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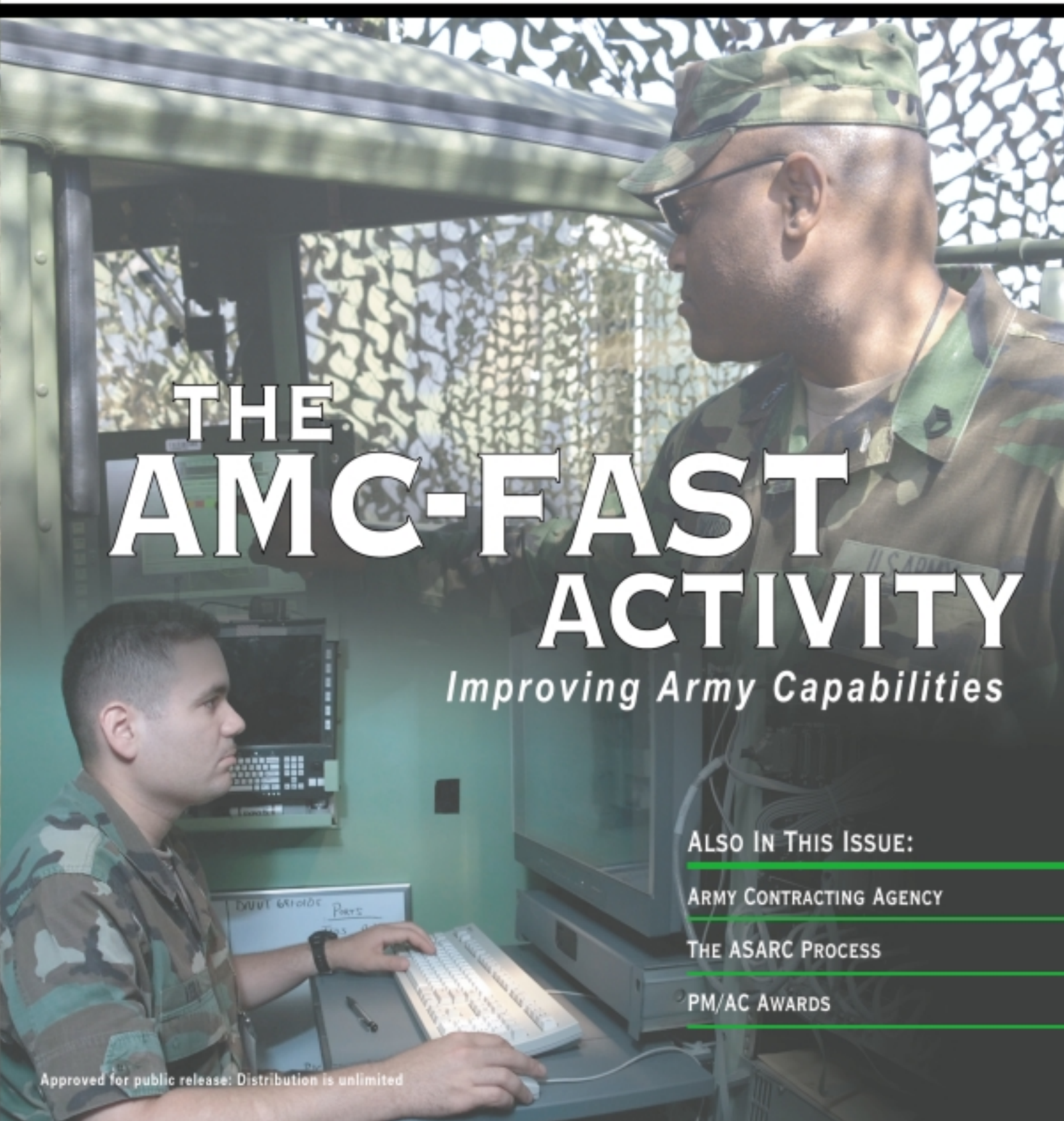
ARMY AL&T



THE AMC-FAST ACTIVITY

Improving Army Capabilities

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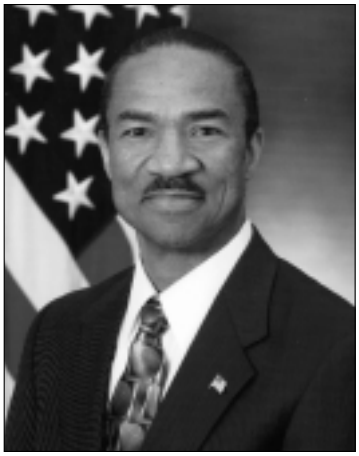
ARMY CONTRACTING AGENCY

THE ASARC PROCESS

PM/AC AWARDS

FROM THE ARMY ACQUISITION EXECUTIVE

The Year In Review



After I was sworn into office on January 2, 2002, I stated that my goal was to deliver to the soldier the right capabilities, at the right time, at the right place, and at the right price. To accomplish this, we focused our efforts as an organization on programs, people, production, and improvement.

Last year, we concentrated on programs, and I am pleased with our success. Let me review some of our accomplishments:

• The Comanche Program was restructured and is on solid footing to become the first system fielded for the Objective Force.

• The Defense Advanced Research Projects Agency and the Army selected the Boeing Company and Science Applications International Corporation as the Lead Systems Integrator for the concept and technology development phase of the Future Combat Systems (FCS) Program. We expect to achieve a successful Milestone B decision this spring.

• The revolutionary technologies that comprised the Crusader Program, especially in software and hardware automation, were transferred to the FCS Program. The Projectile Tracking System continues in development.

• The C-130 transportable Strykers were delivered to the Stryker Brigade Combat Team just 18 months after the Army's contract go-ahead. There are a number of factors that attributed to the success of this program, including a strong, effective program manager and contractor teaming arrangement.

• Recently upgraded body armor, the Interceptor Body Armor, is saving soldiers' lives in Afghanistan.

• Our soldiers have high praise for the use of robotics in theater. Unmanned ground vehicles in Afghanistan have helped our troops successfully clear caves, bunkers, and buildings.

• The HSV-X1 Joint Venture, a large, high-speed, wave-piercing catamaran leased by the Army, demonstrated its many uses, including the ability to transport combat-ready soldiers with their equipment.

• We continued aligning our organization to accomplish our mission better, faster, and cheaper. To eliminate duplication of efforts between major Army commands, all 12 program executive officers (PEOs) now report directly to me as the Army Acquisition Executive. We have the right people in the right places with a clear chain of command.

• We are using metrics to measure the viability of our programs and to keep senior leaders informed.

• With the Army as the Executive Agent, we now have a firm contract with the manufacturer of anthrax vaccine to purchase enough vaccine for DOD through February 2004.

I am pleased to see this issue devoted to the Army Materiel Command's (AMC) successful Field Assistance in Science and Technology Activity. We continue to work closely with AMC on this and other key programs to provide our soldiers with the equipment they need to fulfill whatever mission they are called to perform.

This year, we will continue our close cooperation with other Army organizations and our sister Services, with the Office of the Secretary of Defense, with Congress, and with the Defense community. As we go forward with the Army's transformation, communication and dialogue will play a large role in our success.

From my perspective, the past year was a full and productive one. While I marked my first anniversary, it seems like I arrived yesterday. I am having fun. For this, I give thanks to my superb team in the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, my PEOs and program/project/product managers, and the Army leadership—both civilian and military.

In closing, our commanders and soldiers in the field are doing a fabulous job upholding our national security interests. In 2003, let us always remember them and let us work to make their jobs easier in whatever way we can. May our successes continue.

Claude M. Bolton Jr.

January-February 2003; PB 70-03-1

To contact the Editorial Office call (703) 805-1034/35/36/38 or DSN 655-1034/35/36/38. Articles should be submitted to: DEPARTMENT OF THE ARMY, ARMY ALT, 9900 BELVOIR RD, SUITE 101, FORT BELVOIR, VA 22060-5567. Our fax number is (703) 805-4218. E-mail: **harvey.bleicher@us.army.mil**.

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By order of the Secretary of the Army
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FEATURES

DEPARTMENTS

COVER

AMC-FAST serves as a bridge between Army RD&E and operational forces in the field. AMC-FAST has conducted 1,100 projects since it was established 17 years ago.

AMC-FAST:
A WIN-WIN ACTIVITY

James F. Gibson and
Joseph L. Sites

Introduction

The March-April 1991 issue of *Army RD&A* (now *Army AL&T*) magazine included an article on the Army Materiel Command-Field Assistance in Science and Technology (AMC-FAST) Program. That article was entitled "AMC-FAST—A Win-Win Program." During the intervening 11 years, AMC-FAST changed its title from "Program" to "Activity" but has continued to produce win-win situations for AMC and the Army.

AMC-FAST was established to serve as a bridge between the Army's research and development (R&D) community and its operational forces in the field, and it still uniquely serves that function.

Since its inception, AMC-FAST has undertaken 1,100 projects designed to meet specific needs identified by science advisors serving in the field. In addition, AMC-FAST science advisors represented their commands at scientific conferences, provided their commands scientific and technical advice, arranged for demonstrations, and conducted evaluations of many different types of equipment. For R&D organizations, AMC-FAST science advisors provided

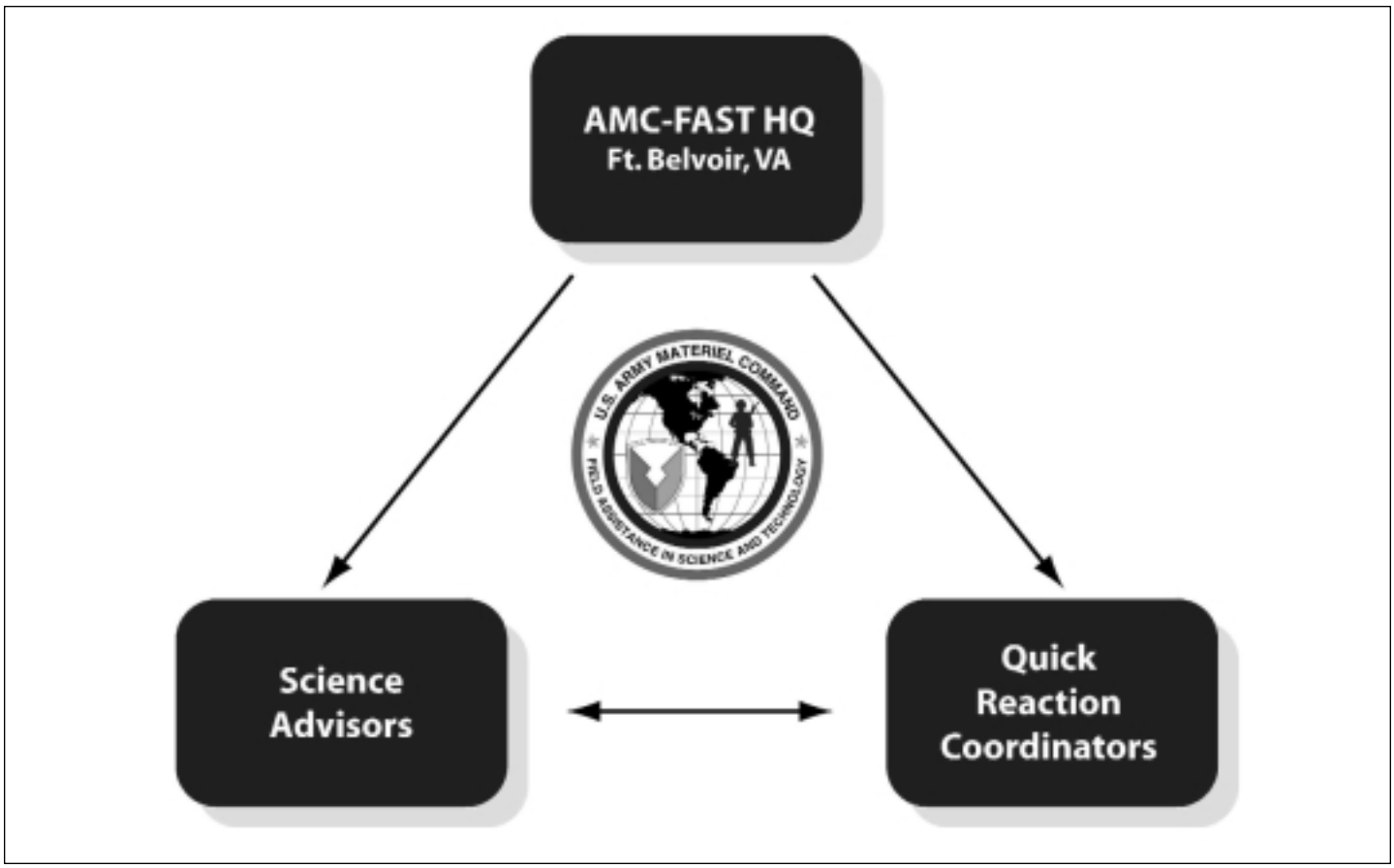

Figure 1.

Quick Reaction Coordinators (QRCs)
Communication Nodes At Army Labs And Centers

U.S. Army Research Laboratory (ARL)
Adelphi, MD

ARL/Army Research Office
Research Triangle Park, NC

ARL/Computational Information Sciences Directorate
Aberdeen Proving Ground, MD

ARL/Human Research and Engineering Directorate (HRED)
Aberdeen Proving Ground, MD

ARL/Information Science and Technology Directorate (ISTD)
Aberdeen Proving Ground, MD

ARL/Sensors and Electron Devices Directorate
Adelphi, MD

ARL/Survivability and Lethality Analysis Directorate
White Sands Missile Range, NM

ARL/Vehicle Technology Center (VTC) (Propulsion)
Cleveland, OH

ARL/VTC (Structures)
Hampton, VA

ARL/Weapons and Materials Research Directorate
Aberdeen Proving Ground, MD

Army Developmental Test Command
Aberdeen Proving Ground, MD

Aviation and Missile Command
Redstone Arsenal, AL

Army Materiel Systems Analysis Activity
Aberdeen Proving Ground, MD

Armament RD&E Center (ARDEC)
Picatinny Arsenal, NJ

Army Communications-Electronics Command (CECOM) Intelligence and Information Warfare Directorate
Fort Monmouth, NJ

CECOM Night Vision and Electronic Sensors Directorate
Fort Belvoir, VA

Engineer Research and Development Center
Topographic Engineering Center
Fort Belvoir, VA

Medical Research and Materiel Command
Fort Detrick, MD

Rock Island Arsenal
Rock Island, IL

Soldier and Biological Chemical Command (SBCCOM)
Natick, MA

SBCCOM/Edgewood Chemical Biological Center (ECBC)
Aberdeen Proving Ground, MD

SBCCOM/Program Executive Office, Soldier
Fort Belvoir, VA

Space and Missile Defense Battle Lab
Colorado Springs, CO

Simulation, Training and Instrumentation Command
Orlando, FL

Army Tank-automotive and Armaments Command (TACOM) Armament and Chemical Acquisition and Logistics Activity
Rock Island, IL

TACOM ARDEC - Benet Lab
Watervliet Arsenal, NY

Training and Doctrine Command
Fort Monroe, VA

Figure 2.

ready access to units in the field. They also arranged for evaluation of equipment under early stages of development and provided the means to explore ideas with the troops who would use the final product.

There are three basic elements to AMC-FAST (Figure 1): the headquarters, science advisors in the field, and quick reaction coordinators stationed at R&D organizations.

Headquarters

AMC-FAST Headquarters is located at Fort Belvoir, VA. The headquarters staff supervises the entire AMC-FAST operation including recruitment, training, and assignment of science advisors; prioritizing projects and allocating their funds; assisting in establishing contacts and information collection; maintaining the AMC-FAST communications network; and overseeing completion of projects.

Science Advisors

Science advisors are located throughout the world. The number of science advisors and their locations change as mission and resource priorities change. Science advisors are nominated for the position by their home AMC subordinate command.

After a screening process, which includes acceptance by their prospective field command, science advisors are selected for assignment. Assignments are normally for 2 years but can be extended to a third year per field command needs, home or sending command concurrence, and the science advisor's desire.

Once on station, science advisors are assigned as members of the command staff of their organizations. As such, they have direct access to command staffs and, depending on the organizational structure, have direct access to the commander or a designated representative. Science advisors also have direct contact with unit commanders, their staffs, and troops in the field. On the staff, science advisors are tasked to provide information and advice on how science and technology can help their commands and how best to introduce, use, and maintain new systems.

Despite the importance of providing advice and obtaining information, the science advisors provide a wealth of experience in identifying problems and developing solutions through the establishment of projects. This has proven to be one of the greatest benefits of the AMC-FAST Activity. The need to begin a project is identified in a number of ways. In many cases, the commander or a member of the staff relates a problem and asks the science advisor to research it. An extremely effective way to identify problems is through contact with soldiers in the field. Soldiers are the operators of the equipment, they know in detail how the equipment works, and they know what they would like to have improved. In addition to pointing out problems, soldiers often have a basic solution in mind, which may only require refinement and production of a prototype for evaluation.

The M-Gator is a valuable resource for light forces.

Coordinators

The third element of the AMC-FAST Activity is its cadre of QRCs. R&D organizations having designated personnel to function as AMC-FAST QRCs are shown in Figure 2. These personnel are vital to the AMC-FAST Activity. Science advisors regularly deal with equipment designed and developed for the Army by AMC organizations; however, to expect any one individual to be totally familiar with these vast resources is unrealistic. Science advisors are exceptionally qualified but, in most cases, they have concentrated their work in one area of expertise.

When confronted with questions and work outside their field, science advisors must have ready access to those who are experts in the field in question. This is where the QRCs are vital. When receiving a task that requires outside help, by going through the QRCs, the science advisor has at hand the expertise and resources of AMC's world-class R&D facilities.

Just as it is unreasonable to expect science advisors to know answers to all questions, the same is true with QRCs. Rather than answer the questions of science advisors, the QRCs determine who has the specific knowledge and expertise to answer the questions. Once that source of expertise is determined, the science advisor and the designated expert contact each other to work on a resolution to the problem. Another important function of the QRCs is to provide a conduit from their R&D organization to units in the field. If an R&D organization has a device under development and would like to have a preliminary review by a unit in the field, the developers can contact their QRC. In turn, the QRC seeks assistance from either the AMC-FAST Headquarters or specific science advisors.

Communications Network

The AMC-FAST Activity also maintains daily contact with approximately 50 organizations. To facilitate communications, AMC-FAST established a communications network in conjunction with the Air Force and Navy. In addition to providing an efficient communications system, the network provides ready access to Air Force and Navy resources. Much like the AMC-FAST bridge between science advisors in the field and AMC's R&D organizations, this communications network provides a "two-way street" between the other Services and AMC-FAST. Requests for assistance are received almost daily, thereby providing Army R&D organizations an opportunity to make their work and knowledge available to the other Services.

Specific Efforts

Thus far, this article introduced the AMC-FAST Activity, described its mission, and detailed its organiza-

tion. Accompanying articles in this issue of *Army AL&T* magazine will describe some of the specific efforts conducted by AMC-FAST that have had an impact on the Army's capabilities. The following paragraphs set the stage for these articles by providing brief overviews of these AMC-FAST efforts.

During the past 8 years, AMC-FAST has supported the AMC Deputy Chief of Staff for Research, Development and Acquisition in conducting technology application conferences. These conferences provide the Army R&D leadership an opportunity to meet face-to-face with commanders in the field. Gathered in a panel format with other R&D leaders, these field commanders present their perceived materiel requirements and desired equipment improvements. The panel also provides information regarding ongoing or planned R&D work, specific issues raised by commanders and, often, assigns a specific issue for work and follow-up action. These conferences demonstrate the value of face-to-face meetings, which clarify issues and enable the exchange of pertinent information and the initiation of work specifically designed to ultimately meet the needs of the soldier. On at least two occasions, issues raised in the technology application conferences have subsequently been addressed by advanced concept technology demonstrations.

Programs

AMC-FAST is also responsible for managing the Army Scientists and Engineers Field Experience with Soldiers (SEFEWS) Program and use of personnel from the AMC-FAST Junior Program. The SEFEWS Program was created to provide AMC scientists and engineers the opportunity to spend time in the field with troops who are using equipment related to the work of the SEFEWS participant. This has proved to be especially valuable to personnel who have no military experience.

The AMC-FAST Junior Program was initiated to provide assistance to science advisors in the conduct of projects. Journeyman-level AMC scientists and engineers are assigned for a limited period of time to work on a specific project. Typically, AMC-FAST Juniors visit the command requesting assistance, observe the problem needing to be addressed, help formulate a solution, and then return to their home station to develop a prototype device. Once the prototype is completed, the FAST Juniors return to the field, assist in demonstrations, and prepare reports on the equipment and their experience.

Conclusion

The goals of AMC-FAST projects are to increase operational capability, improve safety, improve training, and assist in realizing cost avoidance. Many projects have been designed to address only one of these goals, but often a single project can address several of them. One of the outstanding projects conducted by AMC-FAST was the Abrams tank auxiliary power unit. That effort was estimated to have resulted in a cost avoidance of $45 million per year while increasing the capability to conduct "silent-watch" operations. Further, in responding to an XVIII Airborne Corps need for increased mobility on the drop zone, a science advisor initiated a project that resulted in the M-Gator, a lightweight vehicle that recently received high praise for the increased mobility it provided to Army soldiers in Afghanistan. It must be stressed, however, that although AMC-FAST has conducted 1,100 projects, it has depended on the outstanding support of all AMC R&D organizations. The AMC-FAST Activity does not have the resources to conduct projects by itself.

The March-April 1991 *Army RD&A* magazine article concluded by saying that the AMC-FAST bridge between laboratories, centers, and the Army in the field had been in use for 5 years; had considerable success; and that, with continued support, the success would continue. Today, AMC-FAST has been in business approximately 17 years. For further information on how the AMC-FAST Activity can help you, please call us at (703) 704-1486, DSN 654-1486, or view our Web site at **http://www.amc.army.mil/**. Click on **Major Subordinate Commands**, scroll down to **Separate Reporting Activities**, and click on **U.S. Army Materiel Command Field Assistance in Science and Technology Activity**.

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JOSEPH L. SITES is an Executive Vice President of BRTRC Inc., Fairfax, VA. He has a B.S. in military engineering from the U.S. Military Academy, an M.S. in mechanical engineering from The University of Southern California, and an M.S. in international affairs from The George Washington University. In addition, Sites is a graduate of the Command and General Staff College, the Italian War College, and the National War College.

REALIZING JOINT MISSION FORCE C4ISR CAPABILITIES

MG Craig B. Whelden

Introduction

The U.S. Army Pacific (USARPAC) is the force provider of critical Army capabilities in support of the U.S. Pacific Command's (USPACOM) Joint Mission Force (JMF) Concept. In 2000, the Commander, USPACOM originally defined the JMF Concept as: "… a suitably sized force package, drawn from designated PACOM Component Ready Forces, augmented by capabilities provided by Supporting Combatant Commanders, Coalition Partners, and a coordinated group of interagency, nongovernment, and private organizations, from which a Joint Task Force Commander can build tailored task forces for the accomplishment of a wide range of missions."

The USPACOM Combatant Commander believes that 90 percent of his "core" JMF missions will be in the small-scale contingency end of the spectrum and, unless component capabilities are compatible with the JMF Concept, they will become irrelevant and will not be able to participate in contingency missions.

Defining Operational Needs

In September 2001, USARPAC submitted an immediate Operational Needs Statement (ONS) for critical command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities to become compatible with the JMF Concept. This ONS defined C4ISR connectivity and interoperability with USPACOM, reachback to USARPAC, and both vertical and horizontal support to the operational forces. USARPAC has neither a corps nor a theater signal brigade to support these requirements. In the past, when an Army force (ARFOR) was activated to support a USPACOM operational mission, USARPAC went to the U.S. Army Forces Command for support, a process that takes 7-10 days. However, USPACOM levied the requirement that a Joint Task Force (JTF) and its Service components be operationally ready within 2 days of notification. These joint operational requirements mandated that USARPAC have its own organic C4ISR capability.

Teaming

To support USPACOM's requirement, the Army staff and Army Acquisition Corps quickly teamed to field a deployable C4ISR package to USARPAC within 12-13 months. This deployable C4ISR package consists of five separate systems that are integrated to perform C4ISR capabilities in support of JMF missions. It consists of the following subsystems: the Base Band Node (BBN), the USARPAC Tri-band Satellite Terminal (U-TST), the Battlefield Video

The deployable C4I Package includes the BBN (left vehicle) supported by a Tri-band Tactical Satellite Terminal (right vehicle).

Teleconferencing Equipment (BVTC), the Global Command and Control Subsystem-Army (GCCS-A), and the TROJAN Lightweight Terminal Equipment (LITE) (V)1 system.

The Program Executive Office for Command, Control, and Communications–Tactical (PEO, C3T), Fort Monmouth, NJ, has direct project management responsibilities for the BBN, U-TST, BVTC, and GCCS-A subsystems; and the Army Communications-Electronics Command (CECOM) has responsibility for managing the TROJAN LITE (V)1 system.

The deployable C4ISR package augments the Pacific-wide communications infrastructure and is deployed through coordination with USPACOM and USARPAC major subordinate commands. This robust, high-bandwidth infrastructure provides multiple security level connectivity (e.g., Non-classified Internet Protocol Router Network (NIPRNET), Secret Internet Protocol Router Network (SIPRNET), and Top Secret/Sensitive Compartmented Information Joint Worldwide Intelligence Communications System (JWICS)), allowing for the secure use of existing and future command and control applications (e.g., GCCS-A). This enhanced capability also allows a similarly enabled and deployed ARFOR reachback processing and intelligence capability, reducing its footprint and supportability tail. The intent is to provide the designated ARFOR with a capable theater infrastructure, both while in garrison and deployed. Each of the networks (SIPRNET, NIPRNET, and JWICS) support VTC, data, and voice formats. Inherent is the ability to be upgraded in the out years as the Army fields Objective Force C4ISR capabilities.

This advanced C4ISR package allows USARPAC to rapidly deploy two communications suites (by military or commercial means) for support of split operations (e.g., ARFOR and Initial Staging Base). These high-bandwidth deployable packages are also capable of linking with a supported JTF (at sea), as well as to any communications infrastructure available in the USPACOM area of responsibility. The commercial-based communications subsystems are compatible with, and are on a glidepath to, future Army communications systems (e.g., Warfighter Information Network-Tactical (WIN-T)). Additionally, the packages are supportable by approved Program of Record and are capable of scaling up to support a Joint Force Land Component Commander in a major theater of war, if required.

The BBN (interior view) provides advanced commercial off-the-shelf telecommunications technologies for the warfighter.

Conclusion

PEO, C3T assigned Project Manager, WIN-T as the overall system-of-systems integrator for all five C4ISR subsystems. Support for the materiel developers includes the Product Manager, GCCS-A and the Intelligence and Information Warfare Directorate at CECOM.

The basic USARPAC C4ISR package was successfully delivered to Fort Shafter, HI, before the required delivery date of Oct. 1, 2002, and C4ISR teams are now training with the package and conducting acceptance testing.

MG CRAIG B. WHELDEN is the Deputy Commanding General, USARPAC. He was commissioned as a Distinguished Military Graduate from Purdue University. In addition to his B.A. degree from Purdue, Whelden also has an M.A. from Webster University. His education also includes the Armor Officer Basic and Advanced Courses, the Command and General Staff College, and the Army War College.

AMC-FAST PROJECTS IN SUPPORT OF TRAINING

James F. Gibson and Joseph L. Sites

Introduction

Since its establishment, the U.S. Army Materiel Command-Field Assistance in Science and Technology (AMC-FAST) Activity has conducted more than 1,100 projects. These projects range from providing a cover for the Apache helicopter's load jettison switch to the introduction of a side-loading container as a shelter for machine shops and repair stations. The projects varied not only in size, but also in complexity. Some of the most successful projects included the adoption or modification of an off-the-shelf item. Other projects required applied research. In all cases, however, AMC-FAST projects were initiated to respond to soldier needs. Although science advisors initiate and supervise development of projects, it is the AMC research, development and engineering (RD&E) community that actually designs and produces the prototypes that are demonstrated and, on many occasions, fielded to the Army.

In general, AMC-FAST projects address one or more of the following: increased capability, increased security, improved training, and cost avoidance. This article highlights the work of AMC-FAST in support of training.

Training Support

The success of a combat unit rests heavily on the training that its soldiers receive. For this reason, AMC-FAST has given high priority to supporting the Army's training centers. There are currently science advisors located at the 7th Army Training Command (7th ATC), Grafenwoehr, Germany, and at the Joint Readiness Training Center (JRTC), Fort Polk, LA. Science advisors also provide support to the National Training Center (NTC) at Fort Irwin, CA. In addition, science advisors often accompany their command's units when they go to training areas. This is particularly true of our Southern European Task Force Science Advisor and the I Corps Science Advisor.

National Training Center

Highlights of AMC-FAST training center support include the development of items to simulate use of hand grenades and other small explosive devices. This project, which resulted in the development of the required simulators, was initiated after the NTC commander expressed a need. The simulator prototypes, which were produced by the Army Research Laboratory, permit training observers to determine the effectiveness of these weapons that are vital to the infantryman. Other AMC-FAST work at NTC includes development of targets, battery conservation efforts, and support of the opposing force (OPFOR) in training scenarios.

One of the current projects at NTC, "Smoke Eater," deserves special mention. Budd Croley, U.S. Army Communications-Electronics Command's (CECOM) Night Vision and Electronic Sensors Directorate (NVESD), provides science advisor support for the effort to the NTC. With any installation such as NTC, the capability to fight fires is extremely important. In examining the firefighting capability at Fort Irwin, Croley identified a potential solution to a firefighting problem that exists throughout the world: Smoke not only creates a problem for firefighters in seeing how to fight a fire, it becomes a critical factor in finding personnel within the fire (either personnel trapped within the structure or fallen firemen).

Because of Croley's experience with sensors used to see the enemy, he was well aware of the capabilities of thermal imagers. In fact, he believes that a thermal imager would allow a fireman to see through an entire room from a doorway or from several points inside. The current procedure requires firefighters to enter the burning room on their knees and conduct a search while crawling. To confirm the potential value of thermal imagers, the Smoke Eater Project was initiated. The plan is to purchase a thermal imaging sensor and evaluate it at Fort Irwin. The prospects of success are high, and the potential value added is great. Not only can firefighters in the Services benefit from this device, its use can reduce dangers to all firefighters while increasing their effectiveness.

Joint Readiness Training Center

Despite worldwide discussions on prohibiting mine warfare, mines remain a formidable obstacle to U.S. forces. These forces must anticipate mines wherever they operate. Recent experiences in Bosnia, Kosovo, and Afghanistan have emphasized the need to be proficient in the detection and neutralization of mines.

The Engineer School at Fort Leonard Wood, MO, recently developed new techniques and procedures (T&Ps) for using the PSS-12 mine detector. To investigate the advantages of the new T&Ps in a realistic environment containing varying types of soil, vegetation, terrain, and metallic clutter, demonstrations and training research studies were conducted. AMC-FAST's JRTC Science Advisor supported this work. Using the new procedures, soldiers greatly increased their detection rates. In fact, the demonstration was so successful that European observers requested training in Europe. Thus, AMC-FAST's 7th ATC Science Advisor is now working to have the demonstration

conducted at his station. Additionally, a video is being produced for use in training the trainer. The PSS-12 demonstration is an excellent example of AMC-FAST's capability to connect the RD&E community with soldiers in the field and to ensure that improvements are known throughout the Army.

Seventh Army Training Command

As stated earlier, the 7th ATC is located at Grafenwoehr. Prior to becoming a U.S. installation, Grafenwoehr had a long and distinguished history as a training site for the German Army. During the Cold War, the 7th ATC played a vital role in training U.S. soldiers. The 7th ATC has continued making valuable contributions to Army training, even as the operational environment has changed. While adjusting to meet the operational requirements of U.S. forces in Europe, including specific operations in Bosnia and Kosovo, the 7th ATC has undergone major changes in the conduct of training and the facilities provided to trainees. Scott Kohnke, the 7th ATC Science Advisor, and personnel from CECOM's NVESD have been principal players in assisting the 7th ATC in providing more effective training facilities.

Unlike fairly recent training that was heavily dependent on known ranges and stationary targets, current training emphasizes movement. One of the important training changes is the emphasis on force movement and targets that suddenly appear. These changes provide a more realistic situation; however, they also present problems in determining how well tested units perform.

Key to evaluating training and learning from test experience is the after action report (AAR). After consulting with the 7th ATC personnel, a determination was made that the Grafenwoehr training facilities were inadequate to provide reliable AARs. With this as the starting point, Kohnke and NVESD personnel took a survey of the existing range evaluation system and how the different elements of the system could be improved. This work evolved into a series of projects that have progressively addressed requirements as they became known.

Range Evaluation System

The first project was the Range Evaluation System Project 974. This project addressed three primary areas: the Tower Forward Looking Infrared (FLIR) System, a vehicle recording system, and the production of a high-fidelity digital recording for the AAR. The solution to producing a deployable AAR system required the development of a portable thermal recording system. This system includes a thermal camera with electronically controlled pan and tilt, control and recording box, and AAR playback monitor. By the time this article goes to press, it is anticipated that the prototype system will be undergoing evaluation.

Another project in support of the 7th ATC is the Improved Viper Battle Coverage, designed to film day and night infantry maneuver training. This system will provide the capability to film all aspects of attack, patrol, and counterreconnaissance missions. Other 7th ATC projects include: Thermal Visual Modification kits for the M113s used by the OPFOR equipped with the Combat Camera Hand-held Thermal Imager, Helicopter Landing Pad Marker, Moving Target for Artillery, and Threat Countermeasures.

Conclusion

The capability of AMC-FAST to influence the improvement of training through the introduction of new technology has proved to be a valuable service with far-reaching effects. Equipment produced for one area often has applicability in other areas and, although the projects described above focused on improving training, there were often collateral benefits in cost avoidance, improved safety, and improved operational capability.

For more information concerning AMC-FAST, contact AMC-FAST at (703) 704-1486, DSN 654-1486, or **fasthq@nosc.mil**.

With the ability to see through smoke, the FLIR camera can save lives by cutting search time.

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JOSEPH L. SITES is an Executive Vice President of BRTRC Inc., Fairfax, VA. He has a B.S. in military engineering from the U.S. Military Academy, an M.S. in mechanical engineering from The University of Southern California, and an M.S. in international affairs from George Washington University. In addition, Sites is a graduate of the Command and General Staff College, the Italian War College, and the National War College.

AMC And DARPA Teaming To Enable Transition . . .

MACHINE-ASSISTED LANGUAGE TRANSLATION

John P. Grills

Introduction

Transitioning technology to address operational deficiencies as identified by Army commanders is a challenging task. In many instances, there is no clear path to follow. This article highlights an emerging case study in the subject area of assisted language translation, which is critical given the operational tempo (OPTEMPO) and breadth of our current missions. The example will focus on both technology and doctrinal issues involved with providing capability to our soldiers in the field.

Early Translation Efforts

The U.S. Army Materiel Command's Field Assistance in Science and Technology Activity (AMC-FAST) has been assisting field commanders by providing opportunities to demonstrate emerging technology in assisted language translation since the start of the program in 1985. Early efforts focused on the challenges of executing command and control in a U.S. Forces Korea–Republic of Korea (USFK-ROK) coalition environment, as well as assisting the military intelligence community with human intelligence (HUMINT) capabilities. The demonstrated systems concentrated principally on command center operations. Experience with early systems in this environment helped the research community focus on identifying where their efforts needed to be concentrated, but in reality, the early translation efforts fell short of the mark. This made it especially difficult to accomplish any cohesive doctrinal development.

FALCon

As computing technology progressed, the capabilities of the software increased to some extent, but the problem seemed to flounder in the "too hard" category for many years, again closely related to the USFK-ROK interoperability context.

FALCon System Developed

Researchers at the Army Research Laboratory, working with the Defense Advanced Research Projects Agency (DARPA) under the direction of Dr. Melissa Holland, used the information gleaned from interaction with the users to develop a useful capability by focusing on the area of document translation. This led to the AMC-FAST-sponsored development of the Forward Area Language Converter (FALCon) system in 1994 at 18th Airborne Corps.

FALCon allowed documents to be translated and key words to be searched to determine whether closer inspection by an experienced linguist was merited. This provided some useful capabilities to the HUMINT community and is a capability that has been expanded for use in 48 different languages. FALCon 4.0 was delivered to the Project Manager, Counter-intelligence/Human Intelligence (CI/HUMINT) Information Management System (PM, CHIMS) in July 2002 for inclusion into the CI/HUMINT Automated Tool Set (CHATS, v10) for developmental testing. Contingent on the results of testing, FALCon is expected to be implemented in 1,600 fielded CHATS units in FY03. CHATS is the first automated system introduced at a soldier level for tactical HUMINT teams, a milestone capability.

Establishing Requirements

Doctrinal development to allow incorporation of new technology for use in real-world missions is important to consider in concert with technical advances. Consensus in determining actual needs and trade-offs is often difficult to achieve. Thus it is important that technologists maintain continuous dialogue with the Army schoolhouses, in this case, the Intel Center at Fort Huachuca. Richard Herman, the AMC-FAST Science Advisor to U.S. Army Pacific (USARPAC) from 1999-2001 was instrumental in this regard, serving as the liaison between the technologists and the user community. Herman worked closely with LTC Kathy Debolt at the Intel Center at Fort Huachuca to establish an integrated concept team (ICT) to address the doctrinal development, and in turn build solid requirements into the

acquisition system. Prior to this effort, there were no official requirements for development of these capabilities. The culmination of the ICT effort has resulted in the Intel Center's development of the Sequoyah Foreign Language Translation System (S-FLTS) requirement documents, which are currently being staffed at Department of the Army G-8, Programs.

Spiral Development

OPTEMPO and technology usually continue to outpace doctrinal development, and new ideas continue to emerge—most notably in this context, the DARPA Information Technology Office Babylon Program and the development of the PHRASELATOR, or DARPA one-way hand-held translation assistant. (See **http://www.sarich.com/translator/** for complete system description.) Babylon was used as a technology feeder for the FY02 new start Language and Speech Exploitation Resources (LASER) Advanced Concept Technology Demonstration (ACTD).

LASER's objectives are broad:

• Reduce the foreign language barrier across the spectrum of transnational (civilian)/joint coalition (military) cooperation,

• Expedite access to foreign sources and accelerate processing,

• Integrate language translation into tactical and strategic warfare efforts and evidence gathering and processing, and

• Develop and sustain language skills.

LTC Debolt is the LASER Technical Manager at Fort Huachuca, and the U.S. Pacific Command is the Operational Manager. The current USARPAC Science Advisor Andrew Wood is coordinating all USARPAC activities in support of LASER. The PHRASELATOR device is one of the early products from this ACTD.

DARPA PHRASELATOR Spiral Development Devices

LTC James Bass, DARPA-Information Awareness Office Program Manager for Babylon, working closely with Dr. John Johnson, the V Corps Science Advisor, provided V Corps with some early prototype units for use in the FY02 Victory Strike exercises in Poland.

User acceptance is very positive, and this early use provides valuable ideas that are incorporated in an aggressive spiral development process by the DARPA prime contractor, Marine Acoustics Inc. Bass has been so successful with his program that the PHRASELATOR devices are in high demand. Per request of the Central Command, DARPA is providing direct support to Operation Enduring Freedom. Capability has been provided to 18th Corps and Special Operational Force units in the area of operations. Bass briefed the Babylon Program at the annual AMC-FAST Program Review in January 2002.

Conclusion

Because of the high demand across the Services, Bass requested that AMC-FAST act as the primary point of contact for the distribution and training of the PHRASELATOR prototypes for the Army. The AMC-FAST science advisors at the receiving commands are coordinating the distribution and data collection efforts in support of DARPA. This quick response capability of AMC-FAST will be of great benefit to Babylon, the LASER ACTD, and the doctrinal development of this important capability. Putting equipment into the hands of a broad spectrum of users (HUMINT, military police, medical personnel, and humanitarian agencies) will, in effect, provide the type of critical data and feedback that is simply not obtainable in a traditional development environment. Language repositories at the Defense Language Institute will be the recipients of the data, and developers will gain a more complete understanding of the complex missions currently being executed by our soldiers across the globe ... a real win-win example of transitioning capability.

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A Crucial Meeting . . .

THE ARMY SYSTEMS ACQUISITION REVIEW COUNCIL

Susan F. Byrne

Introduction

Every important DOD materiel development program requires a great deal of personnel and financial resources. As such, it is imperative that these programs are reviewed throughout key phases of the acquisition process. That is the mission of the Army Systems Acquisition Review Council (ASARC).

Specifically, the ASARC provides senior acquisition managers and functional principals the opportunity to review designated programs at formal milestones to determine whether a program or system is ready to enter the next acquisition phase.

DoD Directive 5000.1, DoD Regulation 5000.2-R, General Order #3, and Army Regulation 70-1 govern the Army's milestone review process. The ASARC makes recommendations to the Army Acquisition Executive (AAE) on those programs for which the AAE is the milestone decision authority (MDA). In addition to these milestone reviews, an ASARC may be convened at any time to conduct a formal review of the status of a program, to address a specific issue, or, in the case of acquisition category ID Programs, to determine the program's readiness for the Defense Acquisition Board (DAB) and to establish the Army position.

The process described in this article pertains primarily to a milestone review and can be tailored for "special" reviews. While it is theoretically possible to make major acquisition decisions through the staffing process alone, experience has shown that face-to-face discussion speeds the decisionmaking process and improves understanding of the program and the decisions being made.

Organization And Membership

ASARC members include senior acquisition managers and functional principals. The Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) is usually designated as the Army's Acquisition Executive. Members are listed below; however, additional members may be added as necessary.

ASARC Members

ASAALT/AAE (Chairman)
Army Vice Chief of Staff (VCSA)
Deputy Under Secretary of the Army (Operations Research)
Assistant Secretary of the Army (ASA) (Financial Management and Comptroller)
ASA (Installations and Environment)
Commanding General (CG), Army Materiel Command
CG, Army Training and Doctrine Command
Office of the General Counsel
Chief Information Officer (CIO), G-6
Deputy Chief of Staff G-1, G-2, G-3, G-4, G-6, and G-8
ASAALT Military Deputy (MILDEP)
Director, Program Analysis and Evaluation
Director, Cost and Economic Analysis Center
CG, Army Test and Evaluation Command (ATEC)

Army IPT Structure

ASARC members are supported in the decisionmaking process by an integrated product team (IPT) comprised of representatives of each of the Army staff elements. The IPT functions in a spirit of teamwork with participants empowered, to the maximum extent possible, to make commitments for the organization or the functional area they represent. IPTs enable decisionmakers to make the right decisions at the right time.

Two IPT levels support the program manager (PM) throughout the review process: the ASARC and the various working integrated product teams (WIPTs). Established to support each program, the ASARC IPT performs the day-to-day work required throughout the acquisition process, to include those activities leading to a successful milestone decision. The ASARC IPT, which is led by the PM, is the level at which the majority of interaction between the program management office (PMO) and the Department of the Army (DA) staff occurs.

Support provided by the IPT includes reviewing program documentation, preparing assessments, and making recommendations on the

readiness of the program to enter the next acquisition phase. IPT members must be proactive and participate early in the milestone preparation activities. IPT members must also work closely together and with the PM to find acceptable solutions to problems. Issues identified during the IPT process, but not resolved at that level, should immediately be raised to the appropriate decision authority.

The IPT is further organized into WIPTs, which are oriented toward one or more of the various functional areas. These areas typically include cost, acquisition, test and evaluation, and requirements. The PM, in coordination with IPT members, proposes the WIPT structure that is best suited to support his or her specific program. Most IPT members will participate on one or more of the functional teams. WIPTs are normally engaged upfront and continuously during the acquisition process to assist in developing acquisition plans or strategies, test and performance evaluation strategies, and logistics and fielding strategies that will increase the program's probability of success.

Key Coordination Roles

The program's DA Systems Coordinator (DASC) is the primary acquisition staff officer at HQDA. As the ASARC IPT facilitator, the DASC assists the PM in managing the IPT. The facilitator is also responsible for ensuring that IPT members support the PM in preparing the program for review. Further, the facilitator is responsible for recording issues identified by IPT members and assisting in tracking the resolution process. The central focus of the PM and the DASC is to manage the IPT to a zero issues or low-risk ASARC assessment. The PM manages the efforts of the PMO to provide quality and timely program documentation and information to the Army staff and supporting activities, while the DASC ensures that the Army staff action officers effectively support the PM's efforts.

The PM should designate a member of the PMO to serve as the ASARC coordinator, who will be the PM's primary action officer within the PMO for managing the preparation efforts and keeping the process on track. The coordinator also maintains program schedule information, establishes and oversees a program library and current documentation status log or register, establishes and maintains a point-of-contact (POC) list, prepares ASARC-related correspondence, and acts as the central POC at the PMO for all ASARC members. In addition, the coordinator works on routine matters with the DASC, and the DASC coordinates with the PM on important issues.

Serving as the ASAALT POC for the ASARC process is the Executive Secretary. The ASARC Executive Secretary also provides guidance, advice, training, latest policy information, and examples of successful ASARCs.

Schedule Of Events

At the initial IPT meeting, a schedule should be prepared with a target date for the ASARC. Once the schedule is established, the remaining preparation milestones are backward planned. IPT meetings should be proposed and scheduled at a rate of once a month and can be adjusted to respond to the program's needs. The goal is to ensure that adequate time is allowed to enable all required actions to be completed on schedule. The ASARC Executive Secretary publishes a target date (month) for the ASARC starting 6 months prior to the meeting. Later, the ASARC Executive Secretary establishes the exact date of the ASARC—2 months in advance—in coordination with the calendars of the AAE and VCSA.

Typical ASARC Agenda

Item	Presenter	Time
Introduction	PEO	5 min
User Briefing	TSM	10 min
Developer Briefing	PM	15 min
Operational Effectiveness	ATEC	10 min
CIO Assessment	G-6	10 min
Affordability	PAED	10 min
Discussion	All	25 min
Summary of Decision	AAE/VCSA	5 min
	Total	90 min

Documentation

Documentation is the primary source of information for acquisition decisionmakers and their staff at the DA and Office of the Secretary of Defense levels. Statutory or other documentation requiring approval by the MDA are normally nonnegotiable and must be prepared in a prescribed format. Other review and oversight documentation can be negotiated by the PM with the IPT as to need or format.

One of the IPT's first tasks is to determine the requirement for program documents and information and recommend to the MILDEP what documentation should be prepared or tailored for the specific program. Each WIPT is responsible for reviewing program documentation within its functional area and providing recommendations to the IPT. A major function of the IPT is to apply tailoring to the maximum extent possible without undue risk to the oversight or decision process.

MIPS

The intent of the Modified Integrated Program Summary (MIPS) is to provide the decisionmaker with a single document that contains only the information necessary to make the decision. The MIPS is an executive summary of the program and its issues, thus, no one format fits all programs. This eliminates the need for separate, stand-alone documents that cause unnecessary duplication of effort.

The MIPS must answer the following five key questions:

- Is the system still needed?
- Does the system work (from the standpoints of the user, functional staffs, and the PM)?
- Are major risks identified and manageable?
- Is the program affordable (adequately funded)?

• Has the system been subjected to cost as an independent variable analysis?

The PM maintains primary responsibility for the production and content of the MIPS. The MIPS is coordinated with the IPT membership to elicit comments and input at the earliest possible opportunity. A key document within MIPS is the issues/risk memorandum because it identifies all issues that were not resolved within the IPT process and require MILDEP or AAE resolution. This memorandum also provides recommended solutions, if applicable, and any risks to the program associated with the identified issues.

Final IPT Meeting

The ASAALT Deputy for Systems Management chairs the final IPT meeting to review the MIPS and the ASARC briefing and to determine if the program is ready to proceed to the MILDEP review. The goal of this final IPT meeting is to ensure that there are no open issues or nonconcurrences. In addition, the IPT will identify any remaining issues that require guidance or resolution at the MILDEP review. The final IPT meeting is normally attended by the program executive officer (PEO), PM, all IPT members, and any staff principals who might be involved in issue discussion and resolution. If the staff principal does not attend, IPT members should be prepared to confirm the principal's concurrence with the contents of the MIPS. The typical agenda should include a run-through of the proposed briefing slides. Briefers should present only the information required to support requested decisions. It is important that all remaining issues receive a fair hearing and every effort is made to reach resolution prior to MILDEP review. Finally, the ASAALT Deputy for Systems Management is responsible for determining if the program is ready for MILDEP review.

MILDEP Review

The MILDEP Review is a rehearsal for the ASARC and allows one last opportunity to resolve any open issues. It also allows the MILDEP to issue guidance and help the briefers refine their presentations. Attendance at the MILDEP review should include ASARC IPT managers, the PEO, the user, staff principals or their representatives (only if there are issues associated with their area of interest), the ASARC Executive Secretary, and the CIO, G-6 or Deputy for Systems Management (depending on the type of program). It is the responsibility of IPT staff members to brief their principal of the outcome of the final IPT meeting and inform the DASC of the principal's desire to attend the MILDEP review. The PM is not required to pre-brief any principals other than the MILDEP, but it is advisable that he or she pre-brief any principal with outstanding issues. If the MILDEP determines that the program is not ready for the ASARC review, the decision will be accompanied with specific direction as to the deficiencies that must be corrected to have an acceptable program.

ASARC

The MIPS should answer all questions and identify the issues needing resolution by the ASARC. The ASARC briefing presentation should be prepared based on the information included in the MIPS. Backgrounds on all areas to be briefed in the ASARC—user, developer, tester, and affordability—are contained in the MIPS. A typical ASARC agenda is shown on Page 13.

If possible, all portions of the briefing should be prepared by the same activity to ensure consistency and standardization of appearance. It is also extremely helpful to have the preparer of the slides located in the vicinity of the Pentagon to ensure the quick turnaround of briefing changes.

The PM is required to brief the VCSA prior to the ASARC, and the date and time of this briefing are arranged by the ASARC Executive Secretary. The PM or PEO will lead the briefing and designate what roles the other members of the briefing party should play; however, the briefing team should be limited to no more than eight individuals. The AAE does not normally require a pre-brief because he is kept informed by the MILDEP, but IPT representatives should brief their principal. Further, the ASARC IPT representative is responsible for notifying the PM or DASC if his or her principal desires a pre-briefing or meeting.

Expected Outcome

The Acquisition Decision Memorandum (ADM) documents acquisition decisions made and is signed by the MDA. It also establishes the exit criteria that must be demonstrated by the next milestone so a program can move to the next acquisition phase. The ADM is written by the ASARC/DAB Executive Secretary and signed by the appropriate MDA. There is no prescribed format for the document, but it should include the exit criteria applicable to the next milestone review and any other specific guidance directed by the MDA such as delegation of the decision authority to the PEO on specific matters.

Summary

The ASARC is a crucial meeting on the program acquisition path. With proper planning and coordination, it can ease a program's progress through the acquisition process and ultimately result in a better product for our soldiers in the field.

SUSAN F. BYRNE joined the ASAALT staff 3 years ago after serving 11 years at the Army Test and Evaluation Command. She has B.S. degrees in mathematics and physics and an M.S. degree from The George Washington University. She started her career at the Research, Development, and Engineering Center, Fort Belvoir, VA.

Supporting The Warfighter . . .

THE U.S. ARMY CONTRACTING AGENCY

Suellen D. Jeffress

Introduction

In January 2002, the Secretary of the Army and the Chief of Staff of the Army directed Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) Claude M. Bolton Jr. to develop a plan to establish an Army Contracting Agency (ACA) that would support the centralized installation management plan and save the Army financial resources. The ASAALT was also directed to establish a specialized information management and technology contracting activity. With this guidance, the ACA transition team was off and running.

The Army Contracting Agency was activated Oct. 1, 2002, as a Field Operating Agency under the Office of the ASAALT (OASAALT). Headquartered in Falls Church, VA, the ACA is responsible for more than $5.5 billion in annual obligations. In addition, the ACA is one of the three largest contracting organizations in the Army in terms of dollars obligated and personnel assigned—more than 2,300 military and civilian employees worldwide. One of the ACA's primary functions is providing contingency contracting operations support to warfighters.

Vision/Mission

The ACA's vision is to lead the Army in efficient and effective contracting, with a professional team committed to continuous innovation and process improvement. It is a customer-support organization focused on the successful achievement of command missions and the Objective Force.

The ACA's mission is to provide command and control of the regional headquarters, contracting centers, and installation directorates of contracting; the Information Technology E-Commerce and Commercial Contracting Center (ITEC4); the overseas contracting activities; and the contingency contracting function. The overarching goal of the ACA is to provide customers with a substantial return on investment by obtaining goods and services on time and at the lowest total ownership cost. Additionally, there are six specific goals as follows:

• To consolidate requirements and centralize the award of contracts in excess of $500,000 (total contract value including options) per established policies and guidance;

• To integrate and synchronize with the Installation Management Agency (IMA), reshaping in a manner that is transparent to the customer;

• To exploit current technology to the greatest extent possible;

• To centralize personnel management and contingency contracting processes;

• To ensure compliance with small business statutes and guidance; and

• To put more expertise to bear on complex contracting.

Savings

The ACA will generate savings by eliminating duplicative overhead, obtaining greater efficiencies from regionalized contracts, and exploiting procurement initiatives. Further savings will be obtained by leveraging technology to create a more flexible and agile workforce. The ACA will work closely with the newly established Network Enterprise Technology Command (NETCOM) and the IMA to reduce Army overall operation and maintenance costs.

There are no reductions in force or downgrades in the ACA's plans to reshape its workforce. Reshaping will be accomplished by attrition, with no mandatory civilian permanent change of station (relocation) planned. Because 50 percent of the Army contracting workforce will be eligible to retire within the next 5 years, this is a proactive strategy for addressing the Army's needs in conjunction with anticipated workforce changes and maturity.

Metrics

The following five metrics will be used to evaluate the progress and success of the ACA:

• *Customer Satisfaction*. This is the ACA's top priority and will be measured by the Interactive Customer Evaluation Web site at **http://ice.disa.mil**, where customers can rate the ACA and provide feedback to key personnel.

• *Elimination Of Redundant Effort*. This will be measured by contract action reporting tools, which are part of the Federal Procurement Data System.

• *Contracting Professionalism*. The ACA will measure the extent to which it meets the Army contracting community's Professional Executive Committee goals, including Defense Acquisition University certifications and university degrees.

• *Socio-Economic Goals*. Advance acquisition planning will be used as a key tool to ensure achievement of assigned goals.

• *Purchase Cardholder Spans Of Control*. The ACA goal is no more than one billing official for every seven cardholders.

Small Business

A very robust small business program was established to ensure that small business goals and targets remain a priority in ACA procurements. Particular attention will be focused on advance acquisition planning efforts to advocate small business set-asides, partial set-asides, and small business subcontracting plans. A network of

ASAALT Claude M. Bolton Jr., left; Secretary of the Army Thomas E. White; and Acting Director, ACA Sandra O. Sieber uncase the ACA flag.

senior small business specialists will oversee the program.

Customer Organizations

The ACA supports the Army component of the warfighting commanders-in-chief and provides direct mission support to three Army major commands (MACOMs): the Army Training and Doctrine Command (TRADOC), the Army Forces Command (FORSCOM), and the Military District of Washington (MDW). In addition, the ACA directly supports the IMA, providing the base operations contracting support within the Directorate of Contracting for all training and warfighter Army installations both in and outside CONUS. ACA's establishment of the ITEC4 provides an organization to implement an Army enterprisewide buying capability for common-use information technology (IT).

The ACA will perform mission contracting for MDW, FORSCOM, and TRADOC using established contracting offices and existing expertise, located in close proximity to the MACOM headquarters. Liaison officers were assigned to MDW, FORSCOM, and TRADOC to ensure that command-unique mission and contingency requirements are appropriately addressed. Liaison officers are also assigned to the IMA regional headquarters. OCONUS contracting activities will perform mission and contingency contracting for their respective MACOMs.

The ACA provides contracting for IT and commercial product support to the Chief Information Officer, G-6; NETCOM; and the Program Executive Office, Enterprise Information Systems. Transparency is achieved by maintaining the existing customer-contracting office relationship.

Other Responsibilities

The ACA is the Department of Defense Executive Agent for management of the Purchase Card Program. As such, the ACA ensures that the Purchase Card Program supports the acquisition excellence and financial management objectives set by Congress and the Secretary of Defense. In addition, ACA will have Armywide responsibility for the Standard Procurement System, Procurement Management Assessment Program, Javits-Wagner-O'Day Program, and other programs where it is designated as the Army proponent.

Only the installation and information management contracting functions within the following specialty commands will be incorporated into the ACA: the Army Materiel Command, the Military Traffic Management Command, the Army Corps of Engineers, the National Guard, the Army Medical Command, the Army Medical Research and Materiel Command, the Army Space and Missile Defense Command, and the Army Intelligence and Security Command. The Defense Contracting Command-Washington is a specialized contracting agency in FY03, but it is being reviewed for possible inclusion in the ACA in FY04.

Specialty commands retain their currently assigned contracting functions—to include contingency contracting mission—except for selected installation missions and the common-use IT and commercial products mission.

Conclusion

The ACA was successfully created on a greatly accelerated 9-month schedule. This new organization has great promise for superior customer service for installation and common-use IT procurements. Reshaping the workforce to better serve soldier needs will save the Army long-term financial resources by exploiting technology and leveraging economies of scale while maintaining vigilance in its responsibility to the small business community. For more information, visit the ACA Web site at **http://aca.saalt.army.mil**.

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Shown from left to right unfurling the AAC flag are MILDEP LTG John S. Caldwell Jr.; former Assistant Secretary of the Army for Research, Development and Acquisition Gilbert F. Decker; ASC Director COL Mary Fuller; and ASAALT Claude M. Bolton Jr.

Annual AAC Ball . . .

AAC FLAG UNVEILED, FY02 PMs/ACs OF THE YEAR NAMED

Heather J. Kohler

The third annual Army Acquisition Corps (AAC) Ball, held late last year in Alexandria, VA, attracted about 400 guests, including active and retired military, civilian, and industry members of the acquisition community. Among the ball's many highlights were the unveiling of the newly approved AAC flag and presentation of the FY02 Project Manager of the Year, Product Manager of the Year, and two Acquisition Commander (AC) of the Year awards.

Authorized by the Institute of Heraldry, the AAC flag was officially presented to Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT) Claude M. Bolton Jr. during a special Old Guard ceremony. The flag displays the AAC logo on a vibrant ultramarine background. The logo symbolizes the Army acquisition workforce attributes of innovation, excellence, and dedication. Also entwined on the flag are the Greek letters alpha and omega to indicate the intricate and continuous acquisition process. The flag's eagle, our national symbol, represents vigilance and military preparedness. In addition, the color black alludes to dependability and solidarity, the gold and silver (white) signify excellence and integrity, and the laurel symbolizes honor and achievement. All AAC centrally selected commands at the 0-5/GS-14 levels and above (or equivalent personnel demonstration broadband level) are authorized to procure and display the AAC flag. Additional information on how to acquire an AAC flag can be found at **http://asc.rdaisa.army.mil**.

Assisting Acquisition Support Center (ASC) Director COL Mary Fuller in presentation of the Project Manager of the Year, Product Manager of the Year, and two AC of the Year Awards were Bolton and ASAALT Military Deputy (MILDEP) LTG John S. Caldwell Jr. Award winners and their achievements are discussed below.

Project Manager Of The Year

COL Nickolas G. Justice, Project Manager, Force XXI Battle Command Brigade and Below (PM, FBCB2), received the FY02 Project Manager of the Year Award. The FBCB2 is the Army's premier battlefield digitization system and an ACAT ID program that provides

COL Nickolas G. Justice, PM, FBCB2, accepts the FY02 Project Manager of the Year Award from ASAALT Claude M. Bolton Jr. (left) and MILDEP LTG John S. Caldwell Jr. (right).

LTC Donald A. Hazelwood, PM, A2C2S, accepts the FY02 Product Manager of the Year Award from MILDEP LTG John S. Caldwell Jr. (left) and ASAALT Claude M. Bolton Jr. (right).

Sandy Sieber, Army Contracting Agency, accepts an FY02 AC of the Year Award on behalf of COL John A. Merkwan, Commander, USACCE and USAREUR PARC, from MILDEP LTG John S. Caldwell Jr. (left) and ASAALT Claude M. Bolton Jr. (right).

LTC Christopher M. Rasmussen, Commander, U.S. Army Dugway Proving Ground West Desert Test Center, accepts an FY02 AC of the Year Award from ASAALT Claude M. Bolton Jr. (left) and MILDEP LTG John S. Caldwell Jr. (right).

Army tactical vehicles with situational awareness and command and control at the platform level on the battlefield. Justice's efforts on this program resulted in improved system performance, added capabilities, and improvements in the sustainment of the system.

The PM, FBCB2 manages the research, development, acquisition, testing, fielding, sustainment, and modernization of approximately 5,600 FBCB2 systems valued at more than $200 million, and approximately 3 million lines of code worth more than $350 million. These systems are in operation at Fort Hood, TX, and at Fort Lewis, WA, and in Europe in support of national security objectives. Justice manages more than $130 million in annual budget appropriations and three major contracts valued at $745 million. These appropriation and contracts are part of a $2 billion out-year plan that represents the Army's foremost solution to meet the joint vision imperative of information dominance on the battlefield. Additionally, Justice mentors two assistant product managers and leads more than 100 government and contractor professionals.

To keep abreast of technological opportunities in a quickly changing digital commercial environment, Justice partnered with Carnegie Mellon University's Software Engineering Institute and used the Acquisition Support Program to re-architect and transition FBCB2 technology into the Army command, control, communications, computers, intelligence, surveillance and reconnaissance solution for Future Combat Systems (FCS) Block I. This large-scale reuse strategy included numerous benefits such as faster time-to-market, ease of integration, defect reduction, and 3:1 use of cost-reduction versus redevelopment.

When Justice assumed the PM role, reliability concerns and system-of-systems technical challenges jeopardized the FBCB2's scheduled initial operational test and evaluation (IOT&E). The test was renamed as Limited User Test (LUT) 2A and the IOT&E was rescheduled; nevertheless, the Army's need for situational awareness and battle command and control remained. He initiated discussions at the senior executive level with a major DOD contractor to correct known issues prior to the scheduled LUT2A test date. Under Justice's leadership, hundreds of software performance reviews were eliminated and software reliability increased more significantly than earlier versions of software, allowing for continued fielding of a much-needed capability to III Corps.

Because of Justice's efforts, PM, FBCB2 is equipping two Brigade Combat Teams in support of Operation Enduring Freedom. Further, in response to an urgent U.S. Army Central Command Operational Needs Statement, within 120 days, he and his team delivered an upgraded tactical operations center capability to the Coalition Forces Land Component Command. This endeavor resulted in the upgrade of the audio and video capabilities necessary to coordinate and control all of the Army Battle Command Systems efforts in theater.

Product Manager Of The Year

LTC Donald A. Hazelwood, Product Manager, Army Airborne Command and Control System (PM, A2C2S), received the FY02 Product Manager of the Year Award. The A2C2S Office plans and implements all aspects of program management, budget, engineering, acquisition, operational and developmental testing, and logistics support for a state-of-the-art digital situational awareness and command and control system that supports Army transformation. In addition, the A2C2S Office has responsibility for horizontal technology integration for a program valued at $962.1 million.

Hazelwood coordinates with various Department of the Army organizations to design, develop, produce, and integrate 120 A2C2S mission equipment packages onto the Army's UH-60L BLACK HAWK helicopters. He expanded the A2C2S team to a product-oriented, functionally independent organization of more than 100 military, civilian, and contractor professionals encompassing areas of technical, business, test, program management, and special projects. Hazelwood was cited for leading this team to achieve extraordinary results in accelerating the acquisition process and fielding much-needed capabilities to the warfighter.

Hazelwood adeptly developed a three-phase approach to cost-reduction: maximum use of mature existing technologies, fabrication and early deployment of an A2C2S demonstrator, and development of a streamlined approach to contract manage-

ment. By establishing multiple Memorandums of Agreement with different organizations to integrate government off-the-shelf and commercial off-the-shelf equipment, he was able to reduce upfront expenditures and long-term costs through use of existing inventories and standardization of new items. Through this method, and using the Aviation Applied Technology Directorate, Hazelwood built and fielded a demonstrator system for the 101st Airborne Division (Air Assault). This effort resulted in a streamlined schedule; a strong foundation for prototype development; and a low-risk, affordable, and executable future path.

The A2C2S is one of only two DA programs identified to align with the new DOD 5000 series acquisition directives, policies, and guidelines as directed by the MILDEP. Through Hazelwood's guidance, the A2C2S team realigned the program to comply with the new acquisition model and revised program documentation in a minimum amount of time. He conducted an initial baseline review as well as preliminary and critical design reviews, and the prime contractor started binding metal on the first prototype system—all within 10 months from contract award.

To capitalize on Hazelwood's demonstrated organizational skills, the Program Executive Office, Command, Control and Communications Tactical selected him to lead the Balkan digitization initiative. In this role, he worked with various contractors, support agencies, and field headquarters in Europe to synchronize production capabilities, shipping schedules, and unique field requirements to realize an optimum management balance. His efforts enabled him to effectively coordinate and oversee the fielding of 365 situational awareness and force tracking systems in Kosovo and 70 systems to the Southern European Task Force in Italy ahead of schedule.

ACs Of The Year

COL John A. Merkwan and LTC Christopher M. Rasmussen were each recipients of an FY02 Acquisition Commander of the Year Award.

Merkwan was recognized for his outstanding achievements as the dual-hatted Commander, U.S. Army Contracting Command Europe (USACCE) and the U.S. Army Europe (USAREUR) Principal Assistant Responsible for Contracting (PARC). He provides installation and contingency contracting support to the Army's only forward-deployed corps and to all USAREUR units and supporting organizations. As PARC, Merkwan oversees more than 40,000 contract actions valued in excess of $1 billion annually. He is responsible for training, maintaining, and deploying a ready contingency force to support the full spectrum of joint, coalition, and unilateral operations. As the Executive Agent for Contracting in the Balkans, he supervises and rates Air Force, Marine, and Army personnel who provide contingency contracting support in Bosnia, Hungary, Kosovo, and Macedonia.

Merkwan is uniquely responsible for a vast, diverse, and geographically broad spectrum of duties and missions on two distinct fronts. He leads a workforce of more than 325 local civilian and military professionals and an additional augmentation workforce assigned to contingency offices. He commands four deployed joint contracting centers and routinely supports numerous exercises and missions. Always cognizant of operational tempo and stewardship of resources, Merkwan managed to close three offices and reduced deployed personnel by 33 percent without degrading support. He was at the forefront in developing doctrine for contractors on the battlefield, including sponsoring several process action teams that provided comments to the General Accounting Office for its report on this issue.

Merkwan's accomplishments and the command's high standing is further evidenced by the favorable report of the recent Procurement Management Assistance Team review. PARC/USACCE was commended in a number of important areas including the development of innovative business processes, programs, pilots, and initiatives and the use of commercial practices. The innovations and improvements he has brought to USAREUR are remarkable, and he has established the USACCE as one of the Army's premier contracting providers.

Rasmussen was recognized for his contributions as the Commander, U.S. Army Dugway Proving Ground West Desert Test Center, Dugway, UT, where he leads more than 450 military, civilian, and contractor scientists, engineers, and analysts who perform more than 200 major tests per year. He is responsible for an annual budget that exceeds $65 million and for operating complex test facilities and ranges with a real property value of more than $175 million within 800,000 acres of a remote major DOD range and test facility.

Specifically, the Dugway West Desert Test Center is the Nation's premier center for testing chemical and biological (CB) defense systems; smoke, obscurants, and illumination systems; and meteorological and environmental technologies. In addition, the center develops associated modeling and simulation capabilities. Rasmussen's extensive knowledge of military equipment testing enabled him to manage the development and deployment of the Army Test and Evaluation Command (ATEC) Four-Dimensional Weather System. This system provides enhanced meteorological and modeling support capabilities at the major test ranges and proving grounds.

Rasmussen's largest contribution is the absolute commitment to ensuring that warfighters receive the best CB defense equipment and protective clothing available. To achieve this, he ensures that each item tested meets all technical and safety requirements. Further, he provided support for decontamination operations for the September 2001 anthrax attacks on the United States by directing the team supporting the Environmental Protection Agency's remediation of the Hart Senate Office Building. He also developed a chlorine dioxide decontaminate for six strains of anthrax used in this operation. In addition, Rasmussen initiated actions to be the first ATEC organization to obtain ISO 9001-1994 certification, which was completed early in FY02. Rasmussen's efforts have made Dugway Proving Ground's West Desert Test Center the "tester of choice" for any CB defense equipment or operational issue encountered by the joint Services.

HEATHER J. KOHLER, an employee of Science Applications International Corp. (SAIC), provides contract support to the ASC. She has a master's degree in public administration from George Mason University and a bachelor's degree in political science from the University of Connecticut, Storrs, CT.

A SMART Success Story . . .

LESSONS LEARNED FROM THE AH-64 LONGBOW APACHE PMO RISK AND COST REDUCTION SYSTEM

LTC Derek J. Paquette

Background

Virtually every trade publication DOD-wide has dedicated substantial space to Simulation and Modeling for Acquisition Requirements and Training (SMART) and Simulation Based Acquisition (SBA) activities since DOD mandated their use in every major acquisition program in June 2001. This article reports a real-world success story that has produced quantifiable benefits to an ongoing acquisition program in the system development and demonstration phase of the acquisition cycle on a legacy aircraft platform. The Apache Program Management Office's (PMO's) success highlights the benefits that SMART and SBA are capable of delivering!

Introduction

Within aviation, there has been a significant and renewed interest in the SMART processes and SBA activities. This interest is due largely, and correctly so, to perceptions that the appropriate modeling and simulation of a particular system or subsystem early in the acquisition cycle can lead to significantly reduced life-cycle and total-ownership costs (TOC), cost avoidance benefits, reduced acquisition cycle times, and design risk reduction.

Long before June 2001, the AH-64 Apache PMO implemented a vision with the Program Executive Office for Aviation's first real SBA asset known as the Risk and Cost Reduction System (RACRS). RACRS is used to support the development and procurement of the Modernized Target Acquisition and Designation Sight/Pilot's Night Vision Sensor (M-TADS/PNVS). These improved sighting and pilotage sensors will significantly increase the safety of night flying operations with the introduction of advanced forward looking infrared technology into the Apache, as well as greatly enhancing embedded targeting and electronics capabilities.

Challenges

The challenge of implementing SMART/SBA processes into a program centers on identifying the key performance areas and key performance parameters that are the anticipated cost drivers. Once they are identified, the challenge is to determine which areas and/or parameters can benefit most from modeling and simulation analyses. For Apache, this process was further complicated because the M-TADS/PNVS is an enhancement to a legacy system on a legacy aircraft platform. Very little attention has been given to SMART implementations into the "legacy-platform-upgrade-world" that dominates much of aviation acquisition.

The Camber Corp.'s Information Technology Division was tasked by the Project Manager, Apache (PM, Apache) to develop a program in concert with the original equipment manufacturer and current prime contractor for the M-TADS/PNVS Lockheed Martin Missiles and Fire Control (LMMFC) to mature image processing algorithms prior to production. The task also called for help in developing the multitarget tracker capability in the M-TADS/PNVS and assisting in the integration of the other subsensors that make up the M-TADS/PNVS, which represented the highest risk areas to the program. Camber did this by integrating the LMMFC-developed M-TADS/PNVS software into the Longbow Apache

SMART Achievements

SMART Action	Results	Risk Reduction	R&D Cost Benefit	O&S Cost Reduction Benefit	ROI Benefit
1. Thermal Reference Source versus Scene Assisted Non-Uniformity Correction	No redesign required to carry backup thermal reference sources	Yes	Yes	Yes	Yes
2. Front End Fixed-Point Math	12.0 fixed-point math imagery adequate for data transfer	Yes	Yes	No	Yes
3. TADS High Speed Serial Link Bandwidth and Funny Harness	Reduced component count, complexity and maintenance scheme	Yes	Yes	Yes	Yes
4. M-TADS/PNVS Initialization	95% solution okay for emergency launch	Yes - Safety	Yes	Yes	Yes
5. Operator Control Interface	Edges, dynamic range compression, histograms	Yes	Yes	Yes	Yes
6. Detector/Receiver Flashing Channel Acceptance Criteria	Improved yield and safety	Yes	Yes	No	Yes
7. Image Processing Algorithm Maturation	Reduced flight test risk and time required	Yes	Yes	Yes	Yes
8. Adjunct Flight Test Support	Pilot and test team practice	Yes	Yes	No	Yes
9. Range Matrix Completion	Fly where aircraft cannot go	Yes	Yes	No	Yes
10. Milestone C Support	Break the costly fly-fix-fly method	Yes	Yes	No	Yes

RACRS, which resides within the Camber Modeling and Simulation Laboratory in Huntsville, AL.

The RACRS consists of a high-fidelity cockpit simulation of the Longbow Apache pilot and co-pilot gunner stations, and a high-resolution out-the-window visual system running on an SGI 3500 Image Generator with multiple, changeable, high-resolution, Camber-developed, geospecific databases on which to fly. Provisions also exist for the integration of various hardware components of the Longbow Apache as well as open functionality within the software architecture, allowing for future upgrades and follow-on modifications to the Longbow to be tested and evaluated in a "try-it-before-you-fly-it" environment. This capability alone has made PM, Apache a much more informed buyer of modernizations and improvements.

Teamwork

Much of the SBA work on the M-TADS/PNVS is a virtual modeling and simulation effort with intense collaboration between the Apache PMO, the LMMFC development team, and Camber's modeling and simulation staff. Many of the benefits of the Camber efforts are difficult to quantify, a situation similar to that of many of the SBA programs within the Army today. Though difficult to quantify, the benefits are obvious to all who are working on the program, both government personnel and contractors. The driving force behind these program benefits is the collaborative and cooperative environment that has emerged between the four parties involved: PM, Apache; Boeing-Mesa (Apache's manufacturer); LMMFC; and Camber. This team environment facilitated the free-flowing exchange of ideas and information critical to achieving the goal of providing the soldier with a far superior sensor array.

A significant amount of the collaborative work centered on the image processing algorithms, the multitarget tracker functionality, and M-TADS/PNVS system initialization. Much of the effort has been

dedicated to peripheral elements of the program, such as rehearsal of flight test program profiles in geospecific computer databases. An overview of some of the collaborative efforts is provided in the table on Page 21.

Because of the complexities and diversity of new system development, collaboration is critical to the future success of developmental programs. LMMFC has some of the world's finest algorithm architects, while Fort Rucker and Boeing-Mesa have the most experienced and gifted Apache Longbow test pilots. We are learning through solving problems together that the only way for these organizations to truly communicate and articulate real-world concerns, issues, and solutions is through the collaborative environment a SMART program affords. Camber's role as the "honest broker" has allowed these generally mutually exclusive worlds to come together in a cooperative and nonthreatening environment to the betterment and benefit of the soldier.

Total cost avoidance to date has been estimated at $70 million. Many of the areas of focus outlined above are still impacting system design and operations. TOC benefits will continue to be developed as the program continues to mature. Part and parcel to TOC is the cost associated with software development, maintenance, and upgrades of systems over their useful life cycle. These areas are continuing to be evaluated now and throughout FY03.

Summary

The bottom line on the success of the Apache SMART story is that there have been multiple millions of dollars in cost avoidance and risk mitigation realized as a result of these cooperative SBA efforts. The long-term benefit of TOC reduction is still being assessed because the developmental process is not complete. Historical data show that software-intensive programs typically experience growth of at least 40 percent over their life cycle in excess of planned and estimated costs. Camber's efforts have curbed that TOC growth by at least 20 percent. Internal rates of return on PM, Apache's investment are estimated at 10-to-1. This real-world, real-time acquisition program's successes highlight the viability and visibility of the benefits of SMART. This will, hopefully, provide a modernization road map for many other legacy or current force platforms during the Army transformation process.

Because of the complexities and diversity of new system development, collaboration is critical to the future success of developmental programs.

How does this SMART/SBA asset help Army pilots? The AH-64 PMO SMART/SBA RACRS allows pilots and acquisition officials to try it before they fly it on the real aircraft. This tool not only saves valuable aircraft time and resources, but also reduces risks and enhances pilot familiarization with the new systems, e.g., M-TADS/PNVS. As a mission test rehearsal tool, the RACRS allows pilots to fly on geospecific 1-meter resolution, physics-mapped databases under varying environmental and expected threat conditions. On the M-TADS/PNVS Program, the pilots will fly the exact test profiles required at Yuma Proving Ground for an actual flight test, thus saving range time while providing an upfront training benefit.

PM, Apache is increasing its commitment to modeling and simulation efforts as a result of the myriad of successes achieved to date and the ever-increasing complexities of the modernization path ahead. Helmet displays, situational awareness enhancements, fire control radar modifications, emerging missile technologies, unmanned aerial vehicle interoperability studies, and other efforts that represent much of the approved elements of the Longbow Apache Product Improvement Program and other Army transformation efforts will go through similar SMART processes.

LTC DEREK J. PAQUETTE has served more than 2 years as Product Manager for Apache Modernization and the Modernized TADS/PNVS for the Apache Attack Helicopter Program at Redstone Arsenal, Huntsville, AL. He is an Aviation Officer and Senior Aviator with more than 20 years of service. He has a bachelor's degree in engineering from the U.S. Military Academy, West Point, NY, and master's of science degrees from the University of Texas, Austin in aerospace engineering and the University of Southern California in systems management.

Logistical Force Enabler In Korea . . .

WARTIME HOST NATION SUPPORT

John Di Genio

"The ROK-US Alliance is built on the principle of Katchi-Kapshida, 'We go together.'"

—General Thomas A. Schwartz
Commander-in-Chief
United Nations Command/
Combined Forces Command and
Commander, U.S. Forces Korea

Introduction

The Korean peninsula remains one of the world's flashpoints. Although some progress was made during the historic summit between South Korea (Republic of Korea (ROK)) and North Korea, peace and reunification are still beyond reach. Ministerial discussions between the two Koreas have been intermittent. North Korea still maintains one of the largest, forward-deployed armies in the world. This offensive posture—coupled with North Korea's lethal special operations forces, its development of ballistic missiles, and its aggressive program to acquire weapons of mass destruction—causes the Korean peninsula to remain highly volatile.

Military planners expect that a resumption of hostilities will begin with a sudden, rapid North Korean invasion of South Korea. Thus, the commands' (United Nations Command; Combined Forces Command; Headquarters, U.S. Forces Korea (HQ, USFK); and the Service component commands within theater) logistical concerns are the timely support of U.S., South Korean, and allied units in a hostile environment and the swift evacuation of noncombatants from the combat zone. A viable wartime host nation support program is a key force enabler to make these happen should a resumption of hostilities commence in the Korean theater.

Historical Comparison

According to Field Manual (FM) 100-10, *Combat Service Support*, "Provision of support from the host nation reduces the requirement to deploy Combat Service Support units. This allows more combat power to deploy quickly." Under the concept of velocity management, U.S. forces must expeditiously deploy anywhere in the world to fully support a unified command. By the same token, the commander-in-chief of a unified command needs the flexibility to direct and prioritize the flow of assets into his theater to sustain mobilization efforts. If items are commercially available from the local population, there is no need to ship them into a theater of operations. This maximizes shipping space to accommodate the rapid delivery of vital supplies, equipment, materiel, and personnel to the foxhole where they are most urgently needed.

During World War II, the Allies realized that local support would help to alleviate the strain placed on shipping demands to support operations in North Africa and, eventually, in Sicily and the Italian mainland. Consequently, as an integral part of the agreement to take Italy out of the war, the post-fascist government was to provide 23,000 rations, 355 trucks, 12 ambulances, 120 tons of petroleum products, 12 switchboards, 150 field telephones, 100 picks, 200 shovels, 5,000 wire pickets, 150 miles of barbed wire, a 500-man labor pool, and airfield facilities to assist in an Allied airdrop to defend Rome against German occupation.

Locally procured goods and indigenous personnel are needed more than ever to reduce the logistical tail, especially in South Korea. Today's more lethal, heavier equipment and the demand to rapidly deploy combat units to an area of operation have caused military planners to consider alternative means to make optimal use of constrained transportation assets.

The "logistical revolution" calls for the "just-in-time" delivery of personnel and materiel. However, in contrast to World War II, the logistical demands of modern military units are immense. Today's main battle tank is a lot heavier than any of its predecessors. The amount of local support that the Allies demanded from the Italians in 1943 would be a drop in the bucket by today's standards. U.S. forces would easily consume thousands of tons of fuel, ammunition, and supplies during a modern deployment. Furthermore, the speeds in which units deploy and operations commence and end have increased tremendously. Compare Operation Desert Storm to the lengthy military campaigns of both world wars.

The need to rapidly deploy units and materiel to sustain mobilization operations on the Korean peninsula is crucial. Seoul, the capital city of South Korea, is within artillery range of North Korean batteries. North Korean ballistic missiles are capable of hitting any target in South Korea. Numerically superior North Korean forces are capable of overrunning United Nations, combined, and U.S. defensive positions in a blink of an eye. U.S. forces in South

Korea depend on wartime host nation support for labor; commercially available supplies and equipment; facilities to receive, stage, and integrate personnel and materiel; and vehicles to assist in the war effort. Such assistance from the South Korean government helps ensure that critically needed supplies from the United States arrive in time to sustain mobilization.

Gulf War Lessons Learned

The Persian Gulf War clearly demonstrated the need for robust wartime host nation support. FM 100-10 states, "An objective area's infrastructure is a key source of support." Before the Gulf War, Saudi Arabia used the huge revenues it received during the 1973 oil embargo to build a modern transportation infrastructure that greatly facilitated military operations. However, one of the U.S. Central Command's shortcomings during the Gulf War, and a lesson learned for the other unified commands, was its failure to establish wartime host nation agreements that specifically enumerated the responsibilities of local labor during the early stages of the conflict. Without this crucial support firmly in place, military authorities had difficulty taking advantage of the technologically advanced Saudi infrastructure. A report presented to Congress on the conduct of the Gulf War stated, "Saudi Arabian infrastructure—especially airfields and ports—was well developed. … Ramp space at these airfields was … limited, as were ground refueling facilities. … These constraints highlight several key points. *First, it is imperative to have pre-existing host nation support arrangements* to ensure access to arrival facilities whenever possible. A second factor illustrated by air deployment is that there were difficulties in servicing aircraft, even though Saudi Arabia has some of the most up-to-date facilities in the world. These difficulties would certainly be exacerbated were there a requirement to deploy a similar sized force to less developed airfields."

Fortunately, the Korean theater has a solid, functional Wartime Host Nation Support Program. Yet, there are limitations to the level of support that the South Korean government is capable of providing.

Wartime Host Nation Support

Wartime host nation support is authorized under the Wartime Host Nation Support Umbrella Agreement signed by the United States and the ROK in 1991. The ROK recognizes the need for an American presence to maintain stability in the Far East. Furthermore, the United States wishes to maintain a logistics infrastructure in this part of the world in the event hostilities resume.

Bilateral agreements with Korea prevent any misunderstandings over wartime host nation support requirements needed to support mobilization. The defense of South Korea would be severely limited without support from the Korean government. Under the provisions outlined in the 2001 Provisional Wartime Host Nation Support Plan, the Korean government agreed to furnish the items listed in the accompanying table.

The ROK recently emerged from an economic crisis, and its economy is still fragile. Placing too great a demand on the South Korean economy to support U.S. forces—at the expense of consumer products and the needs of its own military forces—could potentially strain the Korean market and, consequently, trigger an adverse financial reaction.

The current level of support may not be enough to fully sustain U.S. needs in the event of a contingency. But, considering the principle of velocity management and the concept of just-in-time delivery, it certainly helps. Furthermore, it is believed that the level of support will substantially increase in the event of hostilities.

Item	Number
Vehicles (including tractor trailers)	5,105
Personnel	23,733
Facilities and land (square meters)	24.2 million
Construction companies	17
Construction equipment	1,296
Material handling equipment (forklifts, etc.)	124
Water (liters per day)	195.4 thousand
Ships	59
Aircraft	10

Determining the level of wartime host nation support and the items to be provided is a 2-year process. U.S. requirements are forwarded to the Korean government in the even years (June 2002). The Korean government publishes the approved plan in the odd years (July/August 2003). The plan goes into effect on the first day of the next even year (January 2004).

HQ, USFK maintains a comprehensive database that delineates the support that each Service requested and the level of support provided by the South Korean government. Six months is typically expended coordinating and consolidating U.S. wartime requirements at HQ, USFK. Afterwards, wartime host nation support requirements usually take between 12-14 months of processing time to go through Korean channels. Timelines to request assistance through the Wartime Host Nation Support Program are firmly established. U.S. units must be ready to submit their requirements in a timely fashion. There is a mechanism in place to accommodate out-of-cycle requests for wartime host nation support, but this process is extremely cumbersome.

Conclusion

The Wartime Host Nation Support Program is a viable, key force enabler to satisfy logistical needs in the Korean theater. It permits the optimization of transportation assets and cargo space. South Korea has traditionally provided vehicles, personnel, facilities, provisions, and equipment to help U.S. forces repel a sudden North Korean invasion. Learning from past wartime experiences, HQ, USFK will continue to rehearse and refine its Wartime Host Nation Support Program to meet current and future challenges.

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IMPLEMENTING EVOLUTIONARY ACQUISITIONS

LTC Jesse M. Stone

Introduction

The U.S. Army is in the process of a sweeping revolution not seen since World War II. According to *Army Magazine's Hooah Guide to Army Digitalization*, the foundation for the new revolution in military affairs is the shift away from producing and employing individual platforms or systems toward integrating all platforms and systems into a single networked grid. This grid continuously monitors changing circumstances and facilitates its own success or survival. This so-called system-of-systems concept is driving the development and design of the Army's Objective Force.

The Objective Force will be an offensively oriented, combined-arms, multidimensional maneuver force that will employ revolutionary operational concepts enabled by new technology. The Army relies on weapons technology breakthroughs to provide greater tactical, operational, and strategic lethality from smaller, more agile forces. The Army's vision involves leveraging state-of-the-art technology to create network-centric systems. These systems will allow commanders to dominate the battlefield through better control, improved situational awareness, and enhanced abilities to target and engage the enemy seamlessly with the most effective weapon systems available.

The problem with this scenario is that DOD and the Army take too long to incorporate advanced technologies into weapon systems using the traditional program model structure. This is especially true in the information technology (IT) area where commercial market demand drives desperately needed innovations that are necessary to successfully implement the Objective Force's system-of-systems concept. This article illustrates how accelerating the use and implementation of the evolutionary approach will facilitate the Army's transformation and maintain its technological advantage over future adversaries.

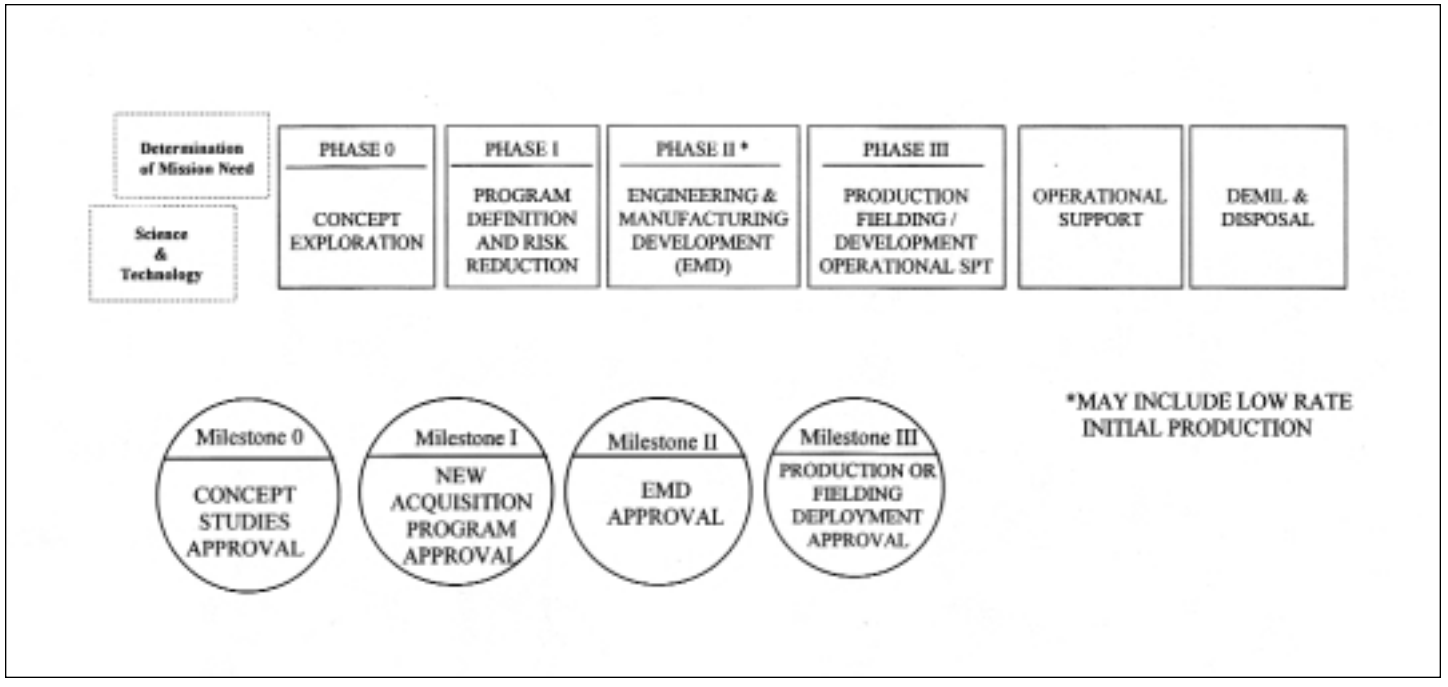

Figure 1.
DOD Traditional Program Structure Model before October 2000

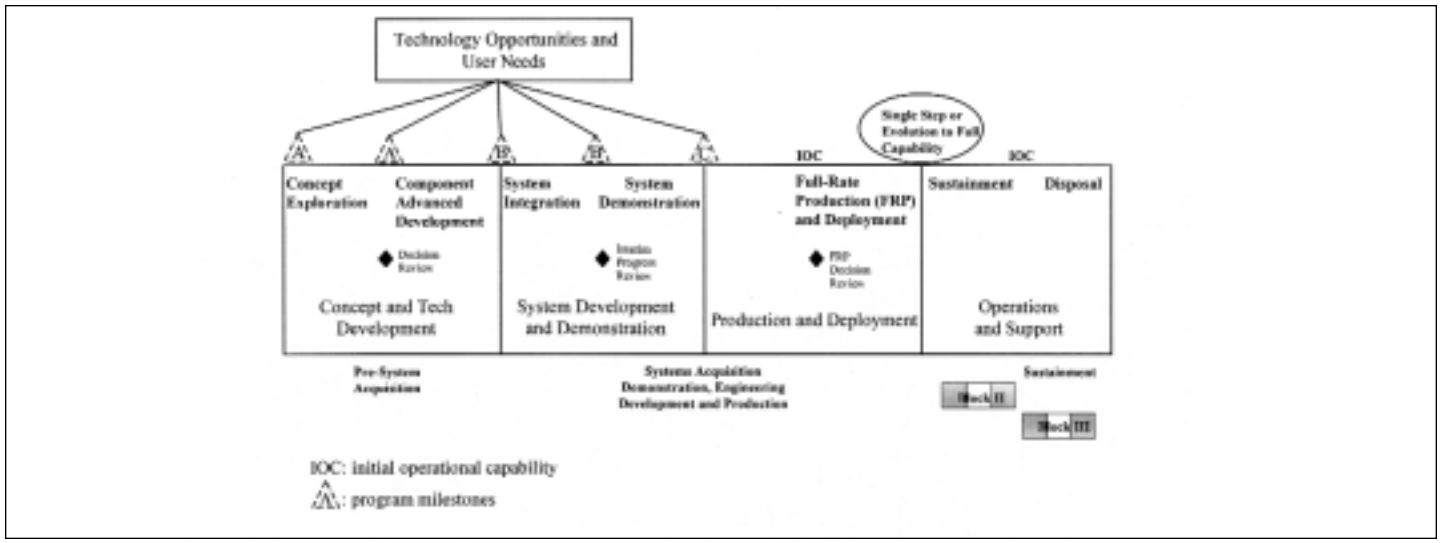

Figure 2.
Defense Acquisition Model as of October 2000

Program Structure

The DOD Deskbook defines "program structure" as "the phases and milestone decision points established for a program." Phases and milestone decision points facilitate the orderly translation of broadly stated mission needs into system-specific performance requirements and a stable design that can be efficiently produced. Program structure provides the context within which a system is designed, developed, and deployed during its life cycle. Program structure is a fundamental building block of the program's acquisition strategy. Use of a particular program structure is one of the most important decisions a program manager (PM) will make because it has a lasting impact on the program throughout its life cycle.

Generally, government PMs use one of four basic types of program structure models to achieve their program objectives: grand design, incremental, evolutionary, or traditional. Prior to October 2000, the traditional program structure model represented DOD's typical approach to major acquisition development programs. Figure 1 shows the traditional program structure model that was depicted throughout the 1990s in DoD Directive 5000.1. Figure 2 depicts the new evolutionary acquisition model.

In October 2000, a major revision to DoD Directive 5000 gave preference to evolutionary acquisition strategies over the traditional acquisition model. Evolutionary acquisition strategies define, develop, and produce/deploy an initial, militarily useful capability based on proven technologies and time-phased requirements, projected threat assessments, and demonstrated manufacturing capabilities.

Evolutionary Acquisitions

According to the updated DoD Directive 5000.2, evolutionary acquisition strategies were given preference over other models to accelerate the incorporation of commercial technology and shorten the acquisition cycle. Actually, the current pace of commercial technology advancement in many sectors exceeds the government-sponsored efforts. Current commercial development cycle times are less than 3-4 years versus 8-10 years for DOD-sponsored development. Taking 8 to 12 years to develop a new weapon system using the traditional model is impractical given the current global rate of technological change. Clearly, the traditional DOD acquisition model cannot assimilate technological changes into weapon systems fast enough to guarantee that our soldiers will maintain the technological overmatch against our future adversaries. In addition, an evolutionary approach to weapon system development acknowledges the difficulty in predicting future technology advancements as well as future warfighter requirements 10 to 15 years into the future.

To its credit, the Army recently reorganized its Science and Technology Program to accelerate and improve the integration of new technology into Army weapon systems. However, it is unlikely that DOD will greatly influence the majority of future technological advances, particularly in the area of information technology, on which the system-of-systems concept will rely. In this area, commercial sector technological advancements will outpace DOD's developmental efforts.

Rapidly integrating state-of-the-art technology into the Army's new network-centric systems is a formidable task, but keeping the systems current with modern technology is the greatest challenge. Adding mature technology capabilities through block upgrades is the best way to address the changing needs of

our warfighters. Today, these changes are dictated by an uncertain enemy and an unclear picture of what future capabilities new technologies may bring.

Shortening acquisition cycles and rapidly incorporating and refreshing new technology into our weapon systems are not the only reasons for accelerating the use of evolutionary acquisition strategies. Other important reasons are to increase the number of contractors willing to do business with DOD and to address the problem of parts obsolescence.

Expanding DOD Contractors

Until the latter part of the 20th century, the government market dominated the technology marketplace. Using competition and research and development funding, the government pushed companies to achieve technological breakthroughs, then allowed them to commercialize the technology over time. In recent years, however, reductions in Defense budgets, coupled with the growing demand for "high-tech" products, made the commercial marketplace more attractive to technology companies. As a result, the number of major technology companies willing to do business with DOD on a large scale has declined at an alarming rate. In fact, the Defense industrial base of major DOD technology companies has decreased from more than 30 contractors to 4.

The diminishing U.S. Defense industry may not be bad. According to then Deputy Secretary of Defense John J. Hamre, "DOD wants nothing less than to dissolve the infamous 'military-industrial complex' that has existed as a parallel universe to civilian industry since the end of World War II. We don't want a defense industrial base anymore. We just want an American industrial base."

While this sounds good, to achieve this goal the military must change its acquisition process. The government must receive current technology from commercial production lines instead of requiring industry to fabricate specialized weapon system components based on 5-year-old technology that was state-of-the-art during the acquisition design phase. Evolutionary acquisition strategies seek to use mature, commercially available technologies. Using mature commercial technology in weapon systems will make future DOD business more attractive to industry, resulting in greater competition and more technological options available to DOD customers.

Parts Obsolescence

The second reason for accelerating an evolutionary acquisition methodology is to address the parts obsolescence problems afflicting most DOD weapon systems. The latest high-performance, commercial off-the-shelf (COTS) technologies become obsolete in 18 months or less, while weapon systems still have 5 to 10 years in design cycles and service life spans of 20 to 30 years. The military's problem is exacerbated by the fact that crucial semiconductors, transistors, diodes, capacitors, and circuits that keep technologies running smoothly are wearing out. Many manufacturers that produced them have abandoned the military to focus on other consumer markets.

Parts obsolescence is a PM's nightmare. The Army's M1 tank has some significant obsolescence issues that may require redesigning the tank to address the problems. Another example is the Army's FireFinder Radar System. In March 2001, the Army was forced to upgrade FireFinder's COTS circuit boards because parts on the old boards were obsolete. COL Michael Cox, Deputy Program Director, Joint Tactical Radio System stated it best when he wrote, "The dramatic pace of advances in communications technology coupled with the military's traditionally long system-acquisition cycles has resulted in technological obsolescence of new systems before they are fielded. Costs have prohibited retrofitting old systems with improved capabilities, resulting in reduced military readiness."

Failure to accelerate the use of evolutionary acquisition strategies could mean sending our soldiers into harm's way with obsolete technology, which could cost soldiers' lives in addition to extra time and money to manage the problem. Moreover, the Army's vision of rapidly fielding the Objective Force cannot be achieved without accelerating the use of evolutionary strategies.

Conclusion

The rapid technological change confronting the Army mandates that we change the way we do business. In the long run, we cannot continue to design and produce weapon systems as we have in the past and expect our soldiers to maintain a technological advantage. Moreover, if we do not change the way we do business, we will not be able to sustain our weapon systems given the growing problems of parts obsolescence and the shrinking number of DOD contractors. Evolutionary acquisition strategies will not completely solve all of these problems. However, it is a step in the right direction and should be aggressively used by PMs whenever possible.

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'Is It Live Or Is It Memorex?'

THE TUAV INITIAL OPERATIONAL TEST

MAJ Michael T. Nelson and
Jimmie S. Smith

Introduction

Ever-increasing technological advances are improving the ground commander's situational awareness (SA) of the battlefield. Systems such as the Joint Surveillance Targeting Attack Radar System (JSTARS), Tactical Exploitation of National Capabilities (TENCAP), Army Reconnaissance Low, Guardrail, Quickfix, and Ground Surveillance Radar (GSR) provide senior leaders with unprecedented enemy SA. The integration of these systems with the Army's digitalization initiative helps further take the fog out of war, bringing the battlefield into better focus.

Commanders of the 4th Infantry, the Army's first digitized division, have become accustomed to always knowing where their units are on the battlefield, as well as having a good idea of the strength, location, and activity of the enemy. However, a shortfall was identified in the reconnaissance, intelligence, surveillance, and target acquisition (RISTA) assets available at the maneuver brigade level. It was determined that brigade commanders needed an aerial tool that provides day and night coverage of their area of interest (AOI) for extended periods of time. This tool should enhance the commander's enemy SA, target acquisition, and battle-damage assessment capabilities without increasing the number of soldiers that must be out in front and in harm's way. Hence, the Tactical Unmanned Aerial Vehicle (TUAV) Program was established as an Army acquisition category II program with Office of the Secretary of Defense oversight.

The Army's objective is to field an unmanned aerial vehicle system to the ground maneuver brigade commanders as quickly as possible. To accomplish this task, the TUAV Initial Operational Test (IOT) was conducted April 9-May 3, 2002. The U.S. Army Operational Test Command (USAOTC) mission was to plan and execute the test to collect and provide the data necessary to support the evaluation of the effectiveness, survivability, and suitability of a production-representative Block I system under realistic operational conditions.

The challenge during the IOT was to create a realistic operational environment at brigade level without incurring the costs and other test limitations associated with using the real intelligence sensors and large numbers of soldiers necessary to generate the tactical situation under which the brigade would normally operate. This article describes how USAOTC used modeling and simulation (M&S) to address this challenge.

Initial Operational Test

The approved scenario for this test called for two U.S. Army Brigade Combat Teams, working in conjunction with a host nation brigade, to provide stability to the newly formed autonomous province of Kazar, which had broken away from the country of Gordo to its north. The main threat within the test brigade's AOI would be low-level insurgency operations sponsored by the government of Gordo. These insurgency operations would include terrorist attacks, small-unit guerrilla activities, and ethnic cleansing. However, during the test, ethnic hostilities with Gordo would increase, and Gordo would begin to shift large numbers of its combat forces toward its southern border with Kazar in an apparent threat to retake Kazar by force. Once defined, the scenario was built in Janus, which was the entity-based combat simulation chosen to drive the test.

The final phase of the IOT focused on the TUAV's contribution to solving the brigade's RISTA requirements associated with the above scenario. The IOT was conducted in a command post exercise environment using a full brigade staff deployed in their tactical operations center (TOC). A battalion response cell, manned by player personnel, stimulated the brigade's command and control systems by conducting security and stability operations on battalion-level Janus workstations and reporting the conduct of those operations to the brigade through their Army Battle Command Systems.

The Extended Air Defense Simulation (EADSIM) replicated the friendly or blue force (BLUEFOR) intelligence sensors such as GSR, Quickfix, Guardrail, JSTARS, and TENCAP. Through its interface with Janus, EADSIM also provided BLUEFOR position locations to the Enhanced Tactical Simulation Interface Unit (ETSIU). In turn, ETSIU converted the sensor and position location data generated by EADSIM into the standard message formats required for the brigade's Army Battle Command Systems. The division staff manned a white cell that provided command, control, communications, and intelligence (C3I) feeds down to the brigade TOC to support cross-cueing of sensors. Through its role as the test unit's higher headquarters, the white cell also assisted the test team in ensuring that the test objectives were met by sending down scripted intelligence messages, managing the division's airspace, and issuing operations and fragmentary orders to the brigade.

A combination of live and virtual targets was used to portray the opposing force (OPFOR) during the IOT. The live targets operated within the brigade's AOI and consisted of a mixture of 30 tracked and up to 60 wheeled vehicles. The live-target vehicles were equipped with the Mobile Automated Instrumentation Suite (MAIS), which provided protocol data units (PDUs) on each activated target vehicle to Janus. The PDUs told Janus what the targets were and where they were located. Janus could then select the appropriate icon to represent each target and post them on the map display within the simulation in accordance with their actual field locations.

Once the live-target vehicles were depicted in Janus, the BLUEFOR sensors being simulated in EADSIM were able to detect them. As the live target vehicles moved around, MAIS kept Janus updated on the current locations of the vehicles by sending out additional PDUs. Virtual targets, also detectable by the EADSIM sensors, were moved in and out of the brigade's AOI in accordance with the tactical scenario.

As virtual targets were moved into the brigade's AOI, they were seamlessly transitioned into live targets. This was accomplished by moving the virtual targets to the map locations, within the simulation, that corresponded with the actual field locations of the live targets that were to take their place. As the virtual targets arrived at their designated transition grid coordinates, they were placed in Janus' "hide boxes," which prevented them from being seen by EADSIM, and the MAIS instrumentation on the corresponding live-target vehicles was immediately activated.

To add even more realism, two live SA-9s, one live SA-8, and one live TAR-75 radar were also employed as targets. Although these real-threat weapon systems were not MAIS-equipped, they were still portrayed in the simulation by simply creating Janus entities to replicate them and manually inputting their actual locations into the simulation. Therefore, it did not matter whether the employment of the TUAV was cued by the movement of virtual OPFOR vehicles detected by a simulated JSTARS or by the radar signature of a virtual TAR-75 detected by a simulated Guardrail.

When the TUAV arrived on station, it found live OPFOR vehicles or, in the second case, an actual TAR-75 radar to report back to the brigade TOC. This gave the test officer the ability to use the intelligence generated by the virtual sensors, which he controlled to stimulate, by means of the white cell, the brigade's employment of the TUAV while maintaining complete operational realism. This was accomplished to the point where a test player soldier commented to visiting GEN Paul J. Kern, Commanding General, Army Materiel Command, "First, I was receiving live feeds, then I flipped a switch, and I was receiving simulated feeds. I could tell no difference between the live and the simulated feeds."

Simulation And Stimulation

The primary purpose of simulation and stimulation is to provide operational realism when using real assets is either unfeasible or impractical. To create the above operational environment using only live assets would have been extremely difficult, if not impossible. It would have also been cost-prohibitive. However, through the use of M&S, USAOTC created a synthetic operational environment that supplied all the C3I feeds necessary to provide realistic stresses on the brigade commander and his staff. These stresses forced the brigade staff to function as if they were in a real combat environment instead of possibly fixating on the TUAV.

The simulation and stimulation architecture also gave the brigade commander and his staff a doctrinally correct and combat realistic operational environment in which to employ the system-under-test (SUT). In other words, the operational environment created by the simulation and stimulation supported using the TUAV as an integrated part of the commander's concept of operation to accomplish a real-world mission instead of as a tool used in isolation.

Conclusion

To accommodate the operational test requirements for the Future Combat Systems and other new developments, USAOTC is developing a digitized synthetic network-centric battlefield environment. Known as the OTC Analytic Simulation and Instrumentation Suite (OASIS), this suite of models, simulations, and instrumentation (MSI) systems and analytic software will enable the testing of any system or platform within the overall battlefield environment. Specific near-term examples of OASIS initiatives are the Intelligence Modeling and Simulation for Evaluation (IMASE) and the Extensible, C3I Instrumentation System, Fire Support Application (ExCIS-FSA).

IMASE is projected to provide the robust, high-fidelity, multiple classification level, live, virtual, and constructive threat environment required for future systems testing. A Tactical Simulation-Operational Test modernization, IMASE will use MSI to automate scenario generation and SUT performance scoring. ExCIS-FSA, a fire support automated test system modernization effort, will provide the comprehensive and high-fidelity instrumentation and data collection capability required for testing fire support systems.

While OASIS looks to the future, USAOTC's near-term goal is to improve upon the M&S successes realized during this IOT so that warfighters involved in upcoming operational tests will have a harder time determining whether it is "live or Memorex."

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ONE DEPLOYED SOLDIER'S PERSPECTIVE ON ARMY KNOWLEDGE ONLINE

MAJ Ed Burke

Changing a duty station is one of the few constants in today's Army. Whether a duty-station move, an exercise, or a deployment, each implies a requirement to gather one's things, package them for movement, and drag them to a new location. Finding available space is often a top consideration. For that reason, highly mobile soldiers regularly store e-mail addresses, frequently used Internet links, online references, and important documents on floppy disks. Unfortunately, these "digits on disks" are often left behind at an office computer while soldiers are at a training center rotation, left on a disk at home while soldiers are deploying, or saved on a Zip disk and tossed in a sealed box scheduled to arrive at a soldier's new quarters many weeks later. There is, however, a way to circumvent some of these challenges through a Web site most soldiers have already visited and about which all soldiers should know.

I'm referring to Army Knowledge Online (AKO) located at **http://www.us.army.mil**. AKO is the Army's solution to keeping important information readily available. Soldiers can use AKO to access e-mail, contact Army sites, and search the World Wide Web from its home page. This gateway to the Internet is easily accessible, easy to use, and travels well. It also largely resolves the problem of not having access to important data.

Having documents available when needed is a challenge, especially when deployed. As mentioned earlier, we typically save those needed files to a disk. Inevitably, one or more of those disks is misplaced or becomes corrupted. While in Afghanistan, I found that using floppy disks was particularly risky. The dust rendered most floppies useless after only a few days. Hard drives were also susceptible to corruption, as I learned firsthand. In a remote location, dust takes an incredible toll on automation equipment.

On AKO, a tab to the Knowledge Collaboration Center (KCC) allows soldiers to post documents to secure remote servers, thus eliminating the need to save files locally to a disk. Providing a place to share files with other AKO users ensured that I could keep important files like this article in a safe place that was accessible whenever and wherever I needed it. Storing files on a server that is always archived reduces the threat of lost or corrupted data. Also, by posting articles to the KCC, I was able to gather the input of others as I sought assistance and effectively ended the need to e-mail multiple versions of the text to multiple addresses.

As I deployed to Afghanistan, I soon came to realize that I had merely scratched the surface of AKO's potential. I found its ability to support communication one of its greatest strengths because AKO assists with the continuity soldiers lose when they pull up roots. In my recent experience, I learned I could share my AKO e-mail address with others to allow friends and co-workers to stay in touch long after I departed an old post.

Another useful benefit was the ability to set up AKO to automatically forward e-mails to other e-mail accounts. Associates who had my AKO address were able to drop a line to my AKO account and via the automatic forwarding feature, I received their messages at any address I chose. This was especially helpful because I find it more convenient to check a work e-mail account without going through the Internet. In effect, AKO provides a permanent e-mail address that will not change as a soldier's geographical location changes.

Digging a little deeper into AKO's capability, one can find a wealth of information. Without changing a single setting from the AKO home page, you can access a number of Army Web sites. I found the channels for Armywide announcements, Army news, and frequently used links most helpful. Each is updated regularly and linked directly to other sites of interest for most Army users. These and many other AKO features provide a quick way of staying current and relevant on the latest Army, DOD, and world information. Capitalizing on this service often seemed a well-suited replacement for newspapers that, if they arrived at all, lagged behind by days or weeks during deployment.

AKO also incorporates the ability to establish and save links to other Web sites. It is not, as some might believe, limited to Army links. Soldiers may have a preference for a specific search engine, a unit Web site, a news Web site, or an entertainment site and can build these links into personalized pages. A distinguishing characteristic, however, is that the links are not saved to the computer. By saving them to the AKO server instead of to a local hard drive, an individual has the links available at home, on temporary duty, or at a public computer. Some may even be able to log on in the field or while deployed.

Because not every soldier has direct access to a networked computer, access to AKO has yet to reach every level of the Army. However, I found tremendous potential for AKO's use by deployed soldiers. Its compilation of Army links puts everything from forms to field manuals and regulations just a few clicks away, reducing the number of hard-copy versions of those documents that units need to transport. AKO Chat provides soldiers an opportunity to work through issues in an informal, real-time fashion.

Without a doubt, AKO is a useful tool. Initiatives for future improvements, increasing interest from soldiers, and support from senior leadership will likely drive AKO forward. As these improvements occur and as AKO continues to develop, it will take center stage as a critical force multiplier for the Army. Army leaders need to embrace AKO, encourage others to use it, and work to make it better. The Army's soldiers need to just log on, where they'll find a world of possibilities to make their jobs easier.

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INTERIM BRIGADE COMBAT TEAM: TRAINING TOC OPERATORS

Dr. Franklin L. Moses, Dr. Brooke Schaab,
and LTC Peter B. Hayes

Introduction

What lessons can be learned from training Tactical Operations Center (TOC) personnel for the 2001-02 Interim Brigade Combat Team (IBCT) (now called the Stryker Brigade Combat Team)? To answer that question, scientists from the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI), with assistance from a contractor team from TRW, observed the IBCT this past year at Fort Lewis, WA. They used questionnaires and interviews as their observation tools. The goal was to develop a basis for shortening the learning curve for future units transitioning to current digital systems or to future battle command systems. Such systems can horizontally and vertically link soldiers through networks of computers. In particular, ARI looked at lessons learned related to operator training, key personnel, and command involvement for digital systems.

Background

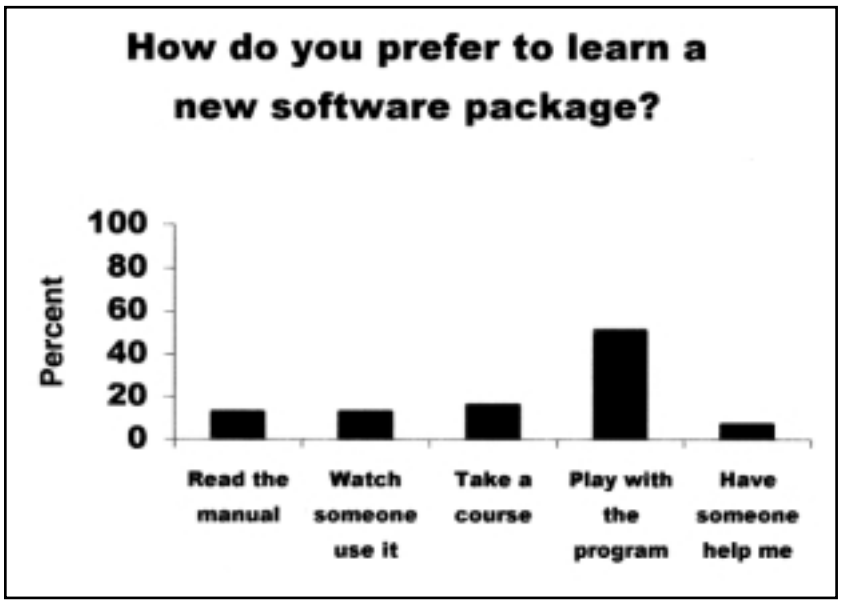
The Army initially established the IBCT at Fort Lewis, WA, to test new concepts and ideas for future warfare as part of the Army's transformation. The IBCT developed and implemented concepts for the application of enhanced combat power using lighter, more agile combat forces. These included digital system enhancements to the command, control, communications, computers, and intelligence network. The IBCT incorporates new concepts regarding digitization of the battlefield and trains soldiers to apply these concepts, the associated equipment, and tools.

COL Steven L. Bailey, Commander, 3rd Brigade (IBCT), 2nd Infantry Division emphasized how his unit leverages the new digital system capabilities in unanticipated ways. Accurate troop location allows him, as a commander, to move beyond "know where I am, know where my buddies are, and know where the enemy is located." In comparison to conventional systems, digital systems allow more time to develop plans, formulate alternative courses of action, and consider what's best to do. There are also notable changes in field operations according to LTC Leonard McWherter, 1st Battalion, 23rd Infantry Regiment. He reports that soldiers, starting from different locations with no radio contact, can coordinate movements and arrive at a designated site at the same time. Lessons learned as part of these and other experiences with digitization, summarized in the next three sections, provide a glimpse of how the Army can improve training now and in the future.

Operator Training

Through new equipment training, soldiers should be given every opportunity to work with digital systems on realistic drills after a brief introduction. Immediate hands-on experience, coupled with knowledgeable coaching, will enable soldiers to move further along the learning curve and to assume greater duties and responsibilities. "Practice, practice, practice" is essential during tactical exercises. The best training for digital systems is done on the actual equipment in context instead of in a separate classroom environment.

Bailey devised a training plan that routinely gave his soldiers the opportunity to practice in tactical exercises. Training was difficult because system operators, often the least experienced enlisted soldiers, needed to learn basic operations and how to hook up hardware, to use system upgrades, and to troubleshoot malfunctions. In addition, they needed skills to rapidly handle large amounts of data and to coordinate their work with operators of other digital systems. Bailey stated that soldiers must know how to make digital systems "do what's needed," which is



well beyond the focus of new equipment training on the basics of making the system work. With Bailey's approach, new training problems appeared and were highlighted for added practice.

Because of new operating procedures, the IBCT senior leadership had to deal with the frustrations of faulty systems and undertrained personnel. For now, soldiers must learn problem-solving techniques so that short-term, work-around fixes can be made before long-term solutions become available. Individual initiative plus trial and error are important factors in finding work-arounds that can become part of the IBCT procedures.

The enlisted soldiers responsible for day-to-day system operations in the TOC received more detailed training than a staff officer did, but not all received the same levels of training. Therefore, some digital system skills were acquired and retained better than others. Operators become more capable and experienced with increased training time spent routinely in field exercises or simulations. Thus, training was enhanced by after action reviews (AARs) that emphasized problems, work-around solutions, and shared learning. Additionally, these AARs were stored for soldiers to review in common files of lessons learned.

Key Personnel

Information flow to the commander through the digital system is dependent on the operator. Thus, it was necessary to develop and implement a cross-training plan to build operator proficiency throughout the breadth and depth of the TOC personnel. Operators were encouraged to teach one another so they could learn system functions and tasks other than their own.

Commanders within the IBCT came to view the well-trained digital system operators as key personnel. As the junior enlisted operators gained system familiarity and understood the terminology, they performed tasks that a soldier normally would be expected to perform only after years of experience. They learned tactical language, schemes of maneuver, missions, military symbols, and graphics that ordinarily are introduced during attendance at an Advanced Noncommissioned Officers Course. This sparked one battalion commander to comment that he could replace a Scout platoon leader or any line company platoon sergeant in a heartbeat, but he couldn't replace Specialist X—at least not anytime soon.

The value of trained digital system operators became increasingly important as the IBCT assimilated system upgrades and had to train replacement personnel. Having new equipment training routinely after each upgrade was impractical because of the frequency of changes. System operators familiar with prior versions quickly determined how the upgrades could be used during TOC operations. In fact, two-thirds of operators responding to a survey indicated that they preferred to learn by hands-on exploration of a software package (see accompanying figure). Nevertheless, peer-to-peer teaching by experienced operators can help shorten the learning cycle for new replacements.

Another interesting observation was that soldiers who gained confidence and knowledge on a system began observing and interacting with their peers. That facilitated the learning of other interdependent digital systems and applications. This teamwork helped the IBCT achieve horizontal team integration as the soldiers became multifunctional.

Command Involvement

A commander's personal interest in digital system training for TOC operations reinforces its importance and assures that soldiers attend. Soldiers at all levels focus on what is important to the commander, an essential ingredient of digital system operations that must integrate across systems and specialties. The commander must place similar emphasis on digital systems and on combat operations training.

More so than with other training, the commander's support and personal involvement was critical to the soldiers receiving quality digital

training. It was also important for soldiers to train together and interact with one another's systems. With the commander involved, staff officers made it a priority for their soldiers to train. The result was greater operational proficiency as soldiers were better able to exploit systems' capabilities for TOC operations. To ensure everyone understood the vital importance of digital systems for operations, one commander even moved his office into the TOC and performed routine business from there.

Soldiers must manage the flow of information in digital systems as a vital part of enhancing the lethality of the IBCT as a multimission, quickly deployable unit.

Improved Systems Training

Lessons learned to date suggest many training questions about how the Army may better prepare to operate in a digital systems environment. For example:

Operator Training

• Should digital system proficiency be translated into some type of common skill?

• How much adaptability and flexibility is essential for midlevel and junior-level soldiers?

• How should the Army assess digital skill proficiency, adaptability, and flexibility?

Key Personnel

• What knowledge do trainers or facilitators need to be effective with digital systems?

• What should be the performance standards for operating digital systems and networks?

• How much individual initiative and responsibility must soldiers take to learn and sustain effective digital system skills?

Command Involvement

• What modifications should the commander make in unit training to support digital systems?

Conclusion

Lessons from the IBCT reinforce and augment what we have learned from the 4th Infantry Division at Fort Hood, TX, and from earlier Army Warfighter Experiments. Soldiers must manage the flow of information in digital systems as a vital part of enhancing the lethality of the IBCT as a multimission, quickly deployable unit.

The first IBCT made excellent progress toward training technically proficient soldiers to be ready to fight. Responsibility was pushed downward to the junior enlisted soldier, who learned functions that normally would be associated with a soldier at a higher level. Consequently, soldiers proficient in digital systems became critical members of the unit. Soldiers found that they trained themselves and their peers on the use of system upgrades. There was less emphasis on rank and occupational specialty and more emphasis on function, adaptability, and collaboration within a digital system network. Leading all this was the commander, who emphasized training on the digital system within the TOC with the same intensity previously reserved for combat operations training.

Many questions are yet to be answered and many other questions are yet to be asked, but the IBCT points the Army in the right direction. Such lessons learned from training digital systems should be applied more broadly throughout the Army as it fields the Future Combat Systems and transitions to the future force.

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INTEGRATING PC GAMES INTO ADVANCED DISTRIBUTED LEARNING ENVIRONMENTS

William Y. Pike

Introduction

PC-based games are developing a sizable following as military training tools. All Services use commercial off-the-shelf (COTS) games as well as custom games and simulated missions developed with PC engines. However, the value of PC games as an advanced distributed learning (ADL) resource is still largely untapped because they are not designed for ADL environments; they also lack consistent military training concepts and provide minimum feedback to players about performance quality.

DOD's vision for the ADL initiative is to "provide access to the highest quality education and training, tailored to individual needs, delivered cost-effectively, anytime and anywhere." The vision for The Army Distance Learning Program is similar: "Improve and sustain readiness by delivering standardized individual, collective, and self-development training to soldiers and units anywhere anytime using multiple delivery means and technologies."

Distance learning, for the most part, implies courseware. To ensure a student has grasped the learning objectives presented by the courseware, some type of assessment tool must be used. Typically, these assessments are multiple-choice, true/false, matching, or short answer fill-in-the-blank tests. While these tests are appropriate for most academic courses, they miss the mark for assessing a student's ability to perform according to military principles and doctrine. COTS games provide, at best, "accidental learning," i.e., there is usually no attempt to ensure a game player is using correct principles: shooting bad guys scores points. Players can win in most first-person shooter games regardless of whether they apply military doctrine and principles.

To improve games for Army training applications, the U.S. Army Materiel Command's (AMC's) Research, Development and Engineering Command's (provisional) Simulation Technology Center is using ADL technology for the integration of courseware with PC gaming technology. The AMC's Research, Development and Engineering Command (provisional) is currently working to produce a learning tool in which the student completes a section of courseware and is assessed via a game-based simulation. As PC gaming technology continues to evolve, distance learning students will reap the benefits of more immersive environments. These engaging environments may have the potential to increase the retention of the knowledge and skills gained through distance learning. Currently, an Army Science and Technology Objective led by AMC's Research, Development and Engineering Command (provisional), with the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) as a partner, is intended to reduce refresher training by 25 percent through "overlearning." Overlearning involves continued training after a student has demonstrated proficiency on a task. In this partnership, AMC's Research, Development and Engineering Command (provisional) develops the special gaming technologies and ARI assesses their success as distance learning tools to enhance soldier performance.

The integration of courseware/PC games with an intelligent tutoring system (ITS) and a learning management system (LMS) results in a very robust environment that can build a profile of a student's weak and strong points. In general terms, an ITS provides the expertise of an instructor to each distributed-learning student. An LMS monitors the overall distributed learning process, from student registration to class participation to end-of-course assessment. The student profile can be used for a variety of purposes such as:

- Developing future game-based training scenarios;
- Assisting onsite instructors in a "blended," or mixed delivery, learning environment to tailor an individual's course of instruction to improve weak areas; and
- Building a "virtual team member" that allows the student's behavior to be modeled in an online exercise even if the student is not available.

Illustrative Scenario

To illustrate these concepts, assume a freshly commissioned Army second lieutenant in the infantry branch is reporting to the Infantry Officers' Basic Course (IOBC) at Fort Benning, GA. As a prerequisite, the lieutenant must complete a distance learning course as an introduction to the principles taught at IOBC. As the lieutenant proceeds through the online course, one particular section causes problems: movement through urbanized terrain. According to Army Field Manual 90-10, *Military Operations*

On Urbanized Terrain (MOUT), there are six principles to consider:

- Using covered routes;
- Moving only after defensive fires have been suppressed or obscured;
- Moving at night or during other periods of reduced visibility;
- Selecting routes that will not mask friendly suppressive fires;
- Crossing open areas (streets, space between buildings) rapidly under the concealment of smoke and suppressive fires provided by overwatching forces; and
- Moving on rooftops that are not covered by enemy direct fires.

Using the game-based simulation, whose controls are very similar to most first-person shooter games, the lieutenant masters four of the principles. However, by consistently choosing routes that mask the team's suppressive fire, the lieutenant fails principle 4, and, by extension, principle 5, more often than not. An ITS, akin to an online coach, delivers occasional hints by a computer-controlled avatar—a senior noncommissioned officer (NCO). The NCO warns the lieutenant against choosing the wrong route. Subsequent scenarios in the online game will involve selecting good routes to enforce the weak principles and build the required knowledge and skills.

Additionally, as part of an optional graduation exercise, distance learning students may participate in an online, multiplayer scenario that uses the same game as the courseware's assessment tool. If an individual is unable to participate, the game can create a virtual team member using the existing profile it has developed. Over time, an extensive selection of student profiles can be built and used to create an entire virtual team for multiuser exercises.

Upon the lieutenant's arrival at Fort Benning, the battalion commander checks the learning management system to see how the lieutenant progressed through the Web-based course. The commander notices a weakness in the selection of routes through urbanized terrain. Reviewing the records of other incoming students, he notices that three other students did not fare well on that principle. The battalion commander puts the four lieutenants together in a "study group" with an instructor who will work on their weak areas.

The Command's Role

This scenario is an example of how AMC's Research, Development and Engineering Command (provisional) intends to leverage the power of learning management systems, intelligent tutoring systems, handheld computers, PC-based games, and engaging courseware to develop a Web-based training environment that is available anytime, anywhere, and tailorable to the individual student. In the scenario, the ITS picks up on areas in which the student is weak, provides hints, and even incorporates the weak points in subsequent scenarios to ensure the student continues to see those principles that he or she has not mastered. The game-based simulation passes assessment results back to the LMS, which builds a profile of the student. This profile is used to build a virtual computer-controlled character for multiplayer game purposes. However, it should be noted that this particular research does not suggest that Web-based simulation should replace live training. Instead, we are advocating that Web-based simulation should augment live training so students can "hit the ground running" to make their live training more effective and efficient.

Challenges

While the concepts presented in this article are all individually achievable, integrating a game engine, courseware, LMS, and ITS together into one cohesive environment is a considerable challenge, financially if not technically. COTS games, as a whole, are not an effective option for assessment tools as they tend to reward players solely for shooting an opposing player. Thus, integrators and content developers must develop the proper mix of tools to complement the COTS games. Also, while ITSs are not new, they are expensive and somewhat limited in scope. They typically consider only a limited number of correct solutions and will mentor students if they veer off the "textbook" solution.

Integrating learning management systems into the target environment appears to be the easiest of the tasks; LMSs should, in theory, be able to accept assessment results from a game as easily as they do from a traditional test. Finally, the issue of conformance with the Sharable Content Object Reference Model (SCORM), an ADL standard intended to aid instructional system developers in sharing educational content across different LMS platforms, poses a challenge. Although the "C" in SCORM has changed from "Courseware" to "Content," the SCORM community is only now taking into account such nontraditional content as game engines.

Conclusion

When PC-based games are integrated with learning management systems and intelligent tutoring systems, the Army will be able to provide a training environment with the correct application of doctrine and principles.

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M109A6 PALADIN: THE CHANGING FACE OF DOD ACQUISITION

Jason Cook

Background

During the last 10 to 15 years, acquisition and logistic reforms have changed the way the military equips the soldier in the field. While strategies have changed, the goal of the acquisition community remains the same—to provide our soldiers with an overwhelming technological advantage. With the implementation of acquisition reform, the refined focus is to remain on the forefront of defense technologies while achieving low life-cycle cost (LCC).

Since its inception, the Office of the Program Manager for Paladin/Field Artillery Ammunition Support Vehicle (FAASV) has been a strong proponent and practitioner of these new initiatives. Team Paladin has been recognized for its success through several efforts and on several programs. The vehicle's main fire control computer received the DOD Standardization Award for Excellence in 1997. However, the most successful and innovative initiative run by Team Paladin to date is the procurement, fielding, and support of the Paladin's primary inertial/Global Positioning System (GPS) navigation system, the Dynamic Reference Unit-Hybrid (DRU-H).

The M109A6 Paladin

Since being fielded to the U.S. Army, the M109A6 Paladin self-propelled howitzer has become and remains the U.S. Army's premier artillery system. The Paladin development effort began with the goal of enhancing the reliability, availability, maintainability, survivability, lethality, and responsiveness of 155mm artillery. Some of the major improvements Paladin M109A6 offers over the M109A5 include enhanced armament, crew safety enhancements, and automotive upgrades. The most significant advantage of the A6 is the onboard electronic fire control, communication, and navigation systems that allow for "shoot-and-scoot" capability.

Electronic Systems

The Paladin's systems, including fire control, communication, and navigation, work together to make the Paladin an extremely effective tactical weapon. These systems include several individual electronic components. The fire control system consists of a main computer, a display screen, and a keypad. The communication system is centered on the Army's standard radio, the Single Channel Ground and Airborne Radio

The DRU-H provides continuous position and pointing data to the M109A6 fire control computer.

The M109A6 Paladin is a 155mm self-propelled howitzer, equipped with automated fire control, communications, and navigation systems.

The FAASV (left) supports the Paladin (right) in the field.

System. The main component of the navigation system is the DRU-H.

Paladin was initially fielded in June 1993 with a fire control system that was built to a full technical data package. The current system, the Automatic Fire Control System (AFCS), was fielded to the entire Paladin fleet in 1997. The Paladin's main fire control computer is based on commercial or PC technology. The AFCS Computer Unit (ACU) uses rotating hard drive, a Pentium processor, and other commercial technologies to perform all fire control functions onboard. Designed and procured using a performance specification based on commercial specifications and standards, the ACU is approaching obsolescence but continues to operate admirably considering its commercial off-the-shelf technology. Personnel conducting sample data collection (SDC) for the Office of the Program Manager for Paladin estimate the mean time between failure (MTBF) for the ACU to be just above 2,000 hours. By maximizing the use of commercial products in the AFCS, the cost of providing onboard fire control has drastically decreased since the first fielding of the Paladin.

DRU-H

Although the fielding of the ACU was a significant accomplishment, the success of that item pales in comparison to the M109A6's main navigation unit, the DRU-H. Fielded in 1993 as an upgrade to the original DRU, the DRU-H performs several functions for the crew. With or without the Precision Lightweight GPS Receiver (PLGR), the DRU-H provides accurate position, gun-tube pointing, and attitude data to the fire control system. When the PLGR is installed, the DRU-H is bounded by the PLGR for position data because of the PLGR's greater accuracy and consistency over time. However, the PLGR does not readily provide pointing data to the AFCS. This capability is provided solely by the DRU-H. The DRU-H also provides gun slew rate feedback.

The DRU-H has met and exceeded the requirements set during the procurement phase. The most impressive statistic is the DRU-H's reliability. The same data collection activity that reports the ACU's reliability data also collects data on the DRU-H. While the ACU achieves relatively good reliability numbers, the DRU-H reliability numbers are staggering. Almost 10 years after the initial fielding of the item, the reliability data continues to be impressive. The DRU-H has shown only 14 failures at SDC sites during the past 6 years. This equates to an MTBF of more than 15,000 hours. When reviewing the performance of an entire group of fielded DRU-Hs, the reliability data is even more impressive. With 1,200 units in the field, only 23 DRU-Hs required repair last year. With an estimated average running time of more than 700 hours per unit per year, this places the estimated field MTBF above 30,000 hours.

The DRU-H achieves this outstanding performance under the most severe of gunfire shock environments. Mounted directly to the vehicle's trunion, the DRU-H is subjected to the full effects of the firing blast and recoil shock of each 155mm round. It is also subjected to extreme temperatures and other detrimental environments. The DRU-H has continually survived the worst aspects of the battle environment. This performance can in part be attributed to the use of military grade components, but the procurement strategies and contracting tools

used in this acquisition also played a major part in the program's success. This exceptional performance is attributed to the LCC acquisition strategy for the DRU-H.

Innovation With Logistics

Development of the Modular Azimuth Position System, which included the DRU, began in 1984. In 1986, the procurement of the DRU for the M109 began with a performance specification as the sole technical document. Although procuring to a performance specification is a standard practice today, this was a rarity for the Army in 1986. The DRU was originally designed to a Military Standard (MIL-D-70789(AR)). In 1991, the DRU was upgraded to interface with the PLGR, thus developing the DRU-H. The DRU Program strategy also made use of an Air Force acquisition model that stresses LCC and contractor logistics support (CLS). Based on those strategies, the Office of Personnel Management decided to trouble-shoot the DRU-H at the line replacement level. Using the DRU-H Built-In Test eliminated any need to invest in interim support equipment or to supply large quantities of spare subassemblies. All failures are simply returned to the contractor for repair.

From the initiation of this program, a conscious decision was made to focus on LCC and CLS for all facets of maintainability, including obsolescence. The emphasis on CLS allowed the Army to eliminate the overhead expenses of establishing and maintaining an organic depot repair capability, which would normally include the cost of test equipment, personnel, and facilities. In addition, neither technical data nor data rights for proprietary software were purchased by the government for support of the DRU-H; the only documentation required was the performance specification (MIL-PRF-71185).

In place of establishing the archetypical logistics solution, this program included innovative acquisition tools such as a Reliability Improvement Warranty (RIW). This tool was also adapted from Air Force acquisition models. At the time, the Air Force had an RIW in place for its form, fit, function (F3) multiple application inertial navigator. The basis of such an acquisition is to make the prime contractor ultimately responsible for the reliability of the product. The RIW motivates the contractor to make product improvements and to implement changes as more reliability data are obtained. The Army leveraged this RIW concept in the procurement of the DRU-H because the DRU-H design had 80 percent commonality.

Under an RIW, the contractor is bound to a fixed price for total support during the warranty period. This provides the contractor a direct financial incentive for improved reliability. Because the DRU-H is based on a proven Air Force design, the contractor has the product confidence to offer a firm fixed price per repair. Because of the excellent reliability, the contractor is able to support the repair contracts for more than 16,000 navigation units from the same repair center location. Years later, these innovative acquisition techniques have benefited the acquisition community, the contractor, and ultimately the U.S. Army.

Pros/Cons Of Success

Even though this acquisition was a tremendous success story to the Army as a whole and to the taxpayer, there was a downside for the soldier in the field. The problem is one of significant repair cost to the soldier as compared to the cost from the vendor. Unit production cost for a new DRU-H to the Army is $88,000 per unit. The cost to the Army for a repair ranges from $600-$8,800, depending on type and severity of failure. However, the cost to the soldier is $47,000. This significant cost difference is driven by the Army Working Capital Fund (AWCF) system. As the Army transitions to commercial business practices and contractor logistics support, the AWCF system will also need to be addressed to ensure that the savings achieved by this transition are appropriately addressed and most effectively leveraged. The real benefit to minimizing or circumventing the cost of AWCF will be the ability to pass the savings on to the ultimate customer, the soldier.

Conclusion

The M109A6 Paladin is and will continue to be the premier artillery piece for the U.S. Army. Further improvements will have to be procured and fielded to meet future operational capabilities. The Army's identified need for accurate, timely, and reliable indirect fires will fuel the future upgrades of this vehicle. The lessons learned are most applicable to electronic devices and are currently being applied to the acquisition of the Paladin's next generation of fire control. To guarantee an overwhelming fighting force, the Army must leverage these successes and continue to adopt both innovative technological and business strategies.

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Information Superiority . . .

THE JOINT SERVICE CHEMICAL AND BIOLOGICAL INFORMATION SYSTEM

Deanna Gross and Wyatt Ulrich

Introduction

In 1994, Congress passed Public Law 103-160, *National Department of Defense Authorization Act*, which created the Joint Service Chemical and Biological Defense Program (CBDP) to provide world-class chemical and biological defense equipment, training, and doctrine for all U.S. military forces. To address the tremendous challenge of coordinating and integrating joint planning, programming, and budgeting functions across the entire chemical and biological (CB) defense mission area, Joint Service Materiel Group (JSMG) personnel proposed spiral development of a state-of the-art information system. The primary goal was to significantly improve the quality of budget documents and other submissions put forth to the Office of the Secretary of Defense (OSD) and Congress while reducing the level of manual effort needed to perform administrative program management duties. This frees program managers (PMs) and program executive officers (PEOs) to focus limited resources on successfully meeting requirements of our warfighters and homeland security personnel.

To this end, the Joint Service Chemical and Biological Information System (JSCBIS) was created. JSCBIS is a powerful, self-updating, client/server software application that allows users to access the JSCBIS relational database from anywhere in the world via the Internet. JSCBIS allows users to run queries, prepare standard reports, and manage funding across multiple budget lines and assigned programs. Program managers retain ownership of their information within JSCBIS while aggregate data are accessible in real time by senior decisionmakers and the acquisition community in general to support statutory reporting requirements (e.g., the president's budget materials). While designed initially to support the CBDP, the JSCBIS software is transportable to any multisystem acquisition program and, in fact, has been used as a framework to develop the Army's Research, Development, and Acquisition Budget Update Computer System.

The Support Systems Division within the Office of the Deputy for Combat Service Support, which reports to the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, is responsible for oversight of JSCBIS. The JSMG manages and executes the day-to-day business, and the U.S. Army Research, Development and Acquisition Information Systems Activity is responsible for software development and database maintenance.

Background

Prior to the establishment of the Joint Service CBDP, the military departments were individually responsible for managing nuclear, biological, and chemical research; development; and acquisition programs. Each department also maintained separate and varied planning, programming, and budgeting processes. When Congress joined these efforts under OSD, it became necessary to eliminate duplication. The challenge was to provide common financial tools and reports while ensuring coordination and integration of data across dozens of programs and disparate organizations. JSCBIS achieves standardization and further links fiscal plans and reports to the needs of Congress and the OSD comptroller.

More than 400 users access JSCBIS to manage more than 100 CB defense programs within various phases of acquisition (technology base, concept and technology development, system development and demonstration, and production and deployment). For example, JSCBIS contains cost, schedule, and performance information for the Joint Service Lightweight Integrated Suit Technology (JSLIST) Program, a common chemical protective ensemble that is being procured to replace all existing CB protective suits in the Services' inventory. JSCBIS enables PM, JSLIST to enter information once into a single database to generate statutory budget documentation, query the database, and print standard reports quickly and easily.

Current Capabilities

The first version of JSCBIS was released in 1996 as a simple budget tool. Today, JSCBIS combines Web-enabled functionality and usability to provide Service PMs and PEOs with the following:

- A capability to collect and process programmatic and financial data;
- Up-to-date data and consistent information (descriptions, requirements, funding, schedules, etc.);
- Generation of research and development descriptive summaries (R-Forms); procurement forms (P-Forms); and executive summaries to support the planning, programming, budgeting, and execution system (PPBES);
- Uniform and conventional formats for accessing, sorting, and reading program data;
- An integrated system to support the decisionmaking needs for managing individual projects and the entire program;
- Import and export of data to and from other applications (e.g., MSWord or Excel); and
- A powerful data browser that allows the user to search, filter, report, compare, aggregate, and analyze the data from any JSCBIS query or report.

JSCBIS has many other useful features:

- An extensive points of contact list that is searchable by last name, first name, or by program affiliation. The point of contact feature is connected to an e-mail feature.
- A calendar feature allows PMs and PEOs to better coordinate meetings. JSCBIS has a bar chart and Gantt chart generator as well as an automated report generator for reviewing financial and programmatic information.
- An automated status, release, and obligation planning and reporting feature to support the execution aspects of program management.

JSCBIS is a valuable tool for maintaining historical data often required for responding to audits and other inquiries, and also data for planning future year efforts. The database archives contain official research, development, and acquisition funding information for the PPBES budget cycle dating back to the FY96 president's budget. Data include information for the year of execution, future years Defense program, and extended planning period years.

Entry to all JSCBIS capabilities is through a menu control panel categorized by selectable tabs (i.e., queries and downloads). JSCBIS is an Internet-accessible, password-protected, self-updating, client-server application with hierarchical control for editing of data and is accessible by PMs and PEOs, budget analysts, project officers, and the entire joint CB Defense community. Additionally, JSCBIS standardizes products, eliminates common errors by spell checking and cross-checking entries, and improves product quality resulting in greater customer satisfaction at higher levels (e.g., OSD).

Future Initiatives

Periodically, new versions of JSCBIS are released to enhance system capabilities. Future JSCBIS upgrades and improvements are planned to support the many aspects of the systems acquisition process and the PMs and PEOs. The following future upgrades are planned:

- An issues module (e.g., reprogrammings, Program Objective Memorandum to budget issues, unfunded requirements);

JSCBIS is a valuable tool for maintaining historical data often required for responding to audits and other inquiries, and also data for planning future year efforts.

- A logistics data module;
- A nuclear, biological, and chemical survivability module;
- A user requirements module; and
- A contracts module.

Conclusion

The CBDP is being used to leverage information technology across the materiel acquisition process. JSCBIS is leading this information revolution for fiscal planning and reporting to ensure that PMs and PEOs have the resources to support our soldiers, sailors, airmen, and Marines operating under the threat of continued proliferation of weapons of mass destruction.

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THE COMPETITION ADVOCATE

MAJ Richard J. Hornstein

Introduction

Several times during my tenure as the Director of Contracting (DOC) at Fort Leavenworth, KS, I received a sole-source request only to find out through additional market research that there were several other valid sources that should have been identified, or another significant, pre-existing problem. (In general, sole-source contracting means that there is only one viable vendor in the marketplace able to fulfill a government requirement. In other instances, the term sole source is also used when full and open competition is consciously excluded, based on various reasons, so that preference can be given to only one vendor.) In one case, an urgent sole-source request was quickly rejected because the vendor identified by the customer was on the government's list of parties excluded from federal procurement and non-procurement programs. That means that because of the contractor's poor behavior and/or business practices in the past 3 years, they were barred from conducting business with any U.S. government agency. As such, because we are a federal contracting activity, we were forbidden from entering into any agreement with them. After the DOC discovered the information about this "alleged" sole source, the requiring activity managed, through additional research and our assistance, to find another source within 1 day.

What can be learned from this example? The first lesson is that the requiring activity was not aware of mandated responsibilities that it must fulfil in the procurement process. The second lesson is that contracting activities must inform their patrons about the statutory and regulatory mandates forbidding curtailment of other than full and open competition. This article addresses these issues by explaining the laws and rationale governing our actions in the contracting community.

Competition Advocate Functions

As the Fort Leavenworth DOC, I have assumed the additional title and responsibility of competition advocate for the installation. Thus, it falls on me to ensure that the basic tenant of contracting—competition—is mandated and protected. For a very good reason, this philosophy is taught to the entry-level contract workforce and continually reinforced. Real benefits are achieved through healthy competition. Conversely, there are increased costs and other negative aspects inherent in sole-source acquisitions. By limiting sole-source procurements, I help to ensure the best value for our customers and overall savings for DOD and our installations, especially in times of limited budgets. Another one of my functions is to provide valid reasons to customers regarding why we mandate competition, and to ask activities to conduct market research prior to submitting a purchase request.

Market Research

I've observed that most activities do not conduct adequate market research to identify numerous sources before they submit their requirements. Market research is defined as the process of collecting and analyzing information about the capabilities within the marketplace to satisfy an agency's needs. It is simply a method of exploring different types of media to find good competitive sources. Some examples the DOC frequently uses are the Internet, the Yellow Pages, catalogs, newspapers, and trade journals. The Federal Acquisition Regulation (FAR) mandates that market research be the first step in all acquisitions. Therefore, to be FAR-compliant, requiring activities should always conduct their own initial market research prior to submitting a purchase request. Most activities that do this effectively experience a smooth procurement, and are generally more satisfied with the quality and/or price of the product or service they receive.

Competition In Contracting

Another important contract tenant is competition. Competition is required in all contracting and is mandated by an important statute called the Competition in Contracting Act (CICA). Other regulations such as the FAR also provide statutory guidance. CICA requires government contract agents to enforce full and open competition on most acquisitions. This, however, conflicts with our personal buying experience in the commercial market where we often return to a familiar vendor that performed well in the past. Despite this preference, it is not legal according to CICA to limit competition for this reason. The desire is quite understandable, but the contracting community cannot support it, which sometimes causes frustrations because our customers usually don't comprehend the rationale behind our decisions. So despite the inclination to buy from a familiar source, it is prohibited because it stifles competition.

Our job as contracting experts is to educate our clientele and explain our reasoning for not supporting this concept, and to provide methods that assist in identifying other sources to adequately meet their needs. The main reason we do this, as previously stated, is that it is mandated by law passed under CICA. CICA ensures that the government-contracting agencies focus their concerns on the benefits of competition and its impact on the procurement process.

CICA Benefits

What are the benefits of competition envisioned under CICA? As a competition advocate, I am suspect of most sole-source requests and examine them closely before they are considered for approval. Why? Because the benefits of competition are good for all involved parties, especially the buyer. Competition is the basis for our market economy and also does some important things in the federal procurement arena. First, by mandating competition in federal procurements, it ultimately helps drive down prices. Second, it provides a safety net to avoid fraudulent pricing and collusive behavior. Finally, it provides a fair and even playing field for all vendors who want to do business with the U.S. government and compete for federal dollars.

FAR Guidance

Generally, there are very few sole-source procurements that meet the guidance of the FAR. FAR Part 6 is pretty clear on circumstances that will and will not allow other than full and open competition. It defines very specific reasons for sole-source procurements and it also distinguishes invalid reasons. Listed below is an extract on this subject from FAR Part 6. FAR 6.301 states the following, which explicitly outlines some reasons that are *not* acceptable for limiting competition:

(c) Contracting without providing for full and open competition shall not be justified on the basis of -

(1) A lack of advance planning by the requiring activity or

(2) Concerns related to the amount of funds available (e.g., funds will expire) to the agency or activity for the acquisition of supplies or services.

(d) When not providing for full and open competition, the contracting officer shall solicit offers from as many potential sources as is practicable under the circumstances.

FAR 6.302-1 delineates below some specific circumstances and exceptions that permit other than full and open competition:

(a) Authority

(2) When the supplies or services required by the agency are available from only one responsible source, or, for DOD, NASA, and the Coast Guard, from only one or a limited number of responsible sources, and no other type of supplies or services will satisfy agency requirements, full and open competition need not be provided for.

Very seldom is this the case with the DOC. Generally we can do more in-depth market research and are capable of identifying multiple sources that can meet most requirements.

FAR 6.302-2 also defines an unusual and compelling urgency of need. To reiterate, this is for an emergency situation, not because of an activity's failure to plan.

(a) Authority

(2) When the agency's need for the supplies or services is of such an unusual and compelling urgency that the Government would be seriously injured unless the agency is permitted to limit the number of sources from which it solicits bids or proposals, full and open competition need not be provided for.

(b) Application. This authority applies in those situations where

(1) An unusual and compelling urgency precludes full and open competition, and

(2) Delay in award of a contract would result in serious injury, financial or other, to the Government.

Customer Education

Our goal is to continue educating and training the customers we support so that they can more effectively forecast requirements and plan their required procurement lead times. We do this by encouraging market research, conducting classes, emphasizing customer interaction, and publishing articles in a quarterly newsletter.

Conclusion

Clearly, there are still some situations where a sole source is justified, and the FAR spells out those situations. For example, in the post-September 11, 2001, environment, there were several sole-source procurements that we executed based on the urgent and compelling need outlined in the FAR. However, all sole-source requests will continue to be scrutinized and challenged to ensure for maximum competition.

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RAPID MANUFACTURING SYSTEM: 21ST CENTURY MAINTENANCE TECHNOLOGY

Coryne Forest

Introduction

The Army is faced with many maintenance challenges that impact readiness. An aging legacy fleet combined with a new emerging fleet poses support and sustainment challenges that cannot be met using traditional technology and methods. The Mobile Parts Hospital is a program that seeks to address some of these challenges. As the program has evolved, it is now being referred to as the Rapid Manufacturing System (RMS). The RMS is a mobile manufacturing system that can produce parts rapidly near the point of need in the battlespace.

The RMS currently consists of two 8- by 8- by 20-foot containers, each carrying one piece of manufacturing equipment. The first is a Directed Material Deposition (DMD) machine that uses a patented process called Laser-Engineered Net Shaping (LENS). The DMD machine can create a fully dense metal part from a computer-aided design (CAD) model. After a part is built "near net shape" in this machine, it goes to the other machine—a 5-axis multitask machining center produced by Mazak for final finishing and dimensioning.

When a request for a part comes to the RMS, its onboard databases are searched to determine if that specific part or one similar to it has been built before. To make the part, the RMS must have a complete 3-D model of the requested part. If the information is not available in the databases, onboard equipment is used to create it—either through a CAD/computer-aided manufacturing (CAM) software package or through a noncontact laser scanner. Once a 3-D model is obtained, it is converted to a file format used by the first of the manufacturing processes described below.

LENS Machine

The first International Standards Organization (ISO) container of the RMS contains a LENS machine. The LENS process is considered a DMD process because powdered metal is directed into the path of a laser beam to create a part layer by layer. The metal parts created using this process can be made equivalent (and possibly better) than the original part in terms of material properties. Also, the time to create a part using this process, compared to casting or forging, is greatly reduced. This is the greatest advantage of the LENS machine.

The LENS process is still immature and remains under both development and testing. To be of use to the RMS, there are many variables in the process that need to be thoroughly understood. The RMS team has laid out three distinct experiments to explore and understand how each of the process variables contributes to the final material and the resultant mechanical properties.

Currently, there are 57 metal powders available for use in the LENS machine, and they cover the spectrum from steel to alloys to titanium. The intention is to carry a powdered metal to the battlespace rather than multiple sizes and shapes of traditional bar stock. The LENS machine will create the rough part from the powder. The rough part will then be finish-machined on the multitask machining center.

Machining Center

The second container of the RMS contains a 5-axis multitask machining center. These machines are multiaxis mills that are set up primarily as lathes. Work pieces such as gears and camshafts that normally would require separate turning centers, and both vertical and horizontal machining centers, can now be completely machined with efficiency and accuracy. All axes are direct motor driven with no belts, pulleys, or gears, and tool exchange speed is nearly instantaneous.

The machine incorporates a color graphics display and a simple programming language. Rather than having to input direct machine code, the programmer simply inputs the dimensions in a logical machining sequence (guided by the machine), and the video display unit shows a shaded model of the work piece for each stage, including a model of the cutting tools in action. This can be seen dynamically for an entire program prior to cutting material and while the actual machining is in progress.

The machine is capable of making tool-path adjustments on the fly to compensate for tool wear. Any manual adjustments done by the operator while the program is running can be recorded by the controller and immediately incorporated into the master program file, if desired. Another capability of this machine is the ability to record cutting-path data in the event of a tool breakage. This information is recorded as the operator manually guides the tool away from the work piece for changing. At the restart command, the stored cutting path data guide the tooling back to the interrupted stage position, and the original program continues. There is no need to return to the program beginning, so this offers significant timesavings over conventional methods.

RMS

The proposed unit to be fielded is just one part of a system-of-systems that will comprise the RMS. There are communications, parts databases, and agile manufacturing cells that are all linked to the mobile systems to provide spare parts to the soldier within hours.

The first supporting element is the parts database, managed by a software package called WindChill. Producing parts on demand with a CAD/CAM data library provides a distinct advantage in timeliness because the entire reverse engineering step can be eliminated. However, if reverse engineering is required, there is a 3-D laser scanner onboard the mobile system, along with software to support reverse engineering. The RMS continually identifies and adds parts to this database by gathering or creating the manufacturing data. The Standard for Exchange of Product format is the current, universally adaptable CAD language and manufacturing data format of choice and is being used by the RMS.

The RMS also contains a satellite data transfer system for receiving and sending CAD/CAM data from anywhere in the world. This data can be directly fed into either of the manufacturing machines or into the pro-engineering workstation for further model definition and storage.

The U.S. Army Tank-automotive and Armaments Command's (TACOM's) Tank Automotive Research, Development and Engineering Center in Warren, MI, is a likely location for the command and control center, which will network the eventual RMS fleet and agile manufacturing cells. The central parts CAD/CAM database and raw material procurement would be logically handled in a central location. Tentative plans are to merge the RMS command and control activities with those of the Emergency Operations Center already located at TACOM.

Although the mobile system of the RMS is successful for a wide variety of parts, it has definite size and weight restrictions, which lead to process limitations. Several critical parts have manufacturing requirements that are simply too large or impractical for a mobile setting. An agile manufacturing cell will be an integral partner to the RMS and will be the support system capable of handling these larger repair parts and processes not available in a mobile unit.

Currently, Army personnel must bring a warehouse of parts with them everywhere they go for all the vehicles they use. With this new RMS, the only supply chain demand is buckets of powder for the LENS machine. This would reduce both the cost and the time associated with buying the spare parts and storing and keeping track of them. It truly exemplifies the Army's goal to reduce the cost and size of the logistics tail while increasing combat commander effectiveness.

Conclusion

The RMS is taking manufacturing in a new direction. Today, even the best rapid prototyping and manufacturing processes are inadequate to fulfill the requirements of the RMS Program, but several processes have made great strides in recent years. In the future, the RMS Program will incorporate processes that offer a wider range of materials, faster build rates, and greater accuracy. The RMS Program must work closely with the Army Ordnance School and the Army Quartermaster School to understand the process and work together to improve vehicle readiness while reducing costs.

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INTEGRATING PC GAMES INTO ADVANCED DISTRIBUTED LEARNING ENVIRONMENTS

William Y. Pike

Introduction

PC-based games are developing a sizable following as military training tools. All Services use commercial off-the-shelf (COTS) games as well as custom games and simulated missions developed with PC engines. However, the value of PC games as an advanced distributed learning (ADL) resource is still largely untapped because they are not designed for ADL environments; they also lack consistent military training concepts and provide minimum feedback to players about performance quality.

DOD's vision for the ADL initiative is to "provide access to the highest quality education and training, tailored to individual needs, delivered cost-effectively, anytime and anywhere." The vision for The Army Distance Learning Program is similar: "Improve and sustain readiness by delivering standardized individual, collective, and self-development training to soldiers and units anywhere anytime using multiple delivery means and technologies."

Distance learning, for the most part, implies courseware. To ensure a student has grasped the learning objectives presented by the courseware, some type of assessment tool must be used. Typically, these assessments are multiple-choice, true/false, matching, or short answer fill-in-the-blank tests. While these tests are appropriate for most academic courses, they miss the mark for assessing a student's ability to perform according to military principles and doctrine. COTS games provide, at best, "accidental learning," i.e., there is usually no attempt to ensure a game player is using correct principles: shooting bad guys scores points. Players can win in most first-person shooter games regardless of whether they apply military doctrine and principles.

To improve games for Army training applications, the U.S. Army Materiel Command's (AMC's) Research, Development and Engineering Command's (provisional) Simulation Technology Center is using ADL technology for the integration of courseware with PC gaming technology. The AMC's Research, Development and Engineering Command (provisional) is currently working to produce a learning tool in which the student completes a section of courseware and is assessed via a game-based simulation. As PC gaming technology continues to evolve, distance learning students will reap the benefits of more immersive environments. These engaging environments may have the potential to increase the retention of the knowledge and skills gained through distance learning. Currently, an Army Science and Technology Objective led by AMC's Research, Development and Engineering Command (provisional), with the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) as a partner, is intended to reduce refresher training by 25 percent through "overlearning." Overlearning involves continued training after a student has demonstrated proficiency on a task. In this partnership, AMC's Research, Development and Engineering Command (provisional) develops the special gaming technologies and ARI assesses their success as distance learning tools to enhance soldier performance.

The integration of courseware/PC games with an intelligent tutoring system (ITS) and a learning management system (LMS) results in a very robust environment that can build a profile of a student's weak and strong points. In general terms, an ITS provides the expertise of an instructor to each distributed-learning student. An LMS monitors the overall distributed learning process, from student registration to class participation to end-of-course assessment. The student profile can be used for a variety of purposes such as:

- Developing future game-based training scenarios;
- Assisting onsite instructors in a "blended," or mixed delivery, learning environment to tailor an individual's course of instruction to improve weak areas; and
- Building a "virtual team member" that allows the student's behavior to be modeled in an online exercise even if the student is not available.

Illustrative Scenario

To illustrate these concepts, assume a freshly commissioned Army second lieutenant in the infantry branch is reporting to the Infantry Officers' Basic Course (IOBC) at Fort Benning, GA. As a prerequisite, the lieutenant must complete a distance learning course as an introduction to the principles taught at IOBC. As the lieutenant proceeds through the online course, one particular section causes problems: movement through urbanized terrain. According to Army Field Manual 90-10, *Military Operations*

On Urbanized Terrain (MOUT), there are six principles to consider:

- Using covered routes;
- Moving only after defensive fires have been suppressed or obscured;
- Moving at night or during other periods of reduced visibility;
- Selecting routes that will not mask friendly suppressive fires;
- Crossing open areas (streets, space between buildings) rapidly under the concealment of smoke and suppressive fires provided by overwatching forces; and
- Moving on rooftops that are not covered by enemy direct fires.

Using the game-based simulation, whose controls are very similar to most first-person shooter games, the lieutenant masters four of the principles. However, by consistently choosing routes that mask the team's suppressive fire, the lieutenant fails principle 4, and, by extension, principle 5, more often than not. An ITS, akin to an online coach, delivers occasional hints by a computer-controlled avatar—a senior noncommissioned officer (NCO). The NCO warns the lieutenant against choosing the wrong route. Subsequent scenarios in the online game will involve selecting good routes to enforce the weak principles and build the required knowledge and skills.

Additionally, as part of an optional graduation exercise, distance learning students may participate in an online, multiplayer scenario that uses the same game as the courseware's assessment tool. If an individual is unable to participate, the game can create a virtual team member using the existing profile it has developed. Over time, an extensive selection of student profiles can be built and used to create an entire virtual team for multiuser exercises.

Upon the lieutenant's arrival at Fort Benning, the battalion commander checks the learning management system to see how the lieutenant progressed through the Web-based course. The commander notices a weakness in the selection of routes through urbanized terrain. Reviewing the records of other incoming students, he notices that three other students did not fare well on that principle. The battalion commander puts the four lieutenants together in a "study group" with an instructor who will work on their weak areas.

The Command's Role

This scenario is an example of how AMC's Research, Development and Engineering Command (provisional) intends to leverage the power of learning management systems, intelligent tutoring systems, handheld computers, PC-based games, and engaging courseware to develop a Web-based training environment that is available anytime, anywhere, and tailorable to the individual student. In the scenario, the ITS picks up on areas in which the student is weak, provides hints, and even incorporates the weak points in subsequent scenarios to ensure the student continues to see those principles that he or she has not mastered. The game-based simulation passes assessment results back to the LMS, which builds a profile of the student. This profile is used to build a virtual computer-controlled character for multiplayer game purposes. However, it should be noted that this particular research does not suggest that Web-based simulation should replace live training. Instead, we are advocating that Web-based simulation should augment live training so students can "hit the ground running" to make their live training more effective and efficient.

Challenges

While the concepts presented in this article are all individually achievable, integrating a game engine, courseware, LMS, and ITS together into one cohesive environment is a considerable challenge, financially if not technically. COTS games, as a whole, are not an effective option for assessment tools as they tend to reward players solely for shooting an opposing player. Thus, integrators and content developers must develop the proper mix of tools to complement the COTS games. Also, while ITSs are not new, they are expensive and somewhat limited in scope. They typically consider only a limited number of correct solutions and will mentor students if they veer off the "textbook" solution.

Integrating learning management systems into the target environment appears to be the easiest of the tasks; LMSs should, in theory, be able to accept assessment results from a game as easily as they do from a traditional test. Finally, the issue of conformance with the Sharable Content Object Reference Model (SCORM), an ADL standard intended to aid instructional system developers in sharing educational content across different LMS platforms, poses a challenge. Although the "C" in SCORM has changed from "Courseware" to "Content," the SCORM community is only now taking into account such nontraditional content as game engines.

Conclusion

When PC-based games are integrated with learning management systems and intelligent tutoring systems, the Army will be able to provide a training environment with the correct application of doctrine and principles.

WILLIAM Y. PIKE is the Lead Principal Investigator for Advanced Distributed Learning at AMC's Research, Development and Engineering Command's (provisional) Simulation Technology Center. He has an M.S. in computer engineering from the University of Central Florida and a B.S. in systems science from the University of West Florida. He is a member of the Army Acquisition Corps and is Level III certified in both information technology and systems planning, research, development and engineering.

FROM THE DIRECTOR ACQUISITION SUPPORT CENTER

I wish each and every one of you the best as we begin this new year! As the Acquisition Support Center continues to focus on providing the best support to ensure a well-trained and educated workforce, we face special challenges. Some of these include strengthening our relationship with the warfighter; maintaining the professionalism of the assimilated workforce; managing the Army's realignment; and securing funds for training, education, and experience opportunities. I am confident that we can meet these challenges with great success.

I would like to direct your attention to several pertinent Career Development Update articles in this issue of *Army AL&T*. One of these articles deals with a recently signed continuous learning (CL) memorandum that requires all DOD acquisition personnel to have an established CL cycle. Previously, only those Acquisition and Technology Workforce members who met the certification requirements for their current position had an established CL cycle. A summary of the FY03 acquisition certification requirements is also outlined.

Also, please note that we are actively seeking students for the summer 2003 Acquisition Career Experience (ACE) Program. Now is the perfect time for your organization to consider sponsoring an ACE student. The ACE Program is great for both the student and the organization. I encourage all of you to consider participating. For more information on this program, other career development information, and current contact information, be sure to access the Acquisition Support Center home page at **http://asc.rdaisa.army.mil**.

Have a safe and happy new year!

COL Mary Fuller
Director
Acquisition Support Center

Logistics Intern Training Program

The Logistics Management Proponency Office in the Office of the Deputy Chief of Staff, G-4, and the U.S. Army Logistics Management College (ALMC), Fort Lee, VA, have teamed up to develop the initial training phase for the Department of the Army's newest group of supply and maintenance interns. Named the DA Logistics Intern Training Program, this partnership effort will result in training, educating, and preparing supply and maintenance interns to successfully progress into Armywide logistics management positions. The curriculum will consist of 24 weeks at ALMC focusing on the interrelationships between logistics functions, structures, and systems in the ever-changing Army.

Components of 14 different ALMC courses and a course from the Center for Army Leadership, Fort Leavenworth, KS, will make up the preponderance of the program. Besides receiving logistics instruction, interns will hone their communication skills through writing, learning presentation techniques, and leadership development. Graduating students will receive equivalency credit for the 14 ALMC courses. Additionally, the Florida Institute of Technology Graduate Center at Fort Lee, VA, has approved 12 graduate-level semester credit hours for the program leading to a master's degree in management, logistics management, or acquisition management as part of a cooperative degree program with ALMC.

The inaugural offering is scheduled for Jan. 21, 2003, with two offerings scheduled per year. Wimpy Pybus, Deputy Assistant Secretary of the Army for Integrated Logistics Support, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, and a member of the *Army AL&T* Editorial Board, is scheduled to convene the first offering.

For more information on the DA Logistics Intern Training Program, call (804) 765-4304 or DSN 539-4304, or e-mail **pawlowsa@lee.army.mil**. Information on applying for the program can be found at **www.logpro.army.mil/logpro/index.jsp**.

Defense Acquisition University And American Graduate University Form Strategic Partnership

The Defense Acquisition University (DAU) has signed a Memorandum Of Understanding with the American Graduate University (AGU) to establish cooperative graduate degree and professional certificate programs. These accredited programs lead to either graduate degrees in acquisition management or program/project

management or to professional certificates in acquisition and contracting, program/project management, financial management and pricing, or general management.

These exciting accredited degree programs are now available to program executive office, program management, and other acquisition professionals.

AGU has provided professional certificates and advanced degrees for contracting and program/project management professionals for more than 40 years, AGU's degree programs offer the following:

• Time-tested, practical content;
• Continuous open enrollment, which allows students to sign up any time, unlike inflexible semester-based programs;
• Advance standing for DAU courses, other university courses, or in limited cases, by equivalency exam;
• The convenience of a distance education format that offers a blend of electronic and print course material;
• The ability to work at one's own pace facilitated by an instructor; and

The AGU also offers low tuition fee that includes all course materials and is covered by most employers' tuition assistance programs or by veterans' benefits.

AGU degree programs are approved by the California Bureau of Private Postsecondary Education and are accredited by the Accrediting Commission of the Distance Education and Training Council. Applicants to the degree or certificate programs may receive up to six units of advance standing based on completion of prior DAU courses. Applicants to the degree programs may be able to challenge for an additional nine units of advance standing based on transcript evaluation and AGU's established challenge process.

For additional information, visit AGU's Web site at **www.agu.edu/dau/**, or contact the AGU Registrar at (626) 966-4576, fax (626) 915-1709, or e-mail **info@agu.edu**.

CLP Update

There have been notable developments with Continuous Learning (CL) Points (CLPs) that are applicable to all Acquisition and Technology Workforce (A&TWF) members. The DOD Under Secretary for Acquisition, Technology and Logistics recently signed a new CL memorandum and policy requiring DOD acquisition personnel to have an established CL cycle. This policy, which became effective Oct. 1, 2002, specifically states that acquisition workforce members will acquire a minimum of 40 CLPs every fiscal year as a goal and that 80 CLPs are mandatory within 2 years.

What does this mean for the Army A&TWF? Previously, only those A&TWF members who met the certification requirements for their current position had an established CL cycle. For A&TWF members who had an active CL cycle prior to Oct. 1, 2002, there is no change; however, for A&TWF members in their current positions on Oct. 1, 2002, who previously did not meet that position's certification requirements, an established CL cycle became a requirement effective Oct. 1, 2002. The CL cycle dates are Oct. 1, 2002-Sept. 30, 2004, and are reflected on the Acquisition Career Brief (ACRB) for all workforce members in this category.

For those A&TWF members accessed into the workforce after Oct. 1, 2002, the 2-year CL cycle start date will be established on the first Sunday after the workforce member is captured in the Career Acquisition Personnel & Position Management Information System (CAPPMIS) database, and the CL cycle dates will be reflected on the ACRB. After the CL cycle dates are established, a supervisor has the ability to adjust the CL cycle dates for workforce members through the Supervisor's Module of the Individual Development Plan (IDP).

DOD's strategic goal is to enhance professional knowledge and revitalize the quality and morale of the workforce. CLPs support that goal by ensuring that all A&TWF members stay current in their respective career fields, meet performance criteria, and continue to achieve professional growth. CLPs accumulate quickly and include almost any training that is job-related. Examples of credible training include Defense Acquisition University training, college courses, seminars, conferences, developmental experience, and other professional activities. Generally, 1 hour of training translates to one CLP.

CLPs are documented and submitted for supervisory approval through the IDP. It is important to note that without a CLP cycle, a supervisor will not be able to award CLPs. To review the DOD Memorandum, go to **http://www.acq.osd.mil/ar/docs/CLMEMO.pdf**. For further clarification of CL requirements within the DOD policy, go to **http://www.acq.osd.mil/ar/docs/CL%20Policy.pdf**. Additional guidance specific to IDPs and CLPs for the Army acquisition workforce are found at **http://asc.rdaisa.army.mil**.

The National Capital Region (NCR) Customer Support Office can assist all A&TWF members regarding the new CLP requirement. NCR contact names and phones numbers are available at **http://asc.rdaisa.army.mil/ncr_region/index.htm**.

Acquisition Career Experience Program

The ACE Program has continued to grow each year, from seven students the first year, to 101 students last year. The recent terrorist events in the United States have resulted in a renewed sense of patriotism and an increased interest in federal government employment. However, many qualifying students were turned away last year because job opportunities were not available.

Recruitment efforts are underway for this premier program, which is designed to attract college students and

retain them in the civilian Army Acquisition and Technology Workforce. The deadline to apply for the 2003 ACE Program is Feb. 26, 2003.

Now is the perfect time for your organization to volunteer to sponsor an ACE student. As a sponsoring organization, you will be required to appoint a mentor to provide daily supervision and management of the student as well as to provide salary and travel-cost funding. Your organization's support in sponsoring an ACE student will enable the continuance of this very successful program.

First year ACE students normally enter the program at the GS-04 or equivalent personnel demonstration broadband level, and second year students may be promoted to the GS-05 or equivalent personnel demonstration broadband level.

For additional information, go to the ACE Web site at **http://asc.rdaisa.army.mil/ace/**.

FY03 Certification Requirements

The 2003 Defense Acquisition University (DAU) Catalog includes changes to certification requirements mandated by the Defense Acquisition Workforce Improvement Act. Requirements for certification in each acquisition career field are located online at **http://www.dau.mil/catalog/cat2003/AppendixB.pdf**.

If you have any questions regarding the certification process, contact your Acquisition Career Manager at **http://asc.rdaisa.army.mil**. Below is a summary of FY03 certification requirement changes for each career field.

Acquisition Logistics

• Level I: No changes.

• Level II: No changes. (Note that requirements will change in FY04.)

• Level III: No changes.

Logistics Sustainment

Changes to be determined.

Auditing

The Army does not certify individuals in this career field.

Business, Cost Estimating And Financial Management

No changes.

Contracting

• Level I: CON 100 added as a mandatory course effective Oct. 1, 2002. However, if an individual completed CON 101 prior to that date, CON 100 is not required for certification.

• Level II: No changes.

• Level III: CON 301 is no longer considered a refresher course. Individuals who have previously completed CON 301 may apply to retake the course; however, travel and per diem funding will be provided by their command.

• Those individuals who occupied an 1102 position within DOD prior to Oct. 1, 2000, are exempted from the educational requirements.

Facilities Engineering

• This is a new acquisition career field. The acquisition position code (APC) assigned to this career field is "F."

• Only Level I certification standards are available at this time.

• Some information on the Facilities Engineering career field can be found at **http://129.2.133.250/fecf/default.htm**.

Industrial/Contract Property Management

• Level I: CON 100 added as a mandatory course. (Note: If a person is certified as a Level I as of Oct. 1, 2002, he or she is not required to go back and take CON 100. If a person was not certified Level I as of Oct. 1, 2002, but completed CON 101 (resident or online) prior to Oct. 1, 2002, he or she is not required to complete CON 100 for certification. This also applies to individuals who started CON 101 prior to Oct. 1, 2002, and who will complete CON 101 after Oct. 1, 2002. If CON 101 was not completed in FY02, CON 100 must be completed prior to CON 101 in FY03.

• Level II: No changes.

• Level III: No changes.

Information Technology

• Level I: SAM 101 added as a desired course.*

• Level II: SAM 201 added as a desired course.*

• Level III: SAM 301 added as a desired course.*

*The recommendation of the Information Technology Functional Integrated Product Team is to make the above mentioned Software Acquisition Management (SAM) courses desired for certification between now and Sept. 30, 2004. Beginning on Oct. 1, 2004, the team recommends that the courses be made mandatory for certification. This plan allows for sufficient funds to be programmed through the Program Objective Memorandum process, and gives DAU sufficient time to prepare for the potential "bow wave" of applicants when the SAM courses become mandatory.

Production, Quality And Manufacturing

• This is a new name for the career field formerly known as "Manufacturing, Production and Quality Assurance."

• No changes to mandatory requirements at any level.

Program Management

• Level I: No changes.

• Level II: No changes.

• Level III: PMT 302, one of the courses previously listed as meeting the training requirement for Level III, is no

longer offered. As such, reference to PMT 302 has been removed from the certification requirements. Although it has been dropped from the certification requirements, it is still valid in lieu of PMT 352 for Level III certification, and the DAU Catalog will be updated to reflect this.

Purchasing And Procurement Technician

• Level I: CON 100 added as a mandatory course effective Oct. 1, 2002. However, if an individual completed CON 101 prior to that date, CON 100 is not required for certification.

• Level II: No changes.

• Level III: No changes.

Systems Planning, Research, Development And Engineering - Science And Technology Manager

• This is a new career field. The APC assigned to this career field is "I."

• There are no Level I certification requirements for this career field, only Levels II and III.

• Information about this career field can be found at **http://www.dtic.mil/whs/directives/corres/html/500052m.htm**.

Systems Planning, Research, Development And Engineering - Systems Engineering

• This is the new name for the career field formerly known as "Systems Planning, Research, Development and Engineering." The APC for this career field remains "S."

• There are no changes to Levels I, II, or III.

Test And Evaluation

The education requirement for all certification levels has changed. The requirement prior to Oct. 1, 2002, stated, "Baccalaureate degree with 24 semester hours or equivalent in physical science, mathematics, chemistry, engineering, physics, operations research, or related field."

• Effective Oct. 1, 2002, the new requirement states, "Baccalaureate degree in engineering, physics, chemistry, mathematics, or a related field." (Note that the wording underlined in the old requirement has disappeared.)

• The exception of "10 years of acquisition experience as of Oct. 1, 1991," is still valid as an alternative to the education requirement.

• The training and experience requirements for test and eveluation remain unchanged.

• The U.S. Army Test and Evaluation Command's Test and Evaluation Basic Course (TEBC) is still valid as an acceptable equivalent to TST 202, per Appendix D of the DAU Catalog.

Military Acquisition Position List Review

The Acquisition Support Center (ASC), in cooperation with the Total Army Personnel Command's (PERSCOM's) Acquisition Management Branch and all organizations where Army acquisition officers are assigned, will conduct a review and update of the Military Acquisition Position List (MAPL). The MAPL Board will meet March 10-14, 2003, to validate and prioritize all MAPL positions in time for PERSCOM's next assignment cycle. The results of this year's board will serve as the priority of fill for PERSCOM assignments for the next 12 months. All organizations with MAPL positions will be required to review and update the justification for each position. While some changes may be minor, other changes will be more dramatic, reflecting the acquisition community's efforts to support Army transformation and the global war on terrorism. This year's review will leverage the acquisition community portal on Army Knowledge Online (AKO) to facilitate virtual collaboration and to minimize travel requirements. A detailed schedule and guidelines will be sent to acquisition organizations and posted into the ASC's subcommunity, within the acquisition community on AKO. Monthly teleconference in-progress reviews will be conducted the second Tuesday of each month, beginning Jan. 14, 2003. All those who will be participating in the MAPL review are requested to subscribe to the ASC's "Council of Colonels" Knowledge Center on AKO to gain access to the required information. This process builds on last year's Command Select List Council of Colonels to sustain the momentum from those meetings that were conducted in September and October 2002.

Correction

An article titled "Board Selects Competitive Development Group" on Page 53 of our November-December 2002 issue indicated incorrect employing agencies for several individuals. The individuals and their correct agencies are as follows: Freida S. Garrison, THAAD Project Management Office; Jose Oscar Gomez, PEO, Aviation; and Jeffery P. Herman, U.S. Army Training Application Program Office, USASOC.

The Contracting and Acquisition Management Development Program

The greatest threats to the Army's acquisition community do not currently lie on the battlefield. Recent demographic shifts (an aging and diminishing workforce population) are presenting unique financial and staffing challenges to the acquisition workforce. Only through an aggressive management recruiting effort can the acquisition community ensure its continued contribution to the Army's transformation. This article addresses one of these efforts.

The Contracting and Acquisition Management Development Program (MDP) is a career development initiative geared primarily for college students who are considering a challenging career in the Army's contracting and acquisition career fields. Implemented in October 2002, the MDP offers motivated, goal-oriented participants a healthy mix of formal classroom instruction as well as on-the-job and rotational training. The ultimate goal of the MDP is to ensure that the acquisition community continues to employ the best and brightest minds available today and well into the future.

The program offers college-level trainees a 36-month training experience with noncompetitive promotions for the first 2 years, nationwide placement, rapid advancement, career mobility, and a wide selection of professional development opportunities. The MDP is composed of four specialized training components: formal instruction, on-the-job training, rotational cross training, and informal in-house training.

Formal instruction provides a solid background in the current methods, processes, and regulations involved in contracting and acquisition. On-the-job training involves assigning each candidate an experienced instructor who will serve as a professional development mentor and information resource. This segment of the training familiarizes the trainee with the daily duties and responsibilities of a contract specialist and prepares candidates for a smooth integration into the acquisition workforce.

Broadening and networking opportunities are provided through rotational cross training. As the trainee transitions through branches within the organization, he or she will experience firsthand the vital role that these areas play in accomplishing mission-critical tasks. Trainees can also elect to rotate through one of their particular center's customer activities. Informal in-house training provides the fundamentals on the underlying principles and operations of contract support.

The final year of the program involves a 4- to 6-month developmental assignment with the Defense Contract Management Agency at a local contract management office. The final segment of training is a "greening" opportunity to give participants a basic understanding of who the ultimate customers are, their programs, and their operational environment.

Recruits enter federal service as full-time employees at the GS-7 level (or equivalent personnel demonstration broadband level) and are noncompetitively promoted every year until they reach their target grades, up to a GS-12. Competition for higher grades will be offered later during the candidate's federal career.

Requirements for incoming trainees include U.S. citizenship, a security clearance, a baccalaureate degree with a 2.95 GPA or better, and at least 24 credit hours of business education. Trainees must also be registered with the Selective Service and sign a mobility agreement. The North Central Civilian Personnel Operations Center in Rock Island, IL, is responsible for centralized recruitment related to the MDP. More information on the Contracting and Management Development Program can be found at **http://asc.rdaisa.army.mil/CP_14/opportunities/opportunities.html**, or by contacting Jennifer Schafer at (309) 782-7299, **jennifer.schafer@cpocria.army.mil**.

NEWS BRIEFS

Patents Awarded For Active Topical Skin Protectant

Dr. Ernest H. Braue Jr. and CPT Stephen T. Hobson of the U.S. Army Medical Research Institute of Chemical Defense (USAMRICD) and their collaborators were recently awarded seven patents. Their research resulted in a barrier cream that can not only prevent chemical warfare agents from being absorbed into the skin, but also neutralize these agents into less toxic products (i.e., serve as a reactive matrix). A patent was awarded for each type of material that was shown to be an effective reactive matrix. Three more patent applications on active topical skin protectant formulations are still under consideration by the U.S. Government Patent and Trademark Office.

This research effort continues studies initiated in the 1980s to develop a topical barrier cream to augment the protective overgarments and/or redefine the circumstances requiring mission-oriented protective posture (MOPP) levels. Transitioned to the production, fielding, deployment and operational support phase of development in 2000, this topical barrier cream, now called Skin Exposure Reduction Paste Against Chemical Warfare Agents (SERPACWA), will be available to warfighters in 2003.

For additional information on this effort, contact Cindy Kronman at (410) 436-1866.

New Fire Protection Garments For Soldiers

Nomex coveralls sent to a group of combat support soldiers participating in Operation Enduring Freedom could be the beginning of affordable flash-flame protection for all soldiers. Seventeen sets of the disposable garments were sent from the U.S. Army Soldier Systems Center in Natick, MA, in response to a request that included flame-resistant clothing. The sage green, commercially available coveralls were selected because of their ability to reduce burns from 88 to 8 percent at a 3-second exposure on an instrumented mannequin when worn over a battle dress uniform (BDU), T-shirt, and briefs.

"The problem is that soldiers are going to be at risk of burns from accidental flash fires because they don't have the right clothing," said Carole Winterhalter, a Textile Technologist with the Individual Protection Directorate, who responded to the request. Furthermore, the coveralls cost $25 a set. Fitted over a regular BDU, the cost totals about $80 versus $180 for a Nomex aircrew BDU. Soft, lightweight, and air-permeable, the coveralls are made from a blend of 92 percent Nomex, 5 percent Kevlar (both flame-resistant fibers developed by DuPont), and 3 percent nylon. Cost savings result from the nonwoven material's direct fiber-to-fabric manufacturing. Another cost saving is a simple garment design with no cuffs and minimum stitching. Army aviators and tank crew members are the only servicemembers authorized to wear flame-resistant clothing, which is made mostly from woven Nomex fabric. The fiber chars instead of melts and gives durable flame protection for the life of the garment. Although flame-resistant and well-liked, Winterhalter said it is too expensive to issue to every ground soldier.

The coveralls now supporting the soldiers were designed for industry. Not intended for fire fighting, they passed National Fire Protection Association standards for industrial workwear when independently tested by the Underwriters Laboratory. Winterhalter said that the garment is limited-wear with low-abrasion resistance and prone to pilling. For an industrial worker, it may last 10-12 washings before being disposed. "We're hoping to get feedback from the soldiers and use it in conjunction with an ongoing development effort to come up with a military-specific version," Winterhalter added.

The military version will have a camouflage pattern, openings for access to BDUs, sizing that fits the military population, and oil and water repellency that may also reduce pilling and enhance durability. Even when worn over the BDU and at double the cost, Winterhalter said the system would be 40 percent less expensive than existing flame-protective clothing. That would meet the team's final objective of developing a flame-protective clothing system that is 30-50 percent less expensive than existing Nomex-based systems.

The Army Soldier Systems Center is part of the U.S. Army Soldier and Biological Chemical Command (SBCCOM). For more information about SBCCOM or the center, please visit our Web site at **http://www.sbccom.army.mil**.

PDAs Find A Place In Military Medicine

When hand-held personal digital assistants (PDAs) hit the market in the late 1990s, the Telemedicine and Advanced Technology Research Center (TATRC) at Fort Detrick, MD, immediately started exploring how clinicians could use them, both on the battlefield and in military treatment facilities. Medical PDAs—called MDAs at TATRC—can improve medical record keeping, give providers instant access to medical information and patient histories, alert providers of lab results, speed up the flow of patient information among providers and commanders, and shorten the time first responders spend on the battlefield filling out forms.

Additionally, MDAs exploit the already powerful capabilities PDAs offer. Scheduling, storing contact information, creating to-do lists, writing personal memos, accessing e-mail, and collecting data are all routine tasks for business PDAs.

Future Medical Shelter System

During the past year, program managers at the U.S. Army Medical Materiel Development Activity have been working with the Army Medical Command Center and School at Fort Sam Houston, TX, to move the service away from its current deployable medical systems shelters to ones that are easier to deploy.

The Army's future medical shelters must meet specific parameters before a C-130 loadmaster will ever strap them down and send them to a deployment. They must require fewer flights and promise lighter loads for the airlifter.

The new shelters are envisioned as a leap forward in shelter technology for fielding a next-generation forward surgical team shelter or a combat support hospital with operating room capability.

What developers of the combat support hospital shelter hope to produce is a surgical shelter with a complete operating room outfitted with two surgical tables, medical equipment, and a patient holding area—all in one container.

A second shelter, intended for use far forward in combat zones, will also be studied in 2003. Mobile Medical International Corp. will develop a "surgical suite in a box." Though it won't be as sophisticatedly equipped as the combat support hospital shelter, it will be ready for medical personnel to see patients in minutes and will have the added features of environmental control and power generation systems.

One-Handed Tourniquet

When a wounded soldier, far from a buddy or medic, needs to put a tourniquet on a severely injured arm or leg, simpler is better. With this in mind, 3 years ago a research and development effort among three U.S. Army Medical Research and Materiel Command organizations set out to create a tourniquet that a wounded soldier could use with one hand to replace the two-handed one currently issued.

Today, 4,000 of the resultant products are on their way to Army Special Forces soldiers at Fort Bragg, NC, for user evaluation. With a cinch-type device made of nylon webbing, plastic "D" rings that lock, a small but sturdy piece of elastic, and a couple of strips of Velcro, the tourniquet looks simple because it is simple.

Second Generation FLIRS Fielded To Soldiers

On Sept. 25, 2002, soldiers from Company C, 1st Battalion, 8th Cavalry Regiment, received their brand new M1A2SEP tanks from the Team Armor partnership at west Fort Hood, TX. The integral part of the Army's newest tank is the 1,000th production unit of the Army's newest Second Generation Forward Looking Infrared (FLIR). Present at the fielding were manufacturing plant technicians from both DRS Technologies and Raytheon—the two prime contractors for the Second Generation FLIR System. It was an exciting experience for the technicians to meet the soldiers who operate their product and to see the fruits of their labors in an operational environment.

The Second Generation FLIR allows gunners to see more clearly and at greater ranges. In the configuration on the Abrams M1A2SEP tank, the Second Generation FLIR enables the crew to have "hunter-killer" capabilities, which allows the gunner to engage targets in one direction while the tank commander is simultaneously looking in all other directions.

The Office of the Product Manager, FLIR is responsible for the Army's ground-based FLIRs. PM, FLIR is part of the Office of the Project Manager, Night Vision/ Reconnaissance Surveillance Target Acquisition (PM, NV/RSTA) at Fort Belvoir, VA, which falls under the cognizance of the Program Executive Office, Intelligence, Electronic Warfare and Sensors, at Fort Monmouth, NJ.

Through horizontal technology integration, the electro-optical components that make up the Second Generation FLIR are the same as those used in the target acquisition systems for four key weapons platforms: the M1A2SEP Abrams tank, the M2A3/M3A3 Bradley Fighting Vehicle, the Line-of-Sight Anti-Tank platform, and the Long Range Advanced Scout Surveillance System, which is currently deployed in Kosovo and Afghanistan. This technology ensures combat overmatch for the combined arms team, while providing significant standoff for target detection, recognition, and identification and common situational awareness to the warfighter. Commonality of components enhances maintainability and supportability on the battlefield.

This team effort during the past several years represents not only the 1,000th Second Generation FLIR fielded, but it represents the thousands of members of the team (soldiers, government civilians, and contractors) who had an integral part in making this portion of battlefield dominance a reality.

Members of Company C, 1st Battalion, 8th Cavalry Regiment, Fort Hood; team members from PM, Abrams; Team Armor; PM, FLIR; PM NV/RSTA; and contractor personnel from DRS Technologies and Raytheon

Army Technology Transfer Awards

Scientists and engineers from the U.S. Army Soldier Biological and Chemical Command's Edgewood Chemical Biological Center (ECBC) received Federal Laboratory Consortium (FLC) Awards for Excellence in Technology Transfer. Winners were honored at the FLC Annual Meeting held in Little Rock, AR, last year.

The FLC is a congressionally chartered network of federal laboratories designed to promote and strengthen technology transfer nationwide. The FLC established this annual award to recognize individuals or teams from federal laboratories and commercial sector partners who have done outstanding work in transferring technology to the commercial marketplace.

Nominations are submitted by the laboratories and are judged by a panel of technology transfer experts from industry, state and local government, academia, and the federal laboratory system.

The award criteria are as follows:

• An individual or team of individuals has demonstrated uncommon creativity and initiative in the transfer of technology.

• The benefits to industry, state and local government, and/or the general public are significant.

• The achievements are recent.

A description of achievements and the names of recipients of Awards for Excellence in Technology Transfer follow.

The Biological Detection Kit (BDK). Increased awareness of biological agents as potential weapons of terror and mass destruction underscores the importance of finding a means to rapidly and effectively sample and detect agents. The BDK consists of sampling and detection equipment for biological agents. Sampling equipment provides a capability for handling large area surfaces, small solid samples, liquid samples, and air samples. Once samples are collected, they are screened for the presence of biological materials using generic assays that are integrated into a single package that can analyze for the presence of DNA, protein, and bacteria. The BDK uses techniques from food safety, personal air monitoring, and other monitoring arenas and integrates them with new approaches to create a technology that is easily used in the field.

The technology transfer effort from the BDK team, comprised of Dr. Peter Stopa, Philip Coon, Dorothea Paterno, James Genovese, Alan Seitzinger of ECBC, and Maurice Milton and Darlene Tieman of Science and Technology Corp., took several forms. A Cooperative Research and Development Agreement (CRADA) was established with New Horizons Diagnostics Inc. to package the kit. EAI Corp., another CRADA partner, further refined and marketed the BDK. Several other vendors, including Turner Designs Inc., Molecular Probes Inc., and Chemmetrics Inc., provided the BDK team with supplies, reagents, and specialized expertise. In addition, an Information Exchange Agreement was established with the Military Institute of Hygiene and Epidemiology in Poland that enabled joint development of the kit's spore luminescence protocol.

The efforts behind the BDK resulted in the development of the BioHaz, a system that enables users to sample and detect biological materials in suspect samples. The Response Equipment Corp., a subsidiary of EAI Corp., is currently marketing this product. The kit is also being marketed as the SWIPE sampling and spore luminescence kit by New Horizons Diagnostics Inc. HAZMAT teams in several cities, including Washington, DC, and Virginia Beach, VA, have used this technology in response to recent incidents involving suspected biological materials such as anthrax.

The Integrated Virus Detection System (IVDS). The IVDS represents a fundamentally new method for detecting and identifying viruses and nanoparticles. Capitalizing on the physical properties of size and density allows viruses to be counted and identified without the use of biochemical reactions. Dr. Charles Wick invented and developed the IVDS and transferred the technology to Virus Detection Systems Company LLC through an exclusive license.

Analysis and identification through the use of the patented IVDS led to a wide range of new discoveries, including the ability of some viruses to pass through filters, change easily, live a long time under harsh environments, and live in soil and water. Recent outbreaks such as the West Nile virus, other alphaviruses, influenza, and foot-and-mouth disease make this technology extremely useful and timely.

Several industries will benefit directly from the development of the IVDS. The bioprocessing industry will be able to use this technology to develop new products, including vaccines, and to expand into new regions of science and technology. Materials technology will use IVDS to refine its nanoparticle-based creations, which can have applications in a number of areas such as paints, coatings, and transparent films used as computer monitors and television screens. The computer industry will be able to produce newer and more complex computing devices with improved nanometer-sized separations and tolerances. Lastly, the IVDS has provided a new standard of measurement on the nanometer scale that relies on such techniques as electronmicrography and light scattering.

Other Army recipients of 2002 FLC technology transfer awards include the following:

AWARDS

• Brian Simmons, an employee with the U.S. Army Development Test Command, received the FLC Laboratory Director of the Year Award for directing the establishment of the Team Aberdeen Proving Ground (APG) Business Development Office (BDO) that serves as a single point of contact for the business community to access APG. Since its opening, the BDO has generated a number of technology transfer agreements and is recognized by the business, government, and academic communities as a vital resource.

• Dr. John Dinan, an employee of the U.S. Army Communications-Electronics Command Research, Development and Engineering Center's Night Vision and Electronic Sensors Directorate (NVESD), received the 2002 FLC Innovative Partnership Award for demonstrating the greatest commitment to the long-term results of technology transfer. As the head of the Microfactory Group at NVESD, Dinan nurtured technology transfer partnerships with several companies that participated in the continued development of infrared focal plane arrays.

• Rich Dimmick, an employee of the U.S. Army Research Laboratory (ARL), received the Harold Metcalf Award for his sustained significant service to the FLC. Dimmick's commitment to technology transfer and the FLC has been exemplified by his unwavering support of the Fire Fighting Task Force.

• James K. Wanko, an ARL employee, received an FLC Achievement Award for his overall contributions to the Army technology transfer program. Wanko coordinates the technology transfer efforts of all the Army's laboratories and centers.

The preceding article was submitted by James K. Wanko, the Army Domestic Technology Transfer Program Manager at the U.S. Army Research Laboratory, Adelphi, MD.

BOOKS

It's not the BIG that eat the SMALL … it's the FAST that eat the SLOW

By Jason Jennings and
Laurence Haughton
Harper Collins Publishers Inc,
New York, 2000

Reviewed by MAJ John H. Grimes, an Army Contracting Officer participating in the Training With Industry Program and assigned to Oak Ridge National Labs, Oak Ridge, TN.

Two California business consultants contend that speed is a business tool. Jason Jennings and Laurence Haughton traveled the globe probing some of the quickest thinking, fastest acting business powerhouses and produced a text summarizing the common conducts of the companies' competitive edges. In *It's not the BIG that eat the SMALL … it's the FAST that eat the SLOW* , the authors blend practical applications of speed into a first-rate business text.

The duo features several companies from diverse business sectors (e.g., Charles Schwab, AOL, Clear Channel Communications, H&M, TelePizza) and expound their commonality of speed as a competitive advantage. More than 30 practical tactics are identified and demonstrated with vignettes from the featured companies.

The practical lessons are presented in a way that makes this 250-page book a very fast, yet amazingly informative, read. The strategies are neatly organized into four broad areas: thinking fast, deciding fast, acting fast, and sustaining a fast organization. No single lesson takes more than five pages to provide an efficacious description, and each broad area could stand alone as a short lesson plan.

A recurrent theme in the book is grasping and improving on one's own competitive advantage. Ranging from spotting trends, to dismantling bureaucracy, to ignoring one's competitor(s), and eliminating speed bumps, the epicenter of most of the book's strategies is enhancing an organization's speed as a competitive edge.

"A 60-second heads-up" wraps up each of the 25 lesson-loaded chapters. Of particular value are the thought-provoking fill-ins accompanying many of the brief summaries. The authors have used reader participation to adeptly personalize the text to readers' peculiar business purposes. Indeed, this book is fruitfully begun at any point, but adding one's own notes to each of the 60-second summaries makes the text an invaluable future desk-side reference.

Nothing can diminish the successes of the featured companies, but the book's lessons generally emphasize efficiency over effectiveness, and it is probably better suited for business leaders than government servants. Nonetheless, the modern business lessons in this book are exceedingly relevant whether you're in big business; a small, private company; or government service. Thus, I add my voice to the many others in recommending *It's not the BIG that eat the SMALL … it's the FAST that eat the SLOW* to *Army AL&T* readers and all contemporary business professionals.

The Rumsfeld Way

By Jeffrey A. Krames
McGraw-Hill, NY, 2002

Reviewed by Dennis L. Winegar, Supervisory General Engineer, U.S. Army Field Support Command, Rock Island, IL. Winegar is a 33-year Army civilian, a member of the Army Acquisition Corps, and a Defense Leadership and Management Program (DLAMP) participant currently performing a 1-year rotational assignment with the U.S. Joint Forces Command, Joint Task Force–Civil Support, Fort Monroe, VA. He can be contacted at winegar@jfcom.mil.

Wouldn't it be great to know how the boss thinks and what leadership wisdom the boss could impart to the staff? Jeffrey Krames has provided a portrait of our current Secretary of Defense Donald H. Rumsfeld to do just that. It is indeed a portrait of Secretary Rumsfeld, but let's look at how Krames developed the portrait or series of portraits of our Defense Department leader.

Krames' book has only been available since the middle of May 2002, so it is no doubt the most current book about Rumsfeld. Don't expect to learn about childhood friends, school teachers, pets, musical lessons, or family life. Krames does give a brief biographical sketch and chronology of the secretary, but he does provide a note in the beginning, "A point to stress: this book is not a biography of Donald Rumsfeld. The biographical material that follows is intended to give the reader a context for the second part of this book which examines Rumsfeld's career thematically."

Krames begins the book with a description called "Rumsfeld's Return," where he tells the story of Aug. 9, 1974, when Richard Nixon resigned the presidency of the United States, Gerald Ford was sworn in as America's 38th president, and Rumsfeld was selected by Ford to "… be someone who could rapidly and efficiently organize the new staff, but who will not be perceived or be eager to be chief of staff."

Krames also takes the reader into one of the secretary's news conferences where Rumsfeld delivered the twice-weekly news on the war against terrorism. Krames' description of the "Rummy Show" captures the essence of those news conferences: "Indisputably, he has become the face and voice of the war. His prickly yet candid answers to often repetitive questions have won over, even mesmerized, a historically skeptical Washington press corps."

Krames then takes the reader through the stages of the portrait painted of Rumsfeld by dividing the book into two parts.

Part I is entitled, "Evolution of a Statesman," where he offers a description of this public official who although is seen at press conferences, television interviews, and official trips, is rarely seen in public. In chapter subheadings like "The Right Man at the Right Time" and "Managing Under Fire," Krames gives us some of the highlights of Rumsfeld's four-decade long career with some special emphasis on how the secretary addresses the media. Krames writes, "If he doesn't know something, he doesn't hesitate to say so. If he doesn't want to answer a certain question, he says that too. And on the flip side, he may choose to respond to a question with almost alarming directness. At one press conference, Rumsfeld was asked why U.S. warplanes were bombing in a certain area. 'To kill them (al Qaeda and Taliban fighters),' he replied. In another meeting with the press, he used the word 'kill' nine times, probably an all-time record for a Pentagon press briefing."

Continuing in Part I, Krames gives us the biographical information of the man from Winnetka, IL, the Princeton graduate, the Navy aviator, the four-term congressman, the government careerist (including his first tour as the youngest ever SecDef), the private business CEO, the string of public service posts, and the return as SecDef (the only person to serve twice in that position and the oldest person to serve in that position).

In Part II, "Lessons from a hard-charging CEO," Krames takes us on a leadership tour to show us, as the book's dust cover says, the "Leadership wisdom of a battle-hardened maverick." The dust cover also provides a summary of Part II: "*The Rumsfeld Way* examines Rumsfeld's many career challenges, details what he did to quickly and clearheadedly deal with each, and reveals how he has engineered some of twentieth century America's most stunning victories—when those around him had all but conceded defeat."

Although Krames did not interview Rumsfeld to gather material for his book, he did do extensive research using speech texts, briefing texts, periodical articles, books, personal interviews (Dr. Henry Kissinger as an example on Feb. 19, 2002), television interviews, commission reports, and the State of the Union Address given by President George W. Bush on Jan. 29, 2002. That research allowed Krames to describe the leadership qualities of Donald Rumsfeld and to provide specific examples from his career both inside and outside the government.

All one needs to do is look at the chapter headings to get a glimpse of what leadership qualities Krames describes throughout his book. Chapters 3 through 12 are titled, "Mission First," "Straight Talk," "All the Right Moves," "Crafting Coalitions," "The Consequence of Values," "The War CEO," "Acquiring and Using Intelligence," "Mastering the Agenda," "The Pragmatic Leader," and "The Determined Warrior." Krames uses those chapters

to highlight qualities that Rumsfeld has developed over his years in the government and in private business.

In Part II, Chapter 3, Krames begins with a discussion of effective leadership, "The Rumsfeld record reveals a leader who has both a keen sense of urgency and an instinct for quickly getting to the heart of a problem—both hallmarks of effective leadership. These qualities may sound like obvious virtues, but the fact is that many leaders take too much time identifying the problem and outlining possible responses. Those moments of hesitation can mean the difference between success and failure." Krames then provides examples of the Rumsfeld "Mission First" mentality during his first days in the Ford administration, his years at G.D. Searle, his liberal use of memos to articulate mission and priorities at NATO and the Pentagon, and his first formal briefing 1 day after the [September 11, 2001] attack on America.

The remaining chapters follow the same format that Krames lays out in Chapter 3—a leadership quality or qualities and examples to show how that quality makes Rumsfeld an excellent candidate for a "Hallway of Leaders." Krames also lists at the end of each chapter several identifiers of "The Rumsfeld Way," which are very similar to the "Rumsfeld's Rules," written by Rumsfeld himself.

Krames' book is well written and includes an abundance of quotes from Rumsfeld and about Rumsfeld. It is an easy read and will certainly find its way onto many business and military suggested reading lists. It is a book that you will want to read, put aside, and read again, and certainly one that you will want to keep on your leadership bookshelf together with "Rumsfeld's Rules."

The Frontiers of Project Management Research

Edited by Dennis P. Slevin, David I. Cleland, and Jeffrey K. Pinto
Project Management Institute, 2002

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

In every evolving profession, it is useful now and then to examine the state of professional knowledge to document progress and establish future directions. Three respected academics—Dennis P. Slevin, David I. Cleland, and Jeffrey K. Pinto—have done just that with their new book, *The Frontiers of Project Management Research*.

The book includes 28 papers from the Project Management Institute Research Conference 2000 held in Paris, France, in June 2000. Each was subsequently refined and updated by the author(s) for inclusion in this collection. The papers are arranged in four general sections: background research in the field, effective practices and success factors, organizational and team relationships—behavioral practices, and project management techniques.

An early paper in the background research section by Peter W. G. Morris describes project management as a discipline focused on itself, with little orientation toward business relevance and benefit. Morris also suggests that because the traditional core of project management is now pretty well understood, future research should address in a theoretical context how core elements work together to deliver successful projects.

David Wilemon's paper on experiences and perspectives embraces this broader view by examining stress, partnering, team performance assessment, and individual team member experiences and evaluating how they affect project performance. More important, Wilemon identifies research issues associated with each area as a means of establishing goals for knowledge development. An item of note from completed research is that unsuccessful project experiences are related first to a perceived lack of top management support and, second, to a lack of clear goals.

In the effective practices and success factors section, Lynn Crawford presents some surprising research results. First, there appears to be little direct relationship between the level of project management knowledge (as defined in *A Guide to the Project Management Body of Knowledge (PMBOK Guide)-2000 Edition*) and perceived performance in the workplace. Second, team development practices are highly rated in literature, but little used in actual performance. Finally, project managers value different activities than their supervisors, suggesting that both groups are not playing the game using the same scorecard.

A study of 60 large engineering and construction projects by Roger Miller and Brian Hobbs reveals that the principal sources of project troubles are management issues, not technical challenges. Projects most likely to succeed are those that enjoy strong sponsorship, strategic depth, and flexibility in responding to crises.

The organization and team relationship section includes eight papers on various human resource subjects. Edward J. Hoffman and others describe research within NASA that indicates team development actions get lost in the noise of project performance. That is, team development and project performance are so closely intertwined that they are not conducted as separate processes—to the detriment of specific team development actions. As a remedy, the authors describe 10 characteristics of superior project teams and 10 team

development functions of project managers that were disclosed through research across NASA organizations.

In the past, attention to scope, cost, and schedule combined with effective tracking and control was usually sufficient for project success. The complexities of today's projects demand project teams that are fast and flexible and leaders who understand the interaction of organization and behavioral variables. Hans J. Thamhain reports research results that define four essential conditions for building effective project teams: a professionally stimulating work environment, good project leadership, qualified personnel, and a stable work environment.

Janice Thomas and others provide an insightful view of "selling" project management to senior executives—an important topic as shown by a 1997 KPMG study that identified lack of top management commitment as a key factor in failed projects. The authors propose a three-part approach of triggers (what will motivate a senior executive to buy in to project management); responses (benefits and value to executive priorities, not just features and attributes); and proof (anecdotal information in a context relevant to executives).

The final section comprises nine papers on project management techniques, including a leading edge view by Chris Chapman and Stephen Ward on managing uncertainty as an evolution of risk management. Managing uncertainty is a more robust approach to risk that considers ambiguities in estimates of risk event probability and impact, the conditional nature of estimates, commitments and targets, and objectives at operational levels. This expanded view provides substantial opportunity for improving project performance.

Defining a project's mission is an essential step toward effective management. It is inevitably accomplished in a highly politicized environment. Graham M. Winch and Sten Bonke describe a stakeholder mapping approach that includes two tools—the stakeholder map and the power/interest matrix—that complements traditional techniques and generates alternate definitions. The result is more effective brainstorming during mission definition and more rigorous analysis of potential threats.

The Frontiers of Project Management Research is an important, much needed addition to project management literature. Every mature profession is founded upon a codified body of knowledge. By providing not just a snapshot but rather a research-based panoramic view in time, this book takes another step toward establishing the baseline for project management.

This book is available from the Project Management Institute Online Bookstore at **www.pmibookstore.org**.

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ACQUISITION EXCELLENCE

Commercial Item Determination

The Defense Acquisition University (DAU) Continuous Learning Center is pleased to announce the availability of two new continuous learning online modules. The new modules, Commercial Item Determination and Commercial Item Determination: Executive Overview, are available to all users of the DAU Continuous Learning Center at **http://clc.dau.mil**. Below are the descriptions of the new modules.

Commercial Item Determination. This module is comprised of 10 lessons. It explores the commercial item determination process as outlined in the *Commercial Item Determination Handbook*. The handbook is a practical reference tool for use in commercial item acquisitions. DOD designed this course to aid acquisition personnel in developing sound business strategies for procuring commercial items by gaining a clear understanding of the guidance and tools contained in the handbook.

The average cumulative time for course completion is 3 1/2-hours, which is equivalent to 3.5 continuous learning points (CLPs). You may take this self-paced course over time, returning to your last accessed page when convenient. The course includes periodic review questions and a post-test, which requires a minimum score of 80 percent and may be taken as many times as necessary. A certificate of completion is available at the conclusion of a successful post-test, and can be accessed in your personal student transcript. Student transcripts are found online in the **Administration Building**/**Student Records**/**Student Transcripts** section at the same Web site noted below. Just select the course title hyperlink to obtain the certificate.

Commercial Item Determination: Executive Overview. This module is a self-paced course comprised of three lessons. It presents an executive overview to the Commercial Item Determination course, which explores the commercial item determination process as outlined in the *Commercial Item Determination Handbook*. The handbook is a practical reference tool for use in commercial item acquisitions. DOD designed this course to aid acquisition personnel in developing sound business strategies for procuring commercial items by gaining a clear understanding of the guidance and tools contained in the handbook.

The average cumulative time to complete this course is 30 minutes, which is equivalent to .5 CLPs. You may also take this self-paced course over time, returning to your last accessed page when convenient.

To access these modules, go to the DAU Continuous Learning Center Web site at **http://clc.dau.mil**. To access the modules for credit, log in using your login ID and password, select the **Learning Center**, and then select **Course Information & Access**. For information about each module, select the computer icon next to the module title. To launch the module, select the module name.

For additional assistance or questions, contact the DAU CLC administrator at **dauclcteam@meridianksi.com**.

CONFERENCES

Army Acquisition Leaders Agree: Good Information Means Good Decisions

Information systems will help the Army win both on the battlefield and in the budget arena, according to the Service's leaders speaking at the Acquisition Community Information Management Users Group Conference in Atlantic City, NJ, late last year.

The theme of the conference was "Enabling the Acquisition Enterprise," and the conference was directed at individuals from the acquisition community who would benefit from discussions, workshops, and hands-on training on the topic of acquisition information management. The conference was sponsored by LTC Chuck Hoppe, Product Manager, Research, Development, Acquisition and Sustainment Information Activity (PM, RDASIA); in tandem with the Program Executive Office for Enterprise Information Systems (PEO, EIS); and the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASAALT).

The keynote speaker, ASAALT Claude M. Bolton Jr., told the group, "If we make better decisions quicker, we win the battle. The same thing in program offices: you get to keep your money and better serve the soldier."

Bolton said Pentagon decisionmakers need to look at the same data to make the right decisions on what programs get funded and what programs get cut. "I need information monthly," said Bolton. "It's got to be right. It's got to be one set of numbers."

"We have an insatiable need for information in the Pentagon, but too many stovepipes," said Donald Damstetter, the Army's Deputy Assistant Secretary for Plans, Programs and Resources. He asked the audience

rhetorically if they thought Pentagon planners make "bad decisions" regarding funding of programs. "They're not bad decisions, they're misinformed decisions because we had bad information," said Damstetter, citing the need for an "enterprise solution" to solve the problem.

AIMing For The Solution

Damstetter said that the Acquisition Information Management (AIM) suite of software applications is the Army's enterprise solution to assist managers of Army acquisition programs in developing and updating data. Some of the major AIM applications are the Monthly Acquisition Performance Review, which includes a "stop light" (red, amber, or green) rating of programs and program elements; Smart Charts, which provide to Congress capsule descriptions of program status; and WARBUCS, the Web Army Research, Development and Acquisition (RD&A) Budget Update Computer System, which provides RD&A funding data.

"We're going to shut people down from doing their own business applications," warned Damstetter. "That means no local versions of Smart Charts. Take the message back that this is where we're going to go."

Program Executive Officer, Enterprise Information Systems (PEO, EIS) Kevin Carroll, whose PM, RDASIA manages the AIM acquisition data repository for DOD, agreed that the Army has to "let old systems die out—that's the kind of discipline we need."

Carroll said that going to an enterprise solution might mean sacrificing minor functionality, but would provide vastly increased confidence in data. "Maybe the old system did something better," said Carroll. "But we must get rid of stovepipes. We don't have confidence in data—and we won't—until we get enterprise solutions." He added that PEO, EIS is "making a big push in employing Enterprise Resource Planning solutions in all our business areas."

"Any new system or capability introduced into the Army infostructure must advance us toward the Army Infostructure Objective State," said Carroll. He said this includes a single Army network (virtual network); one Army portal (Army Knowledge Online); having the ability to electronically find anyone from anywhere within the Army infostructure; plug and play anywhere within the army infostructure; and universal access to Army knowledge.

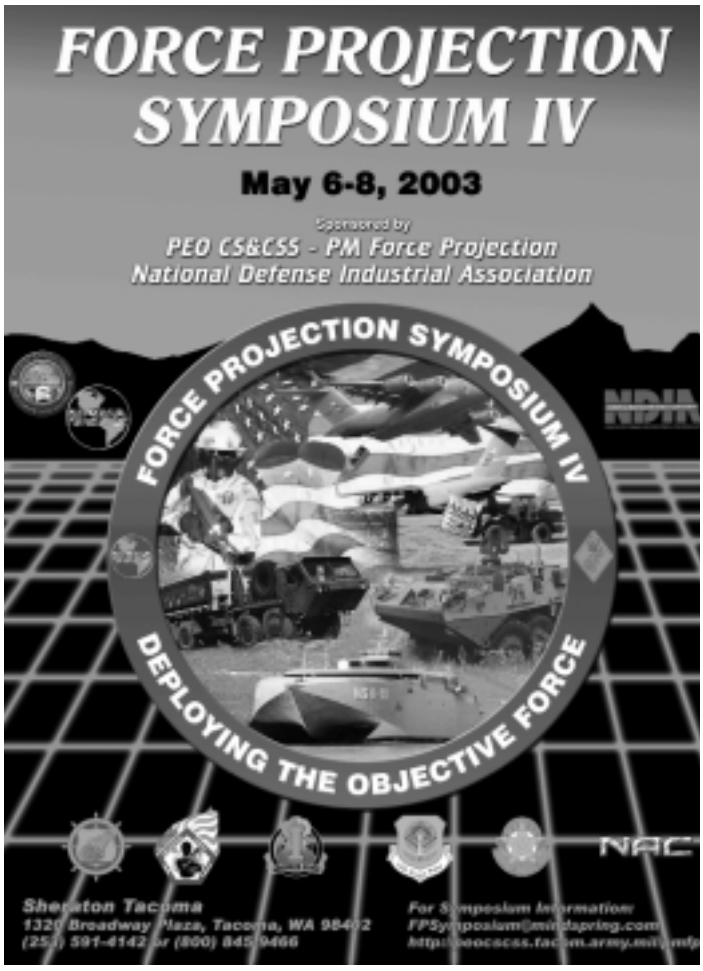
People Are The Key

Bolton told those members of the Army's acquisition community present that they are a big but sometimes unsung player in Army transformation. He illustrated with a story of a heroic Army pilot who kept his helicopter flying for 27 hours despite taking hits that caused it to leak oil and transmission fluid.

"Who wrote the requirements for that helicopter?" asked Bolton. "Who built, developed, and sustained that aircraft? Who did the training? These heroes are able to do their missions because of people like you."

Bolton pointed at the people in the audience. "You people are what it will take to make the Objective Force work. The Objective Force will be 10 percent technology, but 90 percent people—and 100 percent attitude." He concluded, "I can't stand here and tell you what the Objective Force will be," he said. "We're still working on that today. When we get there, we will have an awesome force."

The preceding article was written by Stephen Larsen, PAO, PEO, EIS.



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• Mission Planning And Rehearsal Tools For The Legacy, Interim, And Objective Forces
• Senior Service College Selections

JULY-AUGUST

(*Personnel Transformation*)

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• Technologies To Help Installations Plan Across Fence Lines
• Homeland Defense: A New Mission For The Army's Research, Development and Engineering Centers
• Contingency Contracting: Humanitarian Organizations In Uzbekistan
• The Interim Brigade Combat Team/Interim Armored Vehicle
• AAC Hosts Annual Training With Industry Orientation Workshop
• Army Acquisition Workshop Focuses On Support For The Warfighter
• PMs, Acquisition Commanders, CECOM Team Receive Awards

NOVEMBER-DECEMBER

(*Supporting The Force*)

• Partnership For Research And Studies
• Supporting The Force In Afghanistan And Central Asia
• The Mid-Range Munition Block I FCS Lethality
• Objective Integrated Combat, Command And Control Technology
• Javelin Readiness: Meeting The Logistics Transformation Objective
• TAIS Manages Complexities Of Third Dimension Fight
• Optimizing System Readiness: Program Executive Office, Soldier
• Winning The War On Obsolescence
• Business Case Analysis
• AAC Civilian PM And Post-Utilization Taskforce
• The Army Acquisition Workforce Campaign Plan
• PM Workshop Highlights Civilian Participation
• ASAALT Provides Warfighters Real-Time Support
• The Financial Implications Of Readiness
• Ground-Based Midcourse Defense
• The SSCF And MSSTC Programs At UT-Austin
• Reagan Test Site Adopts Radar Open Systems Architecture
• ASC Hosts Competitive Development Group Orientation
• The Army Information Technology Planning Process
• Common Missile Quality Function Deployment Applications
• The University Of Information Technology

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