinforced window to open and lock in several positions so that it could be used as a firing port.

Additionally, a more robust door latch system that stood up to rigorous safety standards was needed. Partnering with safety engineering, TARDEC engineers designed a heavy-duty latch capable of withstanding the armor door's weight. "We used many of the parts already being used on the existing HMMWV latch, but after making sure that the latch could keep the heavy door closed during impact testing, it was discovered that we needed to revise the design slightly for an even heavier latch," Manceor commented. The result

was a safe, strong and easily installed door latch made of existing and new rapid-prototyped parts.

While addressing the major design issues, TARDEC also worked closely with the Army's Product Manager (PM) Light Tactical Vehicles to tackle the PM's concerns. Noting that there are more 4-door HMMWVs than 2-door models, engineers designed rear passenger doors, allowing the creation of 4-door kits. Soldiers in Iraq also echoed this need, commenting they often travel with more than two Soldiers to a HMMWV, so a 4-door kit was needed to protect rear passengers.

For added protection, the ASK also includes seat-back and rocker-panel protection kits. According to Jim Soltesz, TARDEC Associate Director of Design and Manufacturing, "The design and fabrication of the complete door kits with the added protection panels took only 20 days. This was due to using TARDEC's computer numerically controlled lathes, vertical mills and water jet cutting systems. This technology enabled the data developed by our state-of-the-art CAD stations to migrate to the shop floor with only minor manipulation by mechanical engineering technicians."

After 1,650 miles of simulated rigorous drive testing conducted by TARDEC's Ground Vehicle Simulation Lab, actual drive testing at APG and additional ballistic testing at ARL, the redesigned armor kits were ready for deployment to Iraq. On Nov. 13, 2003, 15 new kits were shipped to Camp Anaconda where a TARDEC team began installation. Manufactured by TARDEC's Physical Prototyping Team, 85 more kits followed to destinations in Iraq and Kuwait.

Once thought to be only a temporary solution to threat issues in Iraq, Manceor said, "The TARDEC/ARL design is well-integrated into the vehicle, affordable and effective. The PM Light Tactical Vehicles decided that this kit will become standard stocked HWWMV hardware." As a result of increased defense and Army funding, TARDEC engineers have handed off design plans for more than 6,000 kits to government fabricating facilities at Anniston Army Depot, AL; Rock Island Arsenal, IL; and Red River Army Depot, TX, for early 2004 production.

TARDEC engineers install an ASK on a HMMWV at APG prior to field testing.

To provide more armor kits for Soldiers, ARL, TARDEC and the PM team have worked since September 2003 on a multipronged approach:

- Depot production will be supplemented by commercial armor solutions.
- Dedicated ATC testers are testing numerous commercial kits around the clock. The kits are being held to the same rigorous standards set by the ASK.
- The Army is close to selecting an industry partner to produce armor kits of their own design.

According to Steve Roberts, Assistant PM for HMMWV Armor Kits, "The driving factor is protection for the Soldier. The combination of depot and industry production allows for the maximum number of vehicles to be kitted in the shortest time possible. The cooperation of the acquisition, research and test community to quickly get Soldiers the required equipment has been truly outstanding."

"This is the way these things are supposed to work," commented TARDEC Executive Director for Development Thomas Mathes. "It was a total RDECOM and PM team experience for success." ARL developed a technology solution, TARDEC refined the design and integrated it into the vehicle, and the Tank-automotive and Armaments Command's Ground Systems Industrial Enterprise is now taking the resultant technical data package and making the kits in quantity. As Mathes points out, "The Army's most valuable resource is our people, who did what it took to get the Soldier what was required."

Judging from feedback received, Soldiers in the field agree, and as more armored convoys roll out of Anaconda, Soldiers comment that they feel much safer and, most important, that their concerns have been heard.

Paul D. Mehney is a Marketing Specialist with TARDEC's Operations Business Group.

Arming Warfighters for Peacekeeping — Non-lethal Armaments

John Cline

Hajji's ice stand is a familiar sight to U.S. troops traveling along this main Baghdad artery. In the city's oppressive summer heat, the sight of Hajji hawking his small sacks of ice is a familiar one. But today is different and possibly dangerous. A passing Humvee containing American soldiers suddenly slows to avoid an Iraqi child playing in the road. Hajji leaves his roadside stand and approaches the soldiers, ice in hand. A few meters behind him, five men appear abruptly, moving quickly toward the vehicle as they shout something the soldiers do not understand in their native tongue. One carries a bag. A soldier yells "Stop!" His words have no effect. The moment is tense. Perhaps the men are friendly, he thinks to himself. But they also may be terrorists. The soldiers must make a split second judgment call on what action to take….

U.S. Soldiers in Iraq frequently face uncertainties similar to the scenario above. But lethal weapons no longer are the only military response to such potential threats. Soldiers on patrol in Iraq and other regions in which the U. S. maintains a military presence now have a veritable arsenal of lethal and non-lethal technologies from which to choose. Non-lethal weaponry has finally come of age.

The Army's lead organization for non-lethal technologies is the Army Materiel Command's Armament Research, Development and Engineering Center (ARDEC) located at Picatinny Arsenal, N.J. A non-lethal team of engineers and scientists there pays close attention to reports on the use of non-lethal options, even as it develops the next generation of munitions and weaponry.

When retired Army LTC Wesley "Bo" Barbour, a consultant who trains Soldiers how to use selected non-lethal munitions and devices, returned from Iraq earlier this year, the ARDEC non-lethal team invited him to visit. During this visit, Barbour noted that one Picatinny-managed non-lethal armament, urgently fielded at the start of *Operation Iraqi Freedom*, is used extensively by U.S. troops. The Advanced TASER, an electric, hand-held stun device that is in the hands of troops patrolling Baghdad, Tikrit, Mosul and other urban areas, is a favorite of Soldiers there, he said. Prisoner detainee centers also are using the devices with considerable success, Barbour commented. The mere sight of the TASER, he was told, has an immediate, pacifying effect on detainees.

Barbour said that he trained more than 100 soldiers to use the TASER while in Iraq. Similar in appearance and touch to the M9 pistol, the weapon has an effective range of between 3-18 feet. It is laser-aimed, powered by compressed air cartridges and fires two tethered dart electrodes toward the target. The target experiences two distinct sensations when hit — extreme pain and instant muscle block. The latter effect has prevented a suicide bomber from detonating body explosives when hit, Barbour said, something a lethal weapon might have failed to do.

While civilian law enforcement agencies in the U.S. have used the TASER for some time, the military has not. At the urging of field commanders and with full backing of Army leaders, a team of Picatinny scientists and engineers began work on delivering an approved device to soldiers in April 2003. Their objective was to put the Advanced TASER in Soldiers' hands within 90 days. The device arrived in Iraq 87 days later.

The TASER team faced many challenges. Among them was the need to identify human safety standards. Local police departments, law enforcement agencies and the vendor had compiled some data. But the information they'd gathered was of little help to the Picatinny team. The non-lethal team set about determining safety parameters, operating restrictions and hazard warnings to ensure the weapon's effectiveness in the field.

Field commanders in Iraq report that the non-lethal stun device is a tremendous asset. It has minimized injuries to public crowds and helped control unruly individuals and groups. The device is preferred by Soldiers over various chemical compounds like pepper spray which have considerable limitations when used in high-temperature environments like Iraq.

The Advanced TASER is one of a growing number of non-lethal options designed to provide soldiers with a range of armament responses. During the past three years, Picatinny has urgently fielded sets of non-lethal items to Bosnia, Kosovo and Afghanistan. The items in these sets range from low-tech wooden batons, loudspeakers and full body shields to more sophisticated gear like infrared spotlights and 40 mm and 12 gauge point and area blunt-impact munitions. Five sets are now in Iraq, being used to conduct searches, secure perimeters, monitor prisoners and control crowds.

Supporters of non-lethal programs foresee U.S. Forces being equipped with an arsenal of next generation non-lethal weapons in the not-too-distant future. Outside the military, non-lethal alternatives continue to be a strong deterrent for use by domestic law enforcement officials. They also are vital to emerging Homeland Defense counterterrorism strategies.

The Picatinny team is working on a number of additional non-lethal devices. Among these are next-generation ground vehicle arresting barriers, area denial systems and non-lethal pre-emplaced munitions. In addition, they are researching the effects of a variety of non-lethal weapons and technologies on human physiology, cognition and behavior.

Lighter, flexible, high-strength materials and more portable systems are essential for critical applications at security checkpoints and perimeters that protect key physical assets. The Picatinny team also is developing alternate vehicle stopping methods that use electronic and directed energy approaches. Existing net and wire-like versions effectively disable vehicles by entangling wheels, but are cumbersome and heavy. They lack easy transportability and speed of assembly — features vital to a Future Force environment.

The non-lethal team also is developing future area denial systems. These counterambush devices — which can be deployed from armored vehicles — will neutralize off-road enemy forces, and better protect U.S. and allied logistics convoys. The Picatinny team currently is working on a non-lethal mortar projectile that will permit commanders to use indirect-fire systems to scatter large numbers of potentially hostile noncombatants in urban environments. Effective crowd control and disorientation devices that precisely aim sounds or obscure visibility are also under study.

Pre-emplaced non-lethal munitions exist but are not widely used by field commanders, perhaps because of a belief that the *Ottawa Treaty* outlaws them. New Non-Lethal Modular Crowd Control Munitions, variants of the old Claymore mine, deliver payloads of rubber balls intended to stun, not mame. Even lethal pre-emplaced munitions now have advanced designs allowing for "man-in-the-loop" control, ensuring area denial while permitting full human control and appropriate decommissioning. Reeducation around the flexibility of using these existing systems is desirable.

Researching the effects of various non-lethal weapons and technologies on human physiology, cognition and behavior is critical for device designers. The Picatinny team is pioneering deeper understanding through a new Target Behavioral Response Laboratory. Working with a consortium of scientists from the military, medical community and academia, this unique one-of-a-kind lab is of strong interest to the military, the Department of Homeland Security and various law enforcement agencies. These sectors have expressed interest in using this soon-to-be expanded facility. By identifying performance metrics to track the response of individuals and groups to non-lethal stimuli, the lab will assist Picatinny weapons developers to gauge risk levels associated with nonconventional approaches.

Continuous Soldier feedback from Iraq and other theaters confirms the value of non-lethal munitions and devices. Soldiers acknowledge that having options short of using deadly force provides alternative means for controlling crowds without loss of innocent life and serious damage to physical structures — an especially important consideration in closely populated areas.

John Cline is ARDEC's System Manager for the Army's Non-Lethal Technology Integration. He is based at Picatinny Arsenal, NJ. He has a B.S. in mechanical engineering from Villanova University and an M.B.A. from Florida Tech.

Up Close and Personal — Iraqi Style

Picatinny Arsenal Public Affairs Office

Three visitors dressed in desert battle dress uniforms enter a bombed-out palace complex in Tikrit, Iraq. It's July 14, 2003. The palace is now occupied by U.S. troops. The trio approaches a small group of sand-encrusted soldiers who are cleaning their rifles. The visitors introduce themselves. Like the soldiers, they're Americans — two Army officers and one Army civilian.

The visitors have come to Iraq to find out how well the soldiers' weapons are holding up in the country's extreme conditions. They speak in hushed voices to avoid disturbing some soldiers who are sleeping nearby. The soldiers respond candidly to the visitors' questions. They discuss reliability, cleaning, ammunition, magazines, cases, lubricants and optical sights. The visitors listen intently, asking questions, examining rifles and taking copious notes. The 90-minute conversation passes quickly. When the interview is finished, the visitors thank the soldiers, wish them luck and head off to their next destination.

John Resch, the Army civilian, is a highly regarded weapons development engineer from the Armament Systems Integration Center, Program Integration Office for Mounted and Dismounted Lethality Systems, located at Picatinny Arsenal, NJ. He is an expert in small and medium caliber weapons design.

The full team consisted of Resch and Majors Mike Williams, Roy Manauis and Kevin Finch from Picatinny Arsenal and CPT Dave Fontaine from Fort Benning, GA. The trip was chartered by the Army's Project Manager for Soldier Weapons (PMSW), also located at Picatinny. PMSW is responsible for small arms development and procurement.

By the time the team left Iraq, another team just like it had spoken to more than 1,000 infantry and logistics support troops and collected 40 pages of handwritten notes along the way.

"We first arrived in the theater of operations June 9, 2003, at Kuwait's Camp Wolfe," Resch recalled. "The plane ride took 32 hours. The team's first stop was Camp Arifijan where it met with contacts, made logistical arrangements and laid out a plan for evaluating the reliability and performance of individual soldier weapons and ammunition under combat conditions," Resch continued.

"Over the next 30 days, we visited Camps New Jersey and New York in Kuwait and the cities of Tikrit, Mosul, Erbil and Baghdad, as well as a side visit to Afghanistan," Resch commented. "We traveled throughout Iraq and Kuwait interviewing infantrymen, tankers, snipers and military police. We passed dozens of Iraqis, some with enthusiastic smiles and waving hands, others with grim stares that clearly stated that Americans are unwelcome," he recalled.

Resch said that the visitors quickly realized how valuable items like water and sunglasses were in the desert environment. "We had to travel in convoys," he said. "As we moved, we scanned the horizon looking for dust devils — small tornado-like wind swirls that can instantly blind drivers."

"The ever-present danger of mortar and rocket propelled grenade attacks forced the team to roar through intersections, ignore occasional traffic signals and cast their wary eyes upward at any overpass," he said.

On a Monday morning several weeks later, Resch and Finch met in a Picatinny conference room with 30 fellow technologists and project officers who'd gathered to listen to them relate their experiences. Aided by photographs and slides, hardware samples and statistical charts, the two enthusiastically shared their lessons-learned with an attentive group of their peers. The session represented an important process in the crucial feedback loop from front-line soldier to the weapons design community.

"Weapons developers often tap the data flow found in electronically published 'lessons learned' that forward-deployed commanders compile and distribute widely throughout the military," Resch explained. "Valuable as this data is, it is necessary to dig deeper in an effort to discover even more important tacit knowledge that may lie between-the-lines," Resch intoned.

Picatinny's network of personal and military contacts allows Army weapons developers to dig deeper into weapons systems performance and identify shortfalls in performance in urban and desert environments. The team's visit to Kuwait and Iraq yielded some valuable lessons. "Among these is the realization the soldiers want to talk," Resch continued. U.S. troops were happy to sit and talk with the stateside visitors about their rifles, their pre-Iraq training and even how much they missed their loved ones."

Resch said the team also found that front-line inventiveness is alive and well. The team saw first-hand how soldiers had found a way to remove ammunition from their vest pockets while lying prone in sand. Troops cut the vests in half and strapped each half to a leg.

"The soldiers we interviewed told us that the M4 and M16 weapons functioned as designed," Resch remarked. "Field research found that the use of different types of lubricant did little to prevent weapon jamming. According to the soldiers we interviewed, regular, disciplined cleaning was the only way to avoid jamming problems."

Resch also said that troops reported that ammunition magazines sometimes did not properly feed rounds into their weapons. The team observed that soldiers were hoarding old magazines, reluctant to turn them in when issued new ones. The spring mechanisms in some of the older magazines no longer exerted the force required to push a round into the firing chamber. This caused some weapons to jam.

"Soldiers said that optical sights gave them greater confidence when acquiring and engaging targets," Resch explained. "The team also discovered that the supply of nonlethal ammunition exceeded demand, and some nonlethal items like sponge grenades sometimes degraded in Iraq's high temperatures."

"The team's visit to Kuwait and Iraq was invaluable," Resch reflected. "It yielded a considerable amount of important information for our weapon developers. In addition, the visit was a significant public relations initiative that let U.S. soldiers know that weapon designers are keenly interested in what they think and what they have to say," Resch concluded.

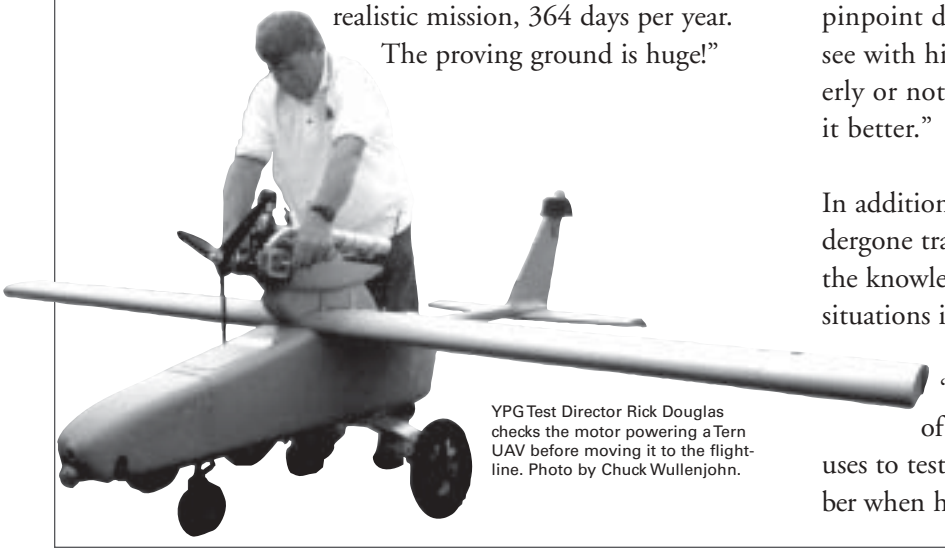
UAV Work Means Kudos for Yuma Proving Ground

Chuck Wullenjohn

The fog of war is made even worse when sand is kicked up during military operations in the rugged deserts of Iraq and Afghanistan. This makes testing and training activities at U.S. Army Yuma Proving Ground (YPG), AZ, more important today than ever before. YPG's 1,200 square miles of harsh terrain, located in America's hottest and driest desert, is proving to be an ideal place for testing equipment and training Soldiers for duty in Southwest Asia.

Rick Douglas, YPG's Test Director for the last 25 years, is an aviation test expert who spends his time working with unmanned aerial vehicles (UAVs). Though testing of munitions and weapon systems makes up 75 percent of YPG's overall workload, test activities involving UAVs are growing and have snowballed in the last year.

"We offer UAV customers capabilities they can't get anywhere else," said Douglas. "We have an unbelievably large test range, varying terrain, restricted airspace that we own, large firing areas and no urban encroachment. Literally, a customer can fly a UAV on a 250- to 300-mile thoroughly realistic mission, 364 days per year. The proving ground is huge!"



YPG Test Director Rick Douglas checks the motor powering a Tern UAV before moving it to the flightline. Photo by Chuck Wullenjohn.

For the past year, Douglas and a team of UAV and aviation test experts have worked closely with the Deputy Under Secretary of Defense (Advanced Systems & Concepts) to test various types and configurations of UAVs and train teams of military personnel. Dozens of UAVs have been tested, from the hand-held Evolution (formerly known as Snake Eye) and Pointer UAVs, to the much larger Pioneer. Other UAVs tested at YPG include the Tern, Mako and Hawkeye. Some are launched from helicopters and fixed-wing cargo aircraft. Douglas estimates more than 50 variants of UAVs and sensor systems have come to YPG over the past year, with 75 percent being deployed directly to the Persian Gulf.

YPG UAV testing most often involves expendable UAVs that are generally low-cost platforms. Expendable UAVs are generally used for surveillance roles and for perimeter watch. Depending on the specific type of UAV, loitering times range from 90 minutes to more than 16 hours.

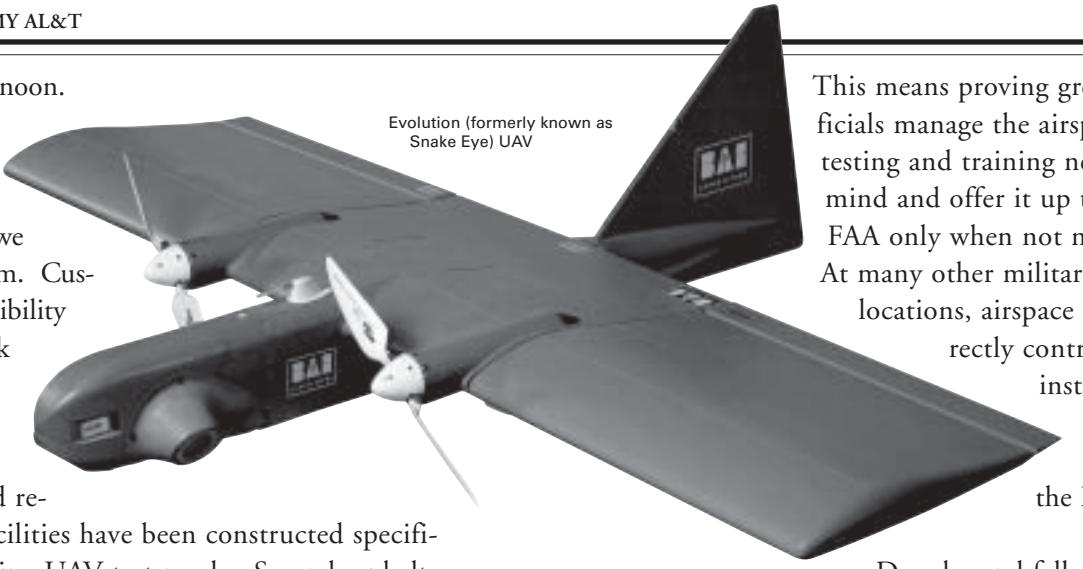
A variety of resupply pods have been developed at YPG for mounting to UAV undercarriages for resupplying friendly forces. These pods can carry a variety of items, including medical supplies, food and ammunition. The UAV itself is controlled by a global positioning system. All an operator needs to do is enter the coordinates of where the UAV is to fly and the coordinates for where the cargo is to be dropped. UAVs can drop sensors for surveillance and can even be used as armed weapon delivery systems.

YPG's firing ranges make it a particularly appropriate location for UAV testing. "There is much more to YPG than simply earth and air," said Douglas. "It's the telemetry and technical infrastructure we have that proves invaluable. This includes Kineto Tracking Mounts, high-speed video, radar, telemetry and detailed, real-time data transmission and mission control that allows testers to gather accurate, pinpoint data. This real-time data enables customers to see with high accuracy why a system is performing properly or not, then pinpoint what needs to be done to make it better."

In addition to testing, dozens of military personnel have undergone training with UAVs over the past year to give them the knowledge and real-world experience needed in combat situations in Afghanistan and Iraq.

"We are the only location that Alexander Lovett of the Office of the Secretary of Defense (OSD) uses to test expendable UAVs," explained Douglas. "I remember when he showed up at 7:00 one morning a year ago —

we began testing by noon. He had real-world requirements that needed to be carried out quickly, so we adapted to meet them. Customer focus and flexibility like this is a hallmark of what we do."



Evolution (formerly known as Snake Eye) UAV

In addition to YPG's large size and restricted airspace, facilities have been constructed specifically aimed at meeting UAV test needs. Several asphalt runways have been built, totaling 7,000 feet in length. Planning is underway to expand and build new office and maintenance facilities to meet the increased workload and future testing requirements.

YPG maintains an extensive collection of former Soviet armored vehicles, from T-72 Main Battle Tanks to BMP Armored Personnel Carriers. The vehicles are frequently used during UAV tests to act as electronic targets to simulate realistic battlefield threats. Other targets of a more specialized nature have also been constructed with an eye toward accuracy and realism to ensure testing and training activities are as relevant as possible.

Douglas feels the UAV targets available at YPG are a unique national resource. "We don't just simulate enemy threats here — we have the real thing," he said. "American forces in Afghanistan and Iraq have reported seeing these exact same threat vehicles. I feel this makes our training and testing priceless."

According to Douglas, one of YPG's most valuable features is the vast amount of restricted airspace available to testers. YPG's 1,200 square miles is divided into two ranges — the east-west Kofa Firing Range used mostly for artillery testing, and the north-south Cibola Range used for aircraft and parachute training and testing. YPG owns the vertical airspace above the Kofa Firing Range from the surface up to an unlimited number of feet and on the Cibola Range from the surface to 80,000 feet. The airspace over the adjacent 665,000-acre Kofa Wildlife Refuge is also controlled by YPG, offering additional airspace to testers.

Douglas is quick to point out that YPG — not the Federal Aviation Administration (FAA) — owns the airspace. This means proving ground officials manage the airspace with testing and training needs in mind and offer it up to the FAA only when not needed. At many other military testing locations, airspace is not directly controlled by installation officials, but by the FAA.

Douglas and fellow team members Jerry Crump and Rick Slaughter were recently honored by OSD for their critical involvement in UAV testing and training operations in support of *Operations Enduring Freedom* and *Iraqi Freedom*. Their work resulted in significantly improved military capabilities and helped save Soldier lives.

"Our job is to make equipment better, and we're proud to do it," said Douglas, a Vietnam War veteran. "It's gratifying to know much of the equipment we test is deployed overseas right away and we've received confirmation of the value of what we do. It's great to support our fighting forces and save American lives at the same time."

Slaughter, an engineer technician, came to YPG in 1998 and works closely with Douglas as a member of the UAV test team. He takes great pride in the work he does.

"Much of the equipment we've worked on is now in service in Iraq," Slaughter remarked. "We've helped make the troops safer and that's an outstanding feeling. Sometimes it feels like we spend more time at the proving ground than we do at home, but we definitely are a team and all of us have become good friends."

Though three people were presented with the OSD award, hundreds of people have worked to ensure the success of UAV testing and training at YPG, cutting across the proving ground's 1,700-person workforce. It's a mission that will continue to grow because YPG's mammoth size and excellent facilities make it a one-of-a-kind national defense asset.

Chuck Wullenjohn is the YPG Public Affairs Officer.

Worth Reading

Combined Arms Warfare in the Twentieth Century

Jonathan M. House
University Press of Kansas, Lawrence, KS, 2001

Reviewed by Geoffrey French, a Counterintelligence Analyst with General Dynamics and a former Logistics Specialist for the U.S. Marine Corps Reserve.

With innumerable authors dissecting the smallest parts of military activity, it's refreshing to find a book that takes a wider view of warfighting and concentrates on how militaries become effective on the battlefield through planning and experience. Jonathan House does just that in his book *Combined Arms Warfare in the Twentieth Century*. House, a history professor at Gordon College in Barnesville, GA, is a former career Army officer. His academic and military backgrounds serve the subject matter well. This book — part of the acclaimed Modern War Studies from the University of Kansas — reflects thorough research without getting lost in the details.

House originally began writing on the subject for a course he taught at the U.S. Army Command and General Staff College, Fort Leavenworth, KS. The original research paper's subtitle was *A Survey of 20th-Century Tactics, Doctrine, and Organization*, and this may be the easiest way to understand the focus of *Combined Arms Warfare*. It's not a "how-to" book, but a look at how past militaries have designed and implemented methods for integrating weapons systems. His book updates and expands that survey and is written with a wider audience in mind.

House divides the book into three sections: examining World War I, World War II and post-World War II through the Persian Gulf War in 1991. In each section, he follows military history as new weapons systems are introduced, developed, countered and finally integrated. House discusses the processes by which changes are made to military organizations, but judges solely on the basis of battlefield performance. For example, he cites Adolph Hitler's desire to have more Panzer Divisions — which required reducing the number of tanks in each division — as actually, if unintentionally, improving the balance of arms in those divisions.The strongest parts of *Combined Arms Warfare*, perhaps fittingly, parallel the strengths of mechanized warfare. The book is at its best when discussing armored conflicts and the planning and strategy that supported them. The section on U.S. military strategy in the 1980s and its effect on the 1990s forces are very interesting. His discussion of conflicts without armored clashes, in particular, Vietnam for the United States and Afghanistan for the Soviet Union, are less insightful. The inability to exploit real combined-arms tactics in both conflicts stymied two powerful militaries facing adversaries without sophisticated weaponry. House understandably avoids devising a strategy that would have perhaps succeeded, sticking to historical descriptions of the two conflicts. Even so, it would seem that these would warrant lengthier discussions and stronger conclusions regarding organization and strategy.

Ultimately, *Combined Arms Warfare* is a very satisfying read and a good reference for those interested in strategy and tactics. The book is choppy in parts because of some poor transitions. For example, all three parts begin with a very brief description of a campaign or battle. These battles are never tied into any of the discussion that follows. However, House makes his points well and his meaning is always clear because he avoids oversimplification and offers no surefire formulas for success. Indeed, if his history proves one thing in combined arms warfare, it's that each campaign's tactics are tailored to the adversary, environment and mission. The best references are not always those that provide simple answers. Often they are those that give an accurate picture of a problem's complexity.

On Hallowed Ground: The Last Battle for Pork Chop Hill

Bill McWilliams
Naval Institute Press, Annapolis, MD

Reviewed by Joe Sites, Executive Vice President, BRTRC Inc., Fairfax, VA. During the period April-December 1952, he served as a platoon leader in the 1st Observation Battalion in the Chorwon Valley. The mission of his platoon was to locate enemy artillery and to direct counterbattery mission. On Hallowed Ground *makes reference by name to 10 of his U.S. Military Academy (USMA) classmates.*

In this book, Bill McWilliams tells the story of the last battle for Pork Chop Hill and gives a good summary of the entire

Korean War. He also dramatically describes the U.S. Army soldier's ability to fight and endure against overwhelming odds.

Having read a number of books about the Korean War, including the classic *Pork Chop Hill* by S.L.A. Marshall, and viewing a number of Korean War movies — even participating in making *One Minute to Zero* — I was at first not inclined to read *On Hallowed Ground*. I am very glad I changed my mind.

On Hallowed Ground begins with factors that led to the war, then the war itself. The author's summary of the war's initial stages states: "From June 25 until Sept. 15, 1950, for the United Nations Forces, primarily ROK [Republic of Korea] and American, it was the kind of war all soldiers despise: scrambling to piece together divisions, regiments, battalions and companies that were not combat ready; a harried rush to the battlefield; confidence overflowing while underrating a disciplined, determined, well-trained and well-equipped enemy. Then stinging defeat, withdrawal and retreat. And in nearly every clash with the rapidly advancing North Korean Peoples Army, the In Mim Gun, heavy casualties." The author's overall summary for the period 1950 to early 1953 includes the initial contact and defeat of "Task Force Smith," Pusan Perimeter, the Inchon landing, the Pusan Perimeter breakout, the entry of the Chinese and the "yo-yo" war that ensued.

The author provides a poignant letter written in August 1951 by LT David Hughes, USMA class of 1950. This letter gives an insightful view of what the war was like for soldiers on the ground. Likewise, the author describes the agonizing peace talks that took place in 1952 and their relationship to the actions on the ground. This was of particular interest to me because from April 1952 to January 1953, I served as an Observation Battalion Platoon leader in the Chorwon Valley. In my position, I had no concept of the political maneuvering taking place at the highest levels and how it affected my soldiers at unit level. *On Hallowed Ground* answers a number of questions I had in 1952.

Beginning with operations in early 1953, the author covers in detail actions leading up to the first battle for Pork Chop Hill that took place March 23-24, 1953. In describing the second battle, the author provided me a great deal of new information. In particular, the material relating to LT Gorman Smith, USMA class of 1951, whose company was ordered to make a counterattack. Having carefully studied the terrain as well as previous and ongoing operations, Smith devised an innovative plan and executed it with successful precision.

The intervening 2 months between the second and last battles for Pork Chop Hill were filled by U.N. forces rebuilding the defenses and preparing for future attacks. The author cites 7th Infantry Division Commanding General MG Arthur G. Trudeau's former experience as an engineer officer and his detailed instructions on field fortifications. Meanwhile, the Chinese were making similar preparations, but with the focus on attack.

The timing of the Chinese attack for Pork Chop Hill's last battle was not known, but it was certain that they would attack. It began on July 6th. Despite overwhelming Chinese forces and their total disregard for the lives of their soldiers, the U.N. forces, primarily American, fought back with everything available. The book's title, *On Hallowed Ground*, is significant because the sacrifices of our soldiers did, in fact, make Pork Chop Hill "hallowed ground." The decision whether to hold on to Pork Chop Hill or withdraw was made at least at the 4-star level — probably higher. From the standpoint of a possible future requirement to stall a Chinese offensive aimed at Seoul, Pork Chop Hill had valid tactical value. However, once the final, most contentious negotiation agenda time was agreed to and initialed on July 9th (while the battle was still in progress), GEN Maxwell D. Taylor knew that after the truce was signed, Pork Chop Hill would sit in the demilitarized zone. At this point, Pork Chop Hill had no further tactical value and the withdrawal was ordered. The successful withdrawal began on July 11th.

In conclusion, the author describes some of the actions that took place after the fall of Pork Chop Hill until the signing of the armistice on July 27th and provides some interviews of battle participants.

From an equipment point of view, *On Hallowed Ground* reminded me of the important roles equipment played — items that no longer exist in today's Army, such as the searchlight that was a product of the "granddaddy" of our present Night Vision and Electronic Sensors Directorate. In the Chorwon Valley, the searchlight made it possible to observe targets for miles. On nights with a low or medium cloud cover, light could be bounced off clouds to provide wide-area illumination and coverage.

This book can rekindle pride for our soldiers who fought in Korea. They continued the American Army tradition of bravery — especially in the most difficult circumstances.

Contracting Community Highlights

This issue's feature article highlights the Defense Acquisition Regulatory (DAR) Council and the vital role it plays in the acquisition policy process. The DAR Council consists of legal and procurement representatives from each DOD service, the Defense Contract Management Agency (DCMA) and Defense Logistics Agency (DLA). Representatives bring different perspectives from their respective agencies and, collectively, they work through issues to establish uniform acquisition policies and procedures that are used by all defense agencies and the services. The Army DAR Council representative is Ed Cornett from the Army Materiel Command. Cornett is detailed to the Office of the Deputy Assistant Secretary of the Army for Policy and Procurement (DASA (P&P)) to support this effort.

In future issues, the DASA (P&P) section will incorporate a new segment, the *DAR Council Corner*, to highlight important DAR Council cases and acquisition policy changes to keep the contracting community informed. To see how you can participate in the acquisition process, read on.

Ms. Tina Ballard
Deputy Assistant Secretary
of the Army
(Policy and Procurement)

How to Participate in the Acquisition Policy Process

Ed Cornett

The DAR Council makes many decisions each week on numerous acquisition subjects. I make decisions each week that affect your work, your organization and the Army. I'm concerned about the decisions I make because I don't always have the information I need from your respective organizations. I know a lot of you would like to participate in the acquisition policy process, so I'll explain how you can.

First, let me explain the DAR system. The Director of Defense Procurement and Acquisition Policy (DDPAP), by delegation from the Secretary of Defense and the Under Secretary of Defense (Acquisition, Technology and Logistics), develops, coordinates, issues and maintains the *Federal Acquisition Regulations (FAR)*, the *Defense Federal Acquisition Regulation Supplement (DFARS)* and other DOD contracting regulations. The DOD contracting regulations govern all contracting activities and the contractors with whom the acquisition community does business. It is the basis for structuring contracts for more than $180 billion in obligations and 5.5 million actions per year.

The DDPAP accomplishes this responsibility through the Defense Acquisition Regulation System (DARS), which consists of the DAR Directorate, DAR Council and DAR Committees. The DAR Directorate is a staff office under DDPAP. The DAR Council consists of a legal and procurement member from each service, DCMA and DLA. Presently, there are 28 permanent DAR committees in specific functional areas such as contract administration and contract pricing. Members are from the services, DCMA, DLA, Defense Contract Audit Agency and Office of the Secretary of Defense. DARS includes approximately 250 members.

DARS is a component of the Federal Acquisition Regulatory System, which codifies and publishes uniform policies and procedures for acquisition by all executive agencies. When a *FAR* case is reviewed, a member from the National Aeronautics Space Administration enters the discussions. In addition, all *FAR* cases are coordinated with the Civilian Acquisition Council (CAC). The CAC is chaired by the General Services Administration and includes members from most civilian agencies.

Go to the DAR Directorate Web site at **http://www.acq.osd.mil/dpap/dars/darcounc.htm** to review how you can participate, review case status, provide comments on cases and view the committee membership that represents the Army under DARS. These members are the Army's functional experts. Click on the **Contact DAR Council** navigation bar to pull up the contact information list. If you have questions in any functional area, e-mail or call one of the members listed. These committee members draft the regulatory language that is approved by the DAR Council.

Along the Web page's right side, you'll find links that allow you to subscribe to News Alerts and to view all DOD acquisition regulations, to include the services and their major commands' *FAR* supplements, instructions and guidance.

However, the main area I want to point you to is the **Out for Public Comment** section. Review the comments from industry, government organizations and individuals like you on the proposed changes in subject cases. Submit your organization's comments — or your own — on these cases. To recommend editorial changes to the *DFARS*, such as corrections of misspelled words, omitted words or lines or errors in format, submit an e-mail to **dfars@osd.mil**. The message should include the *DFARS* citation and a complete description of the error. To recommend new coverage or substantive changes to the *FAR* and *DFARS*, follow the instructions in *DFARS 201.201-1(d)*.

If you scroll down the Web page's right side, near the bottom of the **DARS Menu**, you will see **Status of Open Cases**. This is a list of open *FAR* and *DFARS* cases that is updated weekly as cases are added or deleted, become a final rule or are canceled.

One more important piece of information: Be sure to click on the **DFARS** link in the **DARS Menu**. *DFARS* is being transformed. Procedures, guidance and information within *DFARS* are being transferred to the *DFARS Procedures, Guidance and Instructions (PGI)* or Department of Defense Instructions. The first 15 cases of the transformation process are now completed and approved for a proposed rule. This part of the *PGI* and changes to *DFARS* should be published sometime in the near future for comments. We are doing this to give the system more flexibility and innovation and shorten the DAR Council rule-making process because public comments will not be required for the PGI.

Please participate because you can make a difference. If you have any questions, e-mail or phone the Army council or committee members listed under **DAR Council** or **DAR Committee** at: **http://www.acq.osd.mil/dpap/dars/index.htm**.

Ed Cornett is an Army DAR Council Representative.

Contracting Successes

AMCOM Awards Support Contract for Fort Rucker, AL. The U.S. Army Aviation and Missile Command's (AMCOM's) Acquisition Center, Logistics, Maintenance and Special Projects contracting team, led by Cathy Dickens, is recognized for successfully awarding a contract to Army Fleet Support to provide maintenance and logistics services support at Fort Rucker. The performance-based contract is a possible 10-year effort with a potential value of $2.7 billion and was awarded within 6 months of solicitation release. The initial award is for 1 year with two 1-year options valued at $250 million. The contract is an award term contract in which the contractor, based on outstanding performance, may earn up to an additional 7 option years. The contract contains multiple customers to include the Aviation Training Brigade, Aviation Technical Test Center and the Air Force. Additionally, 23 percent of the total obligated contract value will be performed by small-business concerns.

Army Contracting Agency (ACA) Southern Region, Fort Bragg, NC. The Fort Bragg Government Purchase Card (GPC) team is recognized for increasing rebates and decreasing interest paid by Fort Bragg billing officials. Since 2001, rebates have increased 65 percent while interest has decreased 95 percent. GPC rebates equate to additional purchasing power, and Fort Bragg billing officials collectively received $608,282 in rebates that they used to purchase additional supplies throughout the year. This exceptional performance occurred because of each purchase card team member's diligence when many cardholders and billing officials were deployed.

Pictured from left are Nancy Maples-Remley, Mattie Palmer, Lucinda Nance, Mary Cox, Diane Smith, Linda Biddle and Anna Walker from ACA Fort Bragg.

Military Traffic Management Command's Contract Team. The Military Traffic Management Command's Global Privately Owned Vehicle (POV) contracting team is recognized for awarding a competitive $1.9 billion contract using a trade-off process for the worldwide logistics management of POV transportation and related services, capturing approximately 95 percent of DOD-sponsored POV movements.

The acquisition team, led by Contracting Officer Kathleen Jones, used numerous acquisition streamlining and reform approaches to grant the award term contract, which

comprises five additional 1-year terms of performance that may be earned by the contractor for superior performance. The new contract balances the benefits of the Nation's socioeconomic policies with the cost of government-unique requirements, including aggressive subcontracting goals of 45 percent for small business and a requirement that the contractor subcontract to a NISH (formerly the National Industries for the Severely Handicapped) company in Norfolk, VA. Customer satisfaction and on-time delivery rate is at 99 percent based on recent surveys.

ACA Southern Hemisphere

Pictured from left are Juanita Torres, MAJ Norman Solomon and Luis Torres from ACA Southern Hemisphere.

As part of its support of *Operation Enduring Freedom*, three ACA Southern Hemisphere members met with the Joint Task Force Guantanamo Bay in Cuba.

AMC Welcomes Parsons as New Director of Contracting

The U.S. Army Materiel Command (AMC) moved to its new headquarters at Fort Belvoir, VA, just in time to welcome Jeffrey P. Parsons into the Senior Executive Service position of Director of Contracting. Parsons recently retired as a colonel from the U.S. Air Force where he served as Director of Contracting, Headquarters Air Force Materiel Command, Wright-Patterson Air Force Base, OH. Parsons reported to AMC on Dec. 15, 2003.

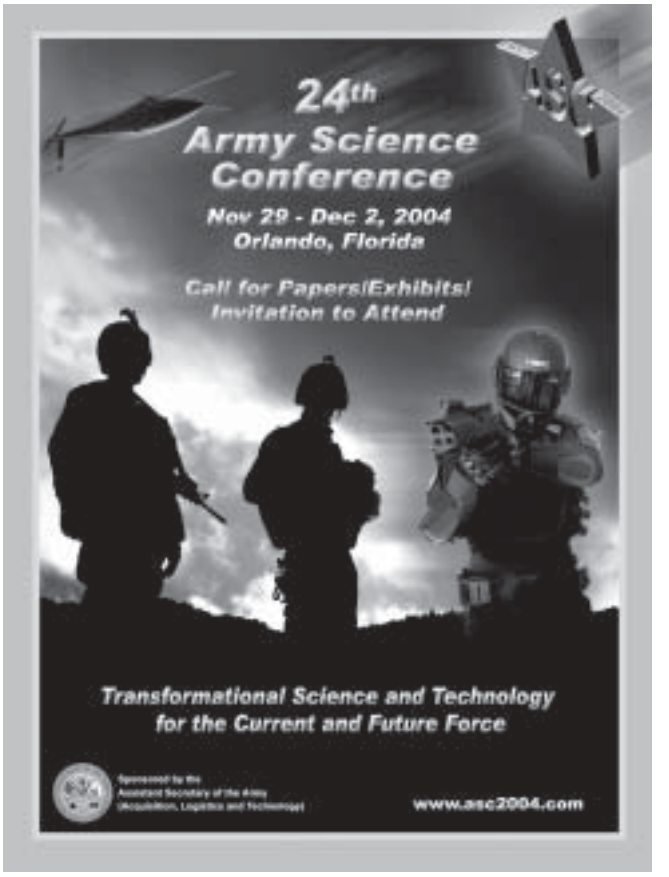
Looking for Career Broadening Opportunities? Then Look No More!

The Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) is offering 1-year developmental assignments to all DA employees at the GS-12 level (or Acquisition Demonstration broadband equivalent) in the Contracting and Acquisition Career Program (CP-14). The Contracting Career Program Office funds travel and temporary duty costs.

For details see the Oct. 31, 2003, memorandum titled *FY2004/2005 Competitive Professional Development (CPD) Announcement for the Contracting and Acquisition Career program (CP-14) (Updated)*. The memorandum is located online at **http://asc.army.mil/docs/programs/cp/FY04CPD Announcement.doc**.

Currently, the ASAALT has a developmental employee who would be happy to share her experience with you. For additional information, e-mail **linda.fowlkes@saalt.army.mil**.

For Contracting Career Program information, contact Sally Garcia at (703) 805-1247/DSN 655-1247.



Army AL&T Writers Guidelines

http://asc.army.mil

Army AL&T is a bimonthly professional development magazine published by the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. The address for the Editorial Office is DEPARTMENT OF THE ARMY, ARMY ALT, 9900 BELVOIR RD, SUITE 101, FORT BELVOIR, VA 22060-5567. Phone numbers for the editorial staff are as follows:

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Purpose

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

Subject Matter

Subjects may include, but are not restricted to, professional development of the Army's AL&T Workforce, AL&T program accomplishments, technology developments, policy guidance and acquisition excellence. 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.**

Article Length

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 that contain 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 files separate from the manuscript.** Artwork must be accessible for editing and not embedded in 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 minimum 300-dpi resolution (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 current position, educational background, acquisition certifications and AAC membership if applicable.

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.

Individuals submitting articles that report Army cost savings must be prepared to provide detailed documentation upon request that verifies the cost savings and their reinvestment. Organizations should be prepared to defend these monies if higher headquarters has a higher priority for them. All articles are cleared by the Acquisition Support Center Director.

Submission Dates

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

Submission Procedures

Article manuscripts (in MS Word) and illustrations/photos (300-dpi JPEG or TIFF) may be submitted via e-mail to **army.alt.magazine@asc.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 and office phone number (DSN and commercial).

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To view the CDG application announcement and obtain more information on this challenging program, go to http://asc.army.mil/programs/cdg or call your region's Human Resource Command Acquisition Career Manager or visit the Acquisition Support Center's Web portal at http://asc.army.mil/portal.cfm; click on AMB in the Quick Links section; then click on the AMB Staff link.

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