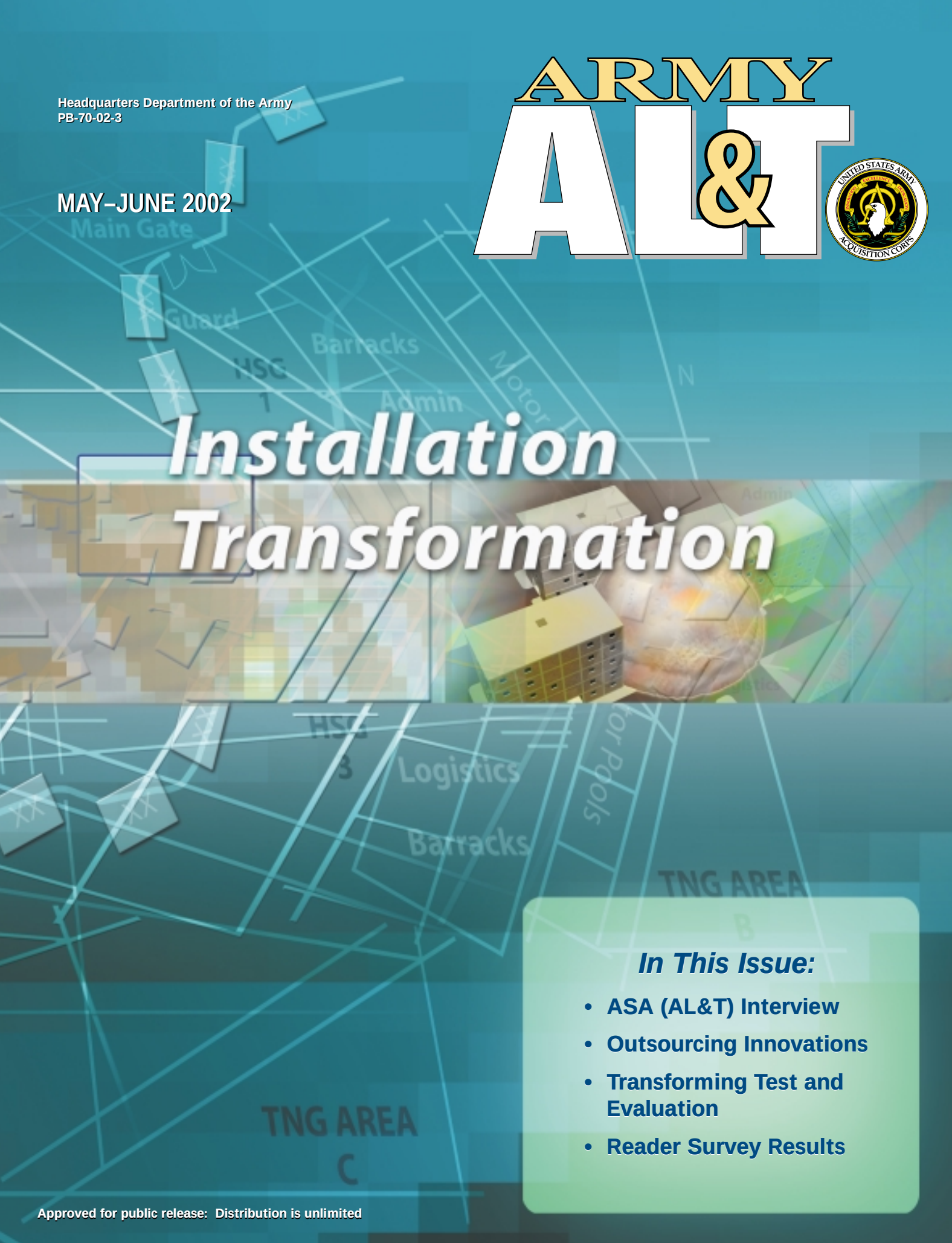
Headquarters Department of the Army
PB-70-02-3

MAY–JUNE 2002

ARMY AL&T

Installation Transformation

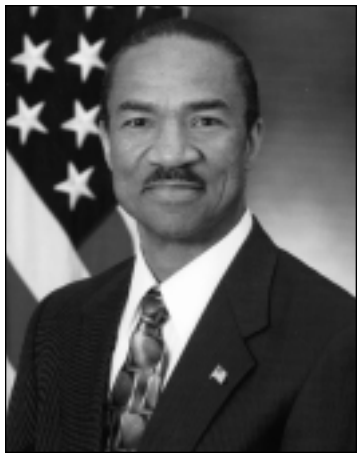


In This Issue:

- ASA (AL&T) Interview
- Outsourcing Innovations
- Transforming Test and Evaluation
- Reader Survey Results

FROM THE ARMY ACQUISITION EXECUTIVE

Transforming Army Installations And Facilities For The 21st Century



Army installations and facilities worldwide are the power projection platforms from which our men and women in uniform successfully deploy to execute their diverse missions. They are an integral component of readiness and also places where our soldiers work, train, and live with their families.

The Army has 12 million acres of land and facilities worth more than $220 billion. On these installations, our world-class fighting force lives and works in third-class conditions. Quality of life and quality of workplace are directly linked to the quality of our infrastructure. Commanders currently rate two-thirds of their infrastructure condition so poor that it significantly impacts mission accomplishment and morale. It also impacts recruitment and retention.

Because we owe our soldiers the very best, the Army's holistic approach to transformation includes transforming our installations and facilities to support the Objective Force. In this issue, you will learn about how the Army plans to improve and manage future installations to meet changing mission requirements while, at the same time, protecting the environment and providing excellent living and working conditions for soldiers. You will learn about Fort Future, a virtual installation where one can model, simulate, and assess plans to support the Objective Force. You will also learn about installation protection against a full range of terrorist threats, and about the need for outsourcing innovations such as strategic sourcing, partnering, and performance-based contracts.

During the next 5 years, shortfalls in installation sustainment, restoration, and modernization are expected to total about $3 billion annually. Adding to this serious situation is the fact that the Army has more infrastructure than it needs, and the cost of operating and sustaining it directly competes with funding our warfighting capability.

Faced with these challenges, the Army has initiated several efficiency initiatives that assist in getting the most we can from available resources. In particular, we are capitalizing on the strengths of the private sector through housing and utilities privatization and competitive sourcing. Two noteworthy programs are the Residential Communities Initiative (RCI) and Utilities Privatization.

The President and Secretary of Defense have made improving military housing a top priority. In 1997, the Department of Defense established a goal to eliminate inadequate housing by 2010. This administration accelerated that goal to 2007. RCI will help the Army meet this important goal. With more than 110,000 family housing units — 67,000 of which are inadequate — this program allows the private sector to remodel, build, and manage housing on Army bases to provide the quality of life that our soldiers and their families deserve. In fact, the privatization of military housing is proving to be a success story. Through RCI, whole communities are being redeveloped — communities that include recreation facilities, shopping areas, schools, and pedestrian pathways.

In another important area, secure, safe, reliable, and efficient utility systems are critical to the success of military installations as force projection and sustainment platforms. Procuring energy commodities effectively and efficiently — and conserving energy — saves money that can be invested in readiness, facilities sustainment, and quality of life. Historically, military installations have been unable to fully upgrade and maintain utility systems because of inadequate funding and competing installation management priorities. This is one reason why we are aggressively pursuing the privatization of utility systems — to free installation managers from the burden of providing utility services and maintaining utility systems. Where economically feasible and when unique security concerns do not exist, utility systems are being sold to private sector contractors who will then either repair them, or upgrade or replace them with improved utility systems and services. This eliminates ownership of the transmission lines and allows the installation to simply be a customer of the utility provided.

Our Nation's security, today and in the future, depends on installations and facilities that support operational readiness and changing force structures and missions. We must continue to transform our installations and facilities into those required for a 21st century military.

Claude M. Bolton Jr.

May-June 2002; PB 70-02-3

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: **bleicheh@aaesa.belvoir.army.mil**.

***Army AL&T* (ISSN 0892-8657) is published bimonthly by the OASAALT. Articles reflect views of the authors and not necessarily official opinion of the Department of the Army. The purpose is to instruct members of the Army acquisition workforce relative to AL&T processes, procedures, techniques, and management philosophy and to disseminate other information pertinent to their professional development. Private subscriptions and rates are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402 or (202) 512-1800. Periodicals official postage paid at Fort Belvoir, VA, and additional post offices. POSTMASTER: Send address changes to DEPARTMENT OF THE ARMY, ARMY ALT, 9900 BELVOIR RD, SUITE 101, FORT BELVOIR, VA 22060-5567. Articles may be reprinted if credit is given to *Army AL&T* and the author. Unless specifically requested, photo credits are not given. Approved for public release; distribution is unlimited.**

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Acquisition Logistics Technology

ARMY AL&T

Professional Publication of the AL&T Community

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FEATURES

DEPARTMENTS

COVER

The transformation of Army installations is a major undertaking to support changing mission requirements.

EXCLUSIVE INTERVIEW WITH CLAUDE M. BOLTON JR. ASSISTANT SECRETARY OF THE ARMY FOR ACQUISITION, LOGISTICS AND TECHNOLOGY

Interviewed by Army AL&T Executive Editor Debbie Fischer-Belous

Army AL&T: **How would you describe your management approach?**

Bolton: I would describe it as a team approach. In terms of management theories, it's participatory. I like forming teams and watching them succeed.

Army AL&T: **What do you hope to achieve during your tenure as the ASA for AL&T?**

Bolton: I want to help the Army in its transformation efforts. We need to transform the Army, and that's been articulated through a vision statement by Army Chief of Staff GEN Eric K. Shinseki and by Secretary of the Army Thomas E. White. The challenge of transforming by the year 2010 is a mighty one, but I believe it's achievable and I think that current progress certainly indicates that we will accomplish our goal.

Another aspect of supporting the transformation is related to programs and people in our acquisition, science, technology, and logistics areas. We must also focus on production, which is dependent on the Defense industrial base, the non-Defense industrial base, the organic industrial base, and the industrial bases abroad. Finally, I place great importance on what I call the "I" item, which is *improvement*. We must constantly improve all of the other areas I mentioned. So that's where I will focus my efforts and in turn support the transformation of the Army.

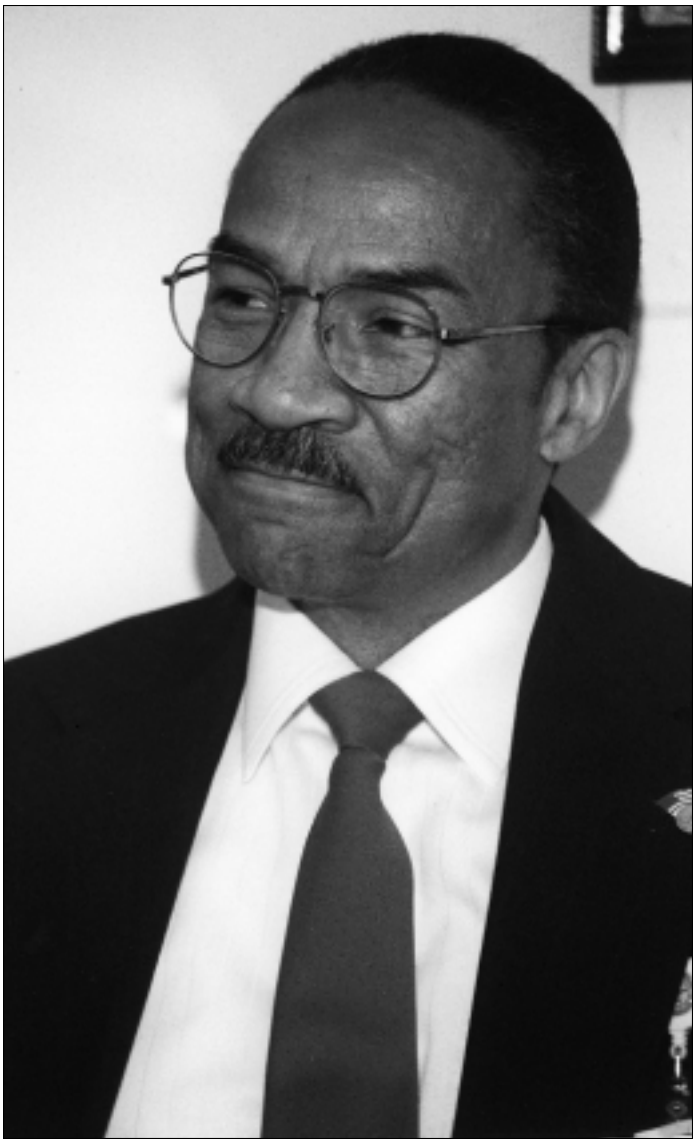
Army AL&T: **You are a veteran of more than 30 years of Active U.S. Air Force service. What differences have you seen thus far in the way the Army conducts business?**

Bolton: Let me tell you the things I like about the Army. First, I really like what our office symbol, AL&T, represents. You won't find AL&T in any of the other Services. You may find an *A*, and maybe even a *T*, but I don't think you'll find all three together. If an organization is going to conduct cradle-to-grave life-cycle management, its headquarters needs to adopt a policy that combines acquisition, logistics, and technology. We do that and I like it. Last August, the Army Chief of Staff put out a memo that called for reorganization of our program executive offices [PEOs] and program management offices. Subsequently, we took each program and put it under one of the PEOs, and gave project, product, and program managers [PMs] life-cycle responsibility for their programs. I don't think you'll find that in the other Services. Although we're still refining the details for this change, I fully expect it to prove very beneficial for the Army.

Another difference between the Army and the other Services is the approach taken during the initial planning stages of a program. Traditionally in the other Services, at the outset, a small number of individuals who are junior in rank and experience determine 70 to 80 percent of the final destiny of a program. My experience thus far with the Army is different. For example, since I arrived here, I have met approximately every other week with the Army Chief of Staff and other senior members of the Army leadership to discuss the Future Combat Systems, which is a key component of the Objective Force. We have addressed what the Future Combat Systems will be, its requirements, and cross-discipline issues. I believe we have the best brainpower and most experienced individuals working on this.

Army AL&T: **In what ways did the events of September 11, 2001, impact the Army's short- and long-term acquisition goals?**

Bolton: The transformation of the Army was going on before 9-11, and we were already working with the Defense Advanced Research Projects Agency on the Future Combat Systems. In addition, the Interim Armored Vehicle, which is now named Stryker, was already under development. What 9-11 did was to give us greater focus. It made us ask ourselves, "Are we doing the right things?" Yes we are, but we need to move faster and I think 9-11 caused us to do that. Thus, my focus is to put the Objective Force together as quickly as possible while simultaneously addressing the readiness of the Legacy Force, recapitalization, and the Interim Force.



September 11 *did* happen and could happen again. But there is less probability of that if we get the Objective Force out there quickly, and that motivates me.

Army AL&T: **Since Objective Force planning predated the events of September 11, 2001, what revisions to it might be required?**

Bolton: We must transform more quickly. The Objective Force concept was introduced approximately 3 years ago, and the Army began teaming with the Defense Advanced Research Projects Agency on that effort at about the same time. So it hasn't been all that long. Actually, prior to 9-11, GEN Shinseki accelerated the Objective Force effort. So now we must achieve that accelerated schedule. Our vision of what the Objective Force should be hasn't changed. It's to deploy a brigade

combat team anywhere in the world in 96 hours after liftoff, a division on the ground in 120 hours, and five divisions on the ground in theater in 30 days. That requires a massive change in what we're doing.

Army AL&T: **One of your prior assignments was Commandant of the Defense Systems Management College. What, specifically, do you think the Army needs to do relative to training and educating its civilian and military acquisition workforce?**

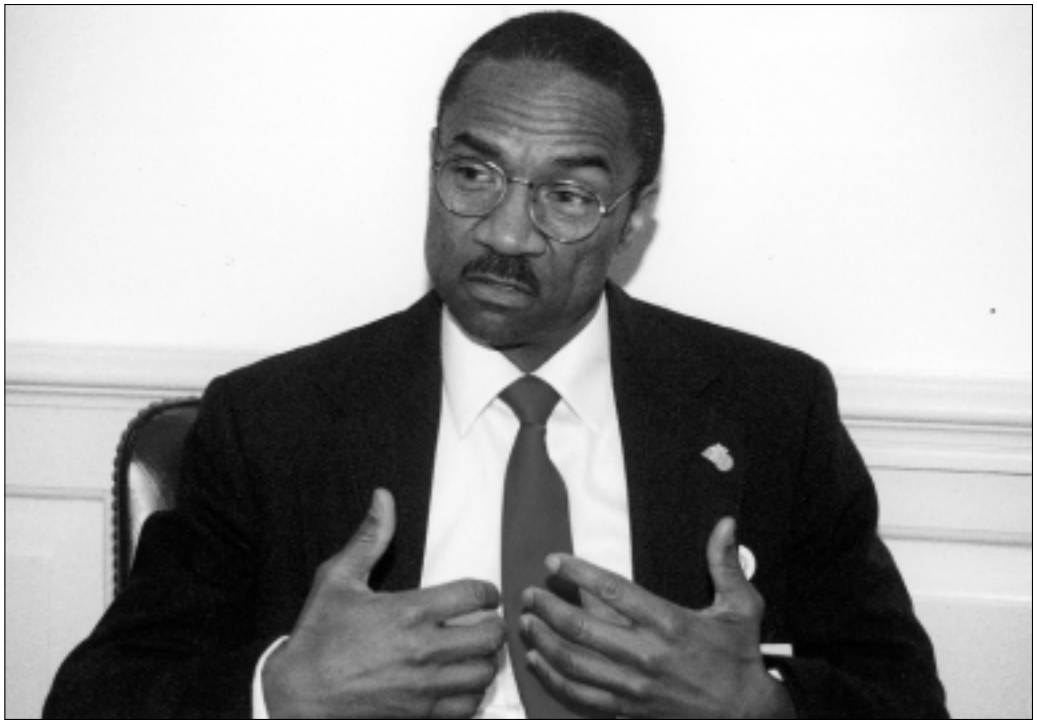
Bolton: The people and programs part of what I talked about earlier is extremely important. In fact, people are key to the success of the Objective Force. During the next few years, we're going to rely greatly on Defense Acquisition University [DAU] President Frank Anderson and his folks to provide us the education and training we need to make the Objective Force a reality. We will also rely on DAU to help us with continuous improvements to the Objective Force. Continuous improvements will be necessary because, as September 11 taught us, our adversaries are clever and change quickly, and we also need to be nimble and capable of changing quickly. Thus, the Objective Force will continue to evolve to be able to address any enemy, at any time, anywhere. That is why our folks must be in a continuous learning environment. As such, we'll be working with DAU and with colleges and universities to make that happen. The bottom line is that members of our workforce who are involved in acquisition, sustainment, and science and technology must keep on learning.

Army AL&T: **You also served earlier in various program executive officer and program manager assignments. What "lessons learned" might you offer to individuals considering such tours today?**

Bolton: Let me start by stating that I've enjoyed every one of those assignments. They haven't always been easy, but I think I've learned most from the assignments that were not easy. In fact, I guess I would say they were all challenging. Some of the lessons learned that I would suggest are as follows:

- Have a requirement,
- Know your requirement,
- Know who your customer is and form a good relationship,
- Know how to relate to Congress and the media, and
- Know the history of your program.

Relative to knowing about the history of your program, I want to note that there is very little acquisition, logistics, and technology work being done today by the Army or the other Services that is totally new. Somewhere, someplace, someone else has already done what we're doing. It could be the other Services, it could be in industry, or it could be halfway around the world. It is important to recognize that. And when all else is said and done, and you've learned the lessons listed above, perhaps the most important thing is keep a sense of humor and stay healthy.



Ultimately, to get the last enemy, we need boots on the ground. We need soldiers who are trained to go in and dig out an enemy who does not want to be dug out.

Army AL&T: **What impact do you believe the Headquarters, Department of the Army reorganization will have on your operations**?

Bolton: We will be smaller, smarter, and faster, and I think that applies across the entire headquarters. I think the rationale behind the reorganization and the downsizing is correct. However, as I stated to some of our personnel yesterday during a briefing, the reorganization will not be easy because some folks in our organization may be impacted. Some may actually retire, so we'll provide incentives for them. In general, people just don't like change, especially changes like this that occur so quickly. I will be as supportive as I can and try to minimize the impact on our personnel. But in the end we will have to reassess, reinvent, re-engineer, remake, and redo ourselves so that we can do what we are charged to do in this office to support not only the Secretary of the Army and the Chief of Staff, but also the soldier in the field.

Army AL&T: **From your perspective, what do you think is the greatest challenge to the Army's successful transformation?**

Bolton: Us! The only thing that stands in our way is ourselves. As I mentioned earlier, humans do not like change unless there is a calamity staring them right in the face. We don't necessarily have a calamity, but we must realize that we all need to change. We are fortunate to have good leaders who understand that we need to change and create the Objective Force, and it's up to the rest of us to make that happen.

Army AL&T: **Is there anything else you'd like to add?**

Bolton: It's hard to get this across in an article, but I want to emphasize that if people see what's going on in Afghanistan today, they will realize the need for the Army. The Air Force, the Navy, and our Special Forces have also done a tremendous job in Afghanistan. Ultimately, to get the last enemy, we need boots on the ground. We need soldiers who are trained to go in and dig out an enemy who does not want to be dug out. I look at what we're trying to do with the Objective Force and I believe that if we had that Objective Force today it would make a world of difference. So I see a great sense of urgency to get on with what we're doing. The longer we wait, the harder it is on our soldiers. So, fielding the Objective Force is paramount.

The other thing I want to add is that I am having an absolutely super time. I've been with the Army and in this position for only a couple of months. I've received tremendous support from the Secretary of the Army, the Army Chief of Staff, the entire Army staff, and the men and women I've had the pleasure of meeting in the field. So, the transition from one Service to the other and from one uniform to the other has been great. I feel part of a team and I enjoy being here. I look forward to keeping our Army the most powerful, the most capable, and the most respected Army the world has ever seen.

TRANSFORMING INSTALLATIONS TO SERVE THE ARMY'S OBJECTIVE FORCE

MG Robert L. Van Antwerp and
MG Hans A. Van Winkle

Introduction

The Army's installations must be transformed to support new requirements of the Interim and the Objective Forces while continuing initiatives to modernize and sustain the current infrastructure. Already faced with major challenges in addressing substandard facilities with limited funds, we must now plan to house, train, and deploy our transformed units. Installations must be prepared to accommodate the new force structures as they emerge to ensure no compromise to readiness.

Under the Army Transformation Campaign Plan, the Office of the Assistant Chief of Staff for Installation Management (OACSIM) is responsible for installation transformation. The magnitude of changes that will be needed, and the speed with which installations must transform, demand innovative strategies from the Army leadership. Traditional business practices will not achieve installation transformation quickly enough to field the Objective Force.

Installation Report Card

Army installations are the platforms supporting Army readiness. They provide the places where our soldiers live, work, and train. Quality facilities and robust power projection platforms are essential to meet our combatant force requirements and soldier expectations.

The Army's inventory currently includes:

- 162,000 buildings totaling almost 1 billion square feet,
- 100,000 family housing units,
- 28,000 miles of paved roads,
- 12 million acres of land, and
- A physical plant with a replacement value of more than $220 billion.

Over the years, the investment in maintenance and repair (M&R) for this infrastructure has fallen far short of that needed to meet operational and quality standards. In the past 10 years, M&R has been funded at approximately 60 percent of that required. Further, funds appropriated for M&R and revitalization of facilities have been diverted to mission requirements. The result is that today we are a mission-ready military that is living, working, and training on installations with serious infrastructure problems.

Army installations are the platforms supporting Army readiness. They provide the places where our soldiers live, work, and train. Quality facilities and robust power projection platforms are essential to meet our combatant force requirements and soldier expectations.

The effects of underfunding have become worse as our facilities have aged. Many of our utility systems are more than 50 years old and have more than exceeded their expected life span. Failures are frequent and could be catastrophic should a gas line or water line fail.

While savings were achieved in previous Base Realignment and Closures (BRACs), the proceeds were cut from operation and maintenance budgets rather than being used to recapitalize bases that remained active. The state of these Army facilities, and the realization that fixing them is not affordable, has led to several DOD-directed privatization and outsourcing initiatives. These efforts seek to provide better quality for our critical facilities by leveraging appropriated funds with private capital. The Military Construction, Army (MCA) Program also has been refocused on modernization, but we

While savings were achieved in previous Base Realignment and Closures, the proceeds were cut from operation and maintenance budgets rather than being used to recapitalize bases that remained active.

continue to lose ground with respect to our facilities.

In addition to our decaying infrastructure, Army installations face many challenges in environmental stewardship. Since enactment of the National Environmental Policy Act (NEPA) of 1970, environmental regulations that impact installations have grown exponentially. Virtually every activity related to a base's mission is governed by one or more regulations. Further, DOD has unique environmental concerns with some of its lands. These concerns include noise, threatened and endangered species, and unexploded ordnance.

The Army is committed to maintaining an environmental ethic, but there is an associated cost. For environmental programs that deal with the present and future—compliance, conservation, pollution prevention, integrated training area management, and technology—annual funding is about $700 million. For those programs dealing with past incidents—restoration, BRAC cleanup, and formerly used Defense sites—the cost is about $800 million annually.

Many installations face growing regional issues with their neighbors. Urban growth and public pressure have in some cases resulted in lost training capability, which impacts readiness. Further, a heightened emphasis on homeland security may change installation-community dynamics.

Supporting Efforts

Our installations will be challenged to support the Interim and Objective Forces. The force structure, doctrine, and weapon systems of the Objective Force will differ greatly from those of the Legacy Force. This will change the types of facilities and support required on an installation, perhaps dramatically. These changes must happen in conjunction with privatization and other ongoing initiatives, and they must be timed to coincide with fielding the new units in a way that provides effective support when it is needed.

While Future Combat Systems (FCS) is an unknown at present, in keeping with transformation objectives, it can be expected to be medium-weight versus the current heavy or light units. The Objective Force will be faster, more survivable, and more deployable with a smaller logistical tail.

FCS will rely on technology for battlefield advantage. Our transformed installations must be able to support any technology and system that may emerge, including wireless Web-based communications to facilitate command and control, Web-based sensors and weapons, unmanned ground and aerial vehicles, robots, "smart" armor, and longer range munitions.

Our current training ranges and facilities were designed to support the Legacy Force. As requirements for the Interim Brigade Combat Team and Objective Force evolve, training ranges must be adapted, or new ones built, to accommodate new weapon systems and doctrine. While virtual and constructive training will be incorporated into the soldier's experience, they will not replace the need for realistic field training. These new ranges must be integrated with the support facilities required for the new weapon systems.

Installations must also ensure that they can procure contract services and hire workers with the types of skills needed to support the transformed force. New technology to be fielded with FCS may demand different capabilities than are currently available in the local community. Planners will need to ensure that service providers are available to support the full spectrum of new requirements. These include all services related to design, construction, operation, and maintenance for both facilities and ranges.

Transformation Strategy

Recognizing the critical role installations play in the readiness, projection, and sustainment of forces, planners have a sense of urgency to put installation transformation in sync with the overall transformation effort. The strategy to do so has four primary components:

• *Plan the installation investments needed to support Legacy, Interim, and Objective Forces in*

conjunction with the ongoing efforts in each line of operation (LO) for Army transformation. Installation initiatives are covered in LO 12 in the overall transformation synchronization matrix. In this way, efforts involving installations can be crosswalked and integrated with the efforts to transform all other aspects of the Army. To support OACSIM, the U.S. Army Corps of Engineers has established a Program Manager for LO 12 to facilitate and manage this effort.

• *Clarify major issues with regard to installation transformation and create a consensus on the way ahead*. There is a need to kick-start the transformation process for installations. Perhaps the greatest challenge comes from the fact that we do not yet know the exact form and function of the objective units or their specific needs. That requires us to build flexibility into future installations to ensure that the evolving objective forces can be effectively served without continuous major changes in installation functions and character.

A seminar game was commissioned to bring together a diverse group to examine installation issues and develop an initial strategy for addressing transformation within the timeframe and potential support requirements of the Objective Force. The game involved players from the Services, the Office of the Secretary of Defense, the Army installation management community, other federal agencies, industry, and academia. It was designed and facilitated by Toffler Associates, an industry consultant in the areas of organizational change and adjustment. The game was conducted on Dec. 6, 2001, at the Johns Hopkins University Applied Physics Laboratory in Laurel, MD. (The article on Page 9 of this issue describes results of the game.)

• *Seek means to accelerate the installation acquisition process*. Given the continuing evolution of FCS and the Objective Force structure and doctrine, it is not possible to develop a specific template that describes the character and capabilities of objective installations. In addition, the timeframe for the current MCA process may preclude effective response to the needs of the Objective Force in time for installations to be ready for their arrival. The simulation based acquisition concept—in principle the approach being used for FCS—is a means to provide a greater in-depth analysis capability that can shorten timelines, give decisionmakers more comprehensive information on alternative approaches to changing installations, and provide integrated economic, environmental, and engineering perspectives. This effort is embodied in the Fort Future Technology Base Program underway in the U.S. Army Engineer Research and Development Center. (Fort Future is described in more detail in the article on Page 14 of this issue.) In addition to Fort Future tools, an installation battle lab (IBL) is being established to provide quick, in-depth analysis to support OACSIM. The IBL will allow task-oriented teams to deal with complex issues faced by the installation management community. It will also provide an initial focus for putting the Fort Future tools to work on interim and objective basing and master planning decision support.

• *Develop a more effective approach to management of installations*. This is being addressed through the new Transformation of Installation Management (TIM) organization recently announced by the Secretary of the Army. TIM will provide an installation management activity and regional centers to afford more effective planning and management of installations. Activities on installations previously managed by the major command will now be handled by the TIM and resourced centrally through OACSIM. This is a major paradigm shift for the Army and the installation support community. Transformation of installations is being built into the TIM business process.

Conclusion

Future installations must be modeled in the context of continuous change. They need to be flexible enough to meet changing mission requirements while protecting the environment and providing excellent living and working conditions.

While transforming our installations presents formidable challenges, it also offers significant opportunities for improving how we manage our Army infrastructure in the future. By making strategic decisions now, we can effect unprecedented life-cycle management of our bases to ensure that they will continue to be responsive to the Nation's defense needs in the generations to come.

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INSTALLATION TRANSFORMATION GAME

Dr. Lewis E. Link Jr., Kristine L. Allaman, and Stephen C. Reynolds

Introduction

As proponents for Army installation transformation, the Office of the Assistant Chief of Staff for Installation Management (OACSIM) and the U.S. Army Corps of Engineers (USACE) determined that a fresh look was needed at the issues and strategies concerning the role of installations in supporting the Objective Force. To initiate this effort, an installation transformation game was sponsored by OACSIM and organized by USACE. Participants included senior leaders from across the Services, the Office of the Secretary of Defense, other federal agencies, academia, professional societies, and industry.

Out-of-the-box thinking was encouraged as game participants sought to address key challenges likely to face installations, not only for the initial rollout of the Objective Force, but also as materiel systems, doctrine, and training requirements evolve over the next 30 years. The game was designed and facilitated by Toffler Associates, an industry consultant in the areas of organizational change and adjustment. The game was held Dec. 6, 2001, at the Johns Hopkins University Applied Physics Laboratory in Laurel, MD.

Based on data collected during the game, findings and recommendations were produced, representative of leadership consensus on key issues. These issues help to focus attention on processes and metrics to be addressed as a transformation of installation management (TIM) organization is established. In addition, modeling and simulation (M&S) will be used to address these issues under the USACE "Fort Future" initiative. (Refer to Fort Future article on Page 14 of this magazine.) This article describes the objectives of the game, key findings, and actions that have been initiated in response to the game to further support Army transformation.

Game Objectives

The key objective of the game was to identify dominant variables that should govern design and modeling of installations to support Army transformation. An ancillary goal was to identify mechanisms for accelerating installation transformation to meet the needs of future forces. Key issues were used as discussion points. Future installations should provide or facilitate the following:

- More rapid and effective deployment and sustainment of U.S. forces,
- Higher levels of unit training and readiness,
- Enhanced force protection and survivability,
- Enhanced well-being of Service members and their families, and
- Versatility and flexibility to respond to continuous changes in forces.

Approach

The game was set in the year 2015 and was conducted over the course of 1 day using a seminar-style approach. It consisted of two radically different installation concepts that were exercised in two game moves. The concepts were not designed to posit a particular recommended installation design, but rather to illustrate opposite extremes to provoke debate. The two extremes were as follows:

- "Fort Autonomy": A "mega-complex" of bases, each fully self-contained and secured from their surrounding communities. All operations-related and "well-being" infrastructures are inside the wire.
- "Fort Synergy": A distributed, mutually supporting "web" of bases, each highly integrated with their surrounding communities. Installations are solely operations-focused, with all well-being functions integrated with the community.

Move one had two steps. The first step required each installation to deploy Objective Forces overseas as part of a Joint Task Force operation. The second step required the installations to backfill and train Legacy Force Army National Guard and Reserve units to prepare for subsequent deployment as reinforcements.

Move two was a plenary session with the purpose of capturing the dominant variables that must be considered in the design and function of future installations that will allow them to be integral and highly valuable components in the Nation's overall future warfighting capability. In reality, the objective was to create

a mission essential task list (METL) for future installations.

The game concluded with a plenary session in which all participants individually identified an issue about which they felt they had gained new insight, as well as how that insight would influence a particular action they would take in support of installation transformation. Toffler Associates analyzed all the information from the game and incorporated the additional insights gained from the preliminary preparation, interviews, and workshops that preceded the game.

Primary Findings

A wealth of findings resulted from the game, based on analysis of the discussions during the game and breakout group presentations. Only the primary findings are presented here. A preponderance of opinion supported the following primary findings:

• All Services are engaged in the process of transforming their installations and facility functions. As a whole, however, these transformations are not being performed in concert.

• Installation transformation must begin now and must be integral to the overall Army transformation effort.

• Future installations will have much greater interdependencies on the surrounding communities.

• Future installations require greater flexibility and adaptability to support evolutionary change.

• Processes for transforming installations need to be streamlined.

• Adaptation of the Army's METL and Doctrine, Training, Leader Development, Organization, Materiel and Soldiers (DTLOMS) concepts could significantly assist in installation transformation.

Game Conclusions

The following conclusions were drawn from the findings and analysis of game results:

• METLs for installations will materially assist in transformation decisionmaking. A consistent, METL-driven approach to planning will allow planning decisions to be evaluated against their mission.

• Installations must transform in synchronization with Army combat force transformation. Otherwise, combat force transformation is at risk.

• Different approaches to critical infrastructure can enhance unit readiness and deployment capability. Design elements with increased flexibility can enhance the capability of installations to change force structure and material systems.

• Three of the game hypotheses (dealing with reduced costs, enhanced environmental stewardship, and increased wellness) require further and more detailed trade-off analysis in a future decision-support system for installations.

• The transformation process for installations needs to be a joint endeavor among the Services.

The Way Forward

The installation transformation game led to a remarkable consensus among Army and joint leaders in identifying key challenges that installations will face in the first half of the 21st century. As a result of the findings and recommendations that emerged from the game, the OACSIM agreed to move ahead on several options in the context of standing up the new TIM organization. As part of its responsibilities under the Army Transformation Campaign Plan, USACE and its Engineer Research and Development Center (ERDC) will provide support to OACSIM in developing these options.

The first key focus area is to develop installation METLs. Mission drives all installation requirements, so METLs will help installations evaluate planning options with a view toward their contribution to an essential task. For instance, one proposal developed and validated in the game has a top line mission to sustain combat capability. There are four essential tasks: protect the force, move the force, sustain combat readiness, and aid retention and recruiting. Under this scenario, decisions about infrastructure, environment, and cultural resources would

Game participants used groupware facilities to rapidly generate and capture responses.

be evaluated against metrics developed for this METL. Installations with different missions will have different METLs, but those with similar missions will have the same METLs.

Metrics

Effective use of METLs requires the development of metrics. Although metrics exist for various purposes throughout the Army, there was agreement during the game that adequate metrics do not exist that would allow modeling of functions such as combat capability throughput and ecosystem impact in a decision support system for installations.

New Army requirements are evaluated for their impact on DTLOMS. No new programs occur without a DTLOMS evaluation. With METLs and metrics in place, proposed transformation requirements can be evaluated for installation management, design, and function. Similarly, new installation developments should be evaluated for their impact on contingency operations, force structure, people, and other factors.

OACSIM has approved the stand-up of an installation battle lab to provide analysis and decision support capability for installation transformation. Established in 1992 at the U.S. Army Training and Doctrine Command, the battle lab concept subjects new ideas to qualitative and quantitative analysis before the Army invests in change. ERDC is working with OACSIM to create a virtual battle lab organization for installations, allowing more flexibility and outreach in developing task-oriented teams to address specific issues.

Installation M&S is a new science and technology objective for the Army. The new initiative, informally known as Fort Future, uses simulations of Army installations to explore ramifications of design and planning decisions on force projection, the ability to train, military construction, force protection, and well-being for the Objective Force. As a result of the installation transformation game, Fort Future will be designed to support METLs and metrics for installation performance as they are adopted.

Installation M&S is a new science and technology objective for the Army. The new initiative, informally known as Fort Future, uses simulations of Army installations to explore ramifications of design and planning decisions on force projection, the ability to train, military construction, force protection, and well-being for the Objective Force.

Support for facility design, both within the cantonment area and on training lands and ranges, is necessary to accelerate the pace of transformation. Under the current military construction process, delivery of a new facility can take from 5 to 7 years for a large project, depending also on timely completion of analysis required under the National Environmental Policy Act (NEPA) of 1970. In addition, fielding of the Future Combat Systems under the unit set fielding process will depend in part on facilities that meet the proper requirements. An important part of Fort Future is a requirements-driven design process with advanced visualization capability to ensure that facilities will actually work with the equipment for which they are designed.

Conclusion

The installation transformation game achieved its purpose. Diverse, well-informed, and motivated senior leaders took a hard look at the role of future installations. They identified the major issues that must be addressed to facilitate successful transformation of installations in sync with the Army transformation goals and developed strategies for dealing with those issues. The game created the necessary momentum and focus to help the installation community fulfill its role in achieving the Objective Force.

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Using Gaming To Make Complex Decisions . . .

BEHIND THE INSTALLATION TRANSFORMATION GAME

John O'Connor and Steven Kenney

2015: An Objective Brigade Combat Team (OBCT) deploys to Southeast Asia from Fort Synergy, its base in California. Fort Synergy has reached new levels of integration with the surrounding community. All medical care, emergency response, housing, and quality of life services are "outside the wire." The forces deploying from Fort Synergy also represent a transformation, with equipment and contingency operations (CONOPS) unlike anything in the Legacy Force. Of course, the Army National Guard (ARNG) and Army Reserve units preparing to flow into Fort Synergy to train and backfill still rely on their legacy systems.

2001: Fourteen years before, leaders from the Services, DOD, and industry considered the situation. What training and maintenance facilities will be needed at Fort Synergy to support both Objective and Legacy Forces? Newer units will still rely on live-fire exercises, but simulation will be central to their training regimen, especially as local communities encroach on the perimeters of western U.S. installations. "Virtual ranges" will probably fill many of the old maintenance buildings rendered obsolete by the unique new OBCT platforms. Reserve and ARNG units will still have their heavy, diesel-fueled equipment, and will need a different range of training and maintenance facilities. Should the ARNG and Reserve units train at another facility before coming to this installation? Should ARNG and Reserve units do annual training at Fort Synergy to ensure the infrastructure they need is in place? Can we cross-train installation personnel to support both Objective and Legacy Forces? One of them throws out an idea: What if we did it this way?

Introduction

Army transformation is proceeding rapidly. New concepts of operations, force structures, and weapons are all in development. One underappreciated element in this is the installation. For a period roughly from 2009 to 2015, Army installations will host three different generations of combat units: the Legacy, Interim, and Objective Forces. The challenge increases when we consider that the structure, equipment, and CONOPS of the OBCT are not yet defined. Long lead time requirements for military construction and other unknown requirements demand that the Army begin addressing the complex questions of installations and force transformation.

In September 2001, under the sponsorship of the Office of the Assistant Chief of Staff for Installation Management (OACSIM), the U.S. Army Corps of Engineers (USACE) asked Toffler Associates, an industry consultant in the areas of organizational change and adjustment, to design a game to identify dominant variables that should govern design and operation of future installations. The objective was to explore how installations must transform to enhance the deployment, sustainment, training, readiness, and survivability of future Army forces, and the quality of life of tomorrow's soldiers and their families.

OACSIM also identified another goal for the game: to identify mechanisms for accelerating installation transformation. Toffler Associates created a seminar-style game to elicit critical data and insights from general officer/CEO-level participants from inside and outside DOD. The technique successfully leveraged the players' creativity and years of experience in combat operations, facilities design and maintenance, and management to meet OACSIM's goals.

Full-Spectrum Gaming

The approach taken by OACSIM and USACE illustrates how powerful and practical gaming can be. First, it's important to be *strategic* in setting the context. Well prior to the game, interviews were held with those experts throughout DOD and the private sector who have experience in disciplines relevant to installations. Each interview focused on illuminating the critical future issues with regard to installations and traced their implications back to today. Simultaneously, in-depth research was conducted on these issues and challenges. This data all fed directly into the game design process.

Because transformation is about tomorrow's force and tomorrow's installations, the game was made *futuristic*, while taking care to remain plausible. The value of gaming a complex issue like installation transformation is the opportunity it affords to illuminate future consequences of surprise as well as unanticipated future opportunities. Key elements of future issues, threats, and opportunities were seeded into the game scenarios as a result of information gathered from the interviews and research. The futuristic construct forced players to project power (OBCT and Legacy Forces) from hypothetical, novel kinds of installations (Fort Synergy and Fort Autonomy). Additionally, testing helped determine, among other things, the level of community integration versus the level of force protection that the future force will require.

A key element of the game was its *experimental* and *conditional* design. Games can and must produce objective and verifiable data that decisionmakers can use. Hypotheses were developed that shaped every step of the work—scenario, game moves, elicitation process, data collection, and post-game analysis and exploitation. The features

of the two futuristic installations determined how different players would execute parallel tasks from different kinds of installations. Those tasks tested hypotheses regarding relationships between installation design and performance of military tasks.

In each task, game planners ensured that the design of the installations was the operative factor in decisionmaking. Also in each move, dilemma conditions were created to further test hypotheses. Players had to determine ways to respond to each challenge while meeting mission requirements within the context of their installation design. In this way, data were collected to help support or refute hypotheses about how installation designs impact deployment timelines, how design choices can impede or facilitate support of different types of units from the same base, and how design choices can diminish or enhance ecosystem impact and soldier wellness.

Another design element that makes gaming so powerful for complex problem solving is its *experiential, competitive* nature. In the installation transformation game, participants "felt" the new opportunities and risks in richer detail than they would have in another kind of interaction. To the greatest extent possible, the game presented our role-playing decisionmakers with the experiences they needed to realistically evaluate options and determine the trade-offs they had to make in their futuristic conditions. Moreover, the competitive nature of the interaction added multidimensionality, unpredictability, and energy to our players' planning. The teams competed against time, against unpredictable conditions, and the inherent uncertainty of installation transformation requirements. The challenge of these competitive conditions generated more robust ideas than other techniques might have, helping to meet the game sponsors' aims.

The Game Experience

The players convened at the Johns Hopkins University Applied Physics Laboratory in Laurel, MD, on Dec. 6, 2001. The conference facility, the Warfare Analysis Laboratory (WAL), featured state-of-the-art technology known as "groupware" that enabled players to "converse" electronically throughout the day with detailed comments and ideas about the content and direction of the game. This enabled game sponsors and designers to capture and rapidly study an enormous trove of data and innovative thinking that formed the basis of post-game analysis. The groupware and other WAL capabilities were important in developing actionable conclusions and recommendations quickly about specific installation transformation issues and opportunities.

The diversity and quality of the players were also key to the game's success. Senior executives from DOD installations were represented in force, providing the expertise needed to support exploration of these complex issues. Augmenting these installation experts were senior leaders from Army operational commands, industry executives, senior representatives from non-DOD government agencies, attorneys, and others. By bringing together this broad range of expertise, game planners began developing solutions to installation transformation challenges that were realistic and practical but also highly innovative and future-focused.

During each move, the senior officer on each team played the role of the commander-in-chief (CINC) while other players acted as members of the CINC's staff. After the breakout sessions, each CINC reported key findings. The reports focused on data that supported or refuted hypotheses focused on the game sponsors' issues of greatest concern. In the afternoon, the players conducted an analytical move. The players discussed and agreed on a top-line mission essential task list (METL) for future installations to support Army combat capability. They also identified the need for multiple METLs to address the very different missions carried out by the different types of Army installations, including training, depots, and arsenals.

Turning Data Into Action

Immediately following the game, Toffler Associates developed its initial analysis. Data for the analysis included the groupware transcripts and detailed game notes. Three days later, the initial analysis served as the starting point for a discussion on how to accelerate the process for transformation.

A more thorough analysis of the game data was then completed, along with findings, conclusions, and recommendations on how the Army should proceed with installation transformation. Findings drawn from research and game play fueled conclusions about the hypothesis. Recommendations based on the conclusions identified critical path steps the Army must take to successfully implement transformation to meet the timeline for the Objective Force.

Conclusion

Full-spectrum gaming can be a powerful tool for addressing complex issues such as installation transformation. The principles of full-spectrum gaming help ensure the key issues and perspectives of the future are mapped to the real concerns of real planners and decisionmakers for maximum learning and practical value. The game brought to realization the decisions that need to be made, and are being made, by OACSIM and others. Now the impact of the game ripples through the Army and DOD. The process of change is underway.

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FORT FUTURE: MODELING TOMORROW'S ARMY INSTALLATIONS

Dr. Michael P. Case

Introduction

Research in a program called "Fort Future" will produce tools critical to the Army's ability to transform its installations in the timeframe required to support our emerging forces. Much like field commanders gain a superior advantage by visualizing the battlespace, installation planners will make strategic decisions by "seeing" results of many different scenarios.

Fort Future research and development is being conducted by the U.S. Army Engineer Research and Development Center (ERDC) in support of the Office of the Assistant Chief of Staff for Installation Management (OACSIM). Fort Future will create a "system-of-systems" that unites existing and new computer models to form a virtual installation. Building on the currently available and planned Standard Army Management Information System (STAMIS) that provides a snapshot of the present, Fort Future will use modeling and simulation (M&S) to help decisionmakers explore alternatives in the complex issue of preparing installations to support future forces.

Background

Simulation and Modeling for Acquisition, Requirements and Training (SMART) is an important part of the Army's strategy in procuring Future Combat Systems (FCS). The SMART strategy uses simulation to evaluate the performance of candidate system concepts before committing substantial resources to systems development. Transforming the Army's installations represents a huge national investment for which appropriate choices must also be made. Fort Future follows the SMART approach in allowing installation planners to model and simulate proposed changes to the infrastructure and environment and evaluate their effectiveness.

The initial 5-year Fort Future effort was approved as an Army science and technology objective beginning in FY02. Several M&S tools are under development, with other existing systems being integrated into a suite of Web-based tools.

Objectives

The key objective of Fort Future is to develop a capability to model, simulate, assess, and optimize installation capability to support the Objective Force. Users of Fort Future, at the installation, regional, or national level, will be able to set up planning scenarios, conduct dynamic analysis over a period of up to 30 years, and compare scenario results. Fort Future will allow decisionmakers to do the following:

• Provide an integrated sustainability planning capability to support mission essential task list (METL) analysis, master planning, and natural and cultural resource planning.

• Simulate and optimize planning for force projection. Metrics will focus on risk-based evaluation of an installation's ability to project forces over time.

• Simulate urban and regional growth around installations as a foundation for analysis of mission sustainability. Factors to be evaluated include encroachment, noise, traffic congestion, habitat, and threatened and endangered species.

• Manage facility requirements to rapidly generate, visualize, and analyze facilities for the Objective Force. The analysis will include force protection and sustainability issues.

Approach

Fort Future will integrate existing computer models where feasible and create new modules where necessary. The goal is to present results of M&S as clearly as possible, making maximum effective use of advanced visualization to enhance understanding of a decision's implications. Fort Future will use the following fundamental process:

• Create scenarios,

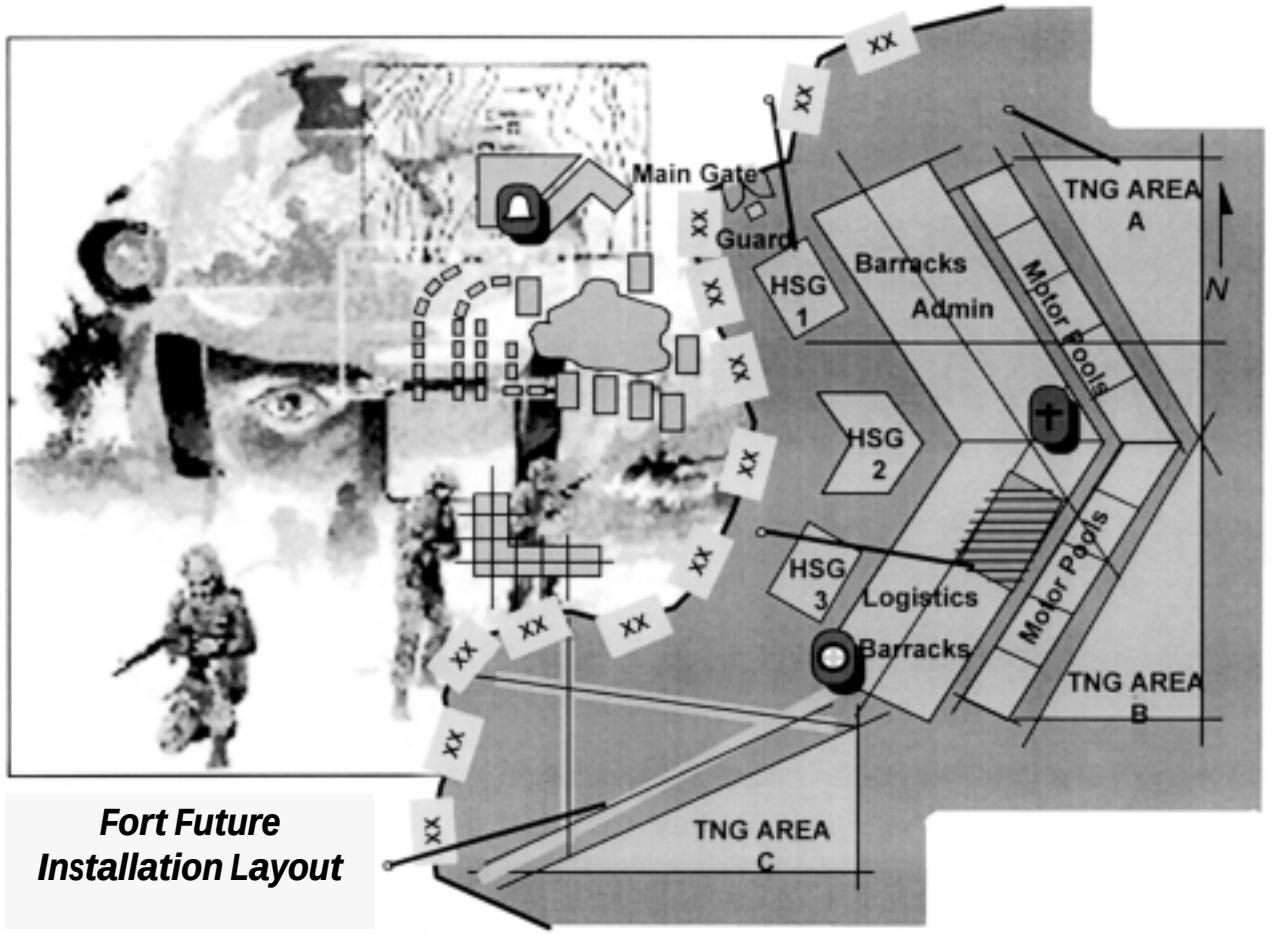
• Conduct analysis using selected computer models,

• Compare and contrast results, and

• Optimize.

The Foundation

The baseline for Fort Future analysis will be created using data from STAMIS and other publicly available repositories. For example, the U.S. Army Training and Doctrine Command (TRADOC) Corporate Database and OACSIM's Geospatial Information System Repository (GIS-R) (see the accompanying article on Page 22 of this issue) pull data from the Installation Status Report, the Integrated Facilities System, and Geographic Information System (GIS) maps into a common data store. When properly updated during the normal course of business, such repositories serve as the best source of data about the current status of an installation. Therefore, access to this information will be an essential element of Fort Future. The currently available TRADOC Corporate Database will be used as an initial module.



Fort Future Installation Layout

Achieving systems interoperability can be a daunting task. Fort Future will take advantage of Common Delivery Framework (CDF), which is being developed by the U.S. Army Corps of Engineers (USACE) to support interoperability and reuse of information technology capabilities in all USACE business areas. CDF uses open standards, published by the World Wide Web Consortium, to make software decision tools, models, and guidance available online.

Access to initial Fort Future capabilities will be provided through the Fort Future Workbench, a Web-served application. Through the workbench, installations, Transformation of Installation Management regional centers, and all "front office" elements will be able to set up private M&S workspaces, with a shared lessons-learned capability based on USACE's corporate lessons-learned module. Ultimately, Fort Future services are targeted for portals such as Army Knowledge Online, an OACSIM portal, or the Defense Environmental Network and Information eXchange (DENIX).

Sustainable Planning

Creating alternative scenarios is the key initiating process for Fort Future. Based on results of the installation transformation game, the sustainable planning module of Fort Future will be a planning tool for installations. Using a METL created from a template, the module will guide users through a process to create a tree structure using elements pulled from master plans and integrated natural and cultural resource management plans. For example, users will be able to designate proposed land-use policies on a GIS interface, which will be captured as a data structure in the tree. Using this process, users will create alternative scenarios to be modeled.

Planning Markup Language (PML) will be an integral part of the sustainable planning module. Using an XML [eXtensible Markup Language] format based on open standards, PML will provide a downloadable description of initial conditions and planned policies that can be read by M&S programs. Standardization efforts will build on industry relationships already formed through the DOD CADD [computer-aided drafting and design]/GIS Technology Center.

Force Projection

Objective Force deployment will be modeled using queued network methods and commercial software commonly used in industrial engineering. Fort Future users will be able to download parametric model templates from a Web site and run simulations locally. By correlating stations and resources with facilities on an installation GIS, parameters such as travel time and number of staging areas can be automatically populated.

Initial models have already been constructed using Interim Brigade Combat Team (IBCT) examples obtained from the Military Traffic Management Command-Transportation

Engineering Agency and Fort Lewis, WA. Research will be conducted to determine the degree of correlation between facility condition, planned maintenance, and risk to power-projection capability. Using these models, planners will be able to quantify criticality of facilities and justify resources.

Working with the Force Projection Battle Lab Support Element at Fort Eustis, VA, installation planners will evaluate the force projection module as the installation component within the suite of models used for deployment analysis. An integrated projection simulation capability consisting of multiple installations is also planned.

Training And Sustainability

Army transformation poses serious challenges to training on today's installations. Projections indicate that weapons will shoot farther and training will take significantly more space, with virtual and live training being conducted concurrently. The sustainable training module of Fort Future will be designed to help decisionmakers identify risk factors promptly so that steps can be taken to avoid conditions that might limit training. For example, if installation planners could identify potential areas of high growth and complaints about noise, they could work with local planning boards to establish buffer zones of compatible use.

To predict growth, ERDC is modeling urban and regional dynamics in a system called the Military Land-use Evaluation and Impact Model (mLEAM). The system runs on massively parallel supercomputers that make enormously complex calculations available to users within minutes rather than hours.

The goal of Fort Future is to bring mLEAM to the desktop through a Web interface so that it will be available to installation and regional planners. In the first prototype, planners will be able to run mLEAM at Fort Benning, GA, on a secure Web client, and then overlay noise contours for IBCT weapons. Other factors such as threatened and endangered species, traffic congestion, energy use, water consumption, and encroachment frequency will be added, as will a multi-installation analysis capability.

Facility Modeling

Before Objective Force brigades can be deployed, installations must conduct analyses to determine their facility requirements. The difficulty of this task is compounded by the fluid state of information about the FCS and the long lead time (5 to 7 years for large facilities) built into the Military Construction, Army (MCA) and National Environmental Policy Act (NEPA) processes. Installations designated for IBCTs have been overloaded with requirements to produce large numbers of DD Form 1391 planning documents—used to request all military construction projects within DOD—in a very short time. Under the unit set fielding process, systems cannot be fielded until supporting facilities are in place, adding even more pressure on the MCA process.

A Fort Future component called Building Composer will shorten the time required to acquire facilities while ensuring that Objective Force and FCS requirements are met. Building Composer tracks facility requirements, supports planning and design processes, and supports associated analyses. Users will be able to download libraries of requirements from the Fort Future Web site, construct a building program, visualize the building design for sustainability using the Sustainable Project Rating Tool (SPiRiT), obtain a cost estimate, complete a DD Form 1391 planning document, and produce a design-build request for proposal.

The Building Composer team is testing the system by building a requirements library for IBCT maintenance facilities based on lessons learned from Fort Lewis. Military Operations on Urbanized Terrain (MOUT) facility requirements will also be added. An advanced immersive visualization capability is being developed using a facility called the CAVE [Core Automated Virtual Environment] at the University of Illinois. The goal is to test the workability of proposed maintenance facilities using computer models of FCS components. Using this feature, a designer will be able to virtually pull a vehicle into a maintenance bay and visually check factors such as worker and crane access.

Force Protection

The USACE anti-terrorist (AT) planning software (AT Planner) is a primary tool in Fort Future, with events of September 11, 2001, increasing its importance. Fort Future will initially address blast effects and chemical, biological, and radiological (CBR) vulnerability. An initial force protection module will provide a capability to download site and building information to Blast Effects Estimation Model or AT Planner, simplifying the process of setting up a simulation. To protect against CBR threats, new requirements will be incorporated into Building Composer and eventually feed the Defense Advanced Research Projects Agency's Immune Buildings Program. Potential modules for physical security are also being explored.

Conclusion

Fort Future has charted an ambitious course toward providing an installation simulation-based acquisition capability in support of Army transformation. Using an incremental delivery strategy, program planners will rapidly put systems in the hands of users and validate and refine them through the new installation battle lab. Beginning with computer models for single installations, these system-of-systems will evolve to allow multi-installation analysis in support of regional and national goals. Ultimately, Fort Future will support the proposed installation battle lab and sustainable installation planning exercises in ensuring continued mission support in the 21st century.

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ENERGY IN A NEW ERA OF ARMY INSTALLATIONS

Dale L. Herron

Introduction

Energy represents a critical asset to mission readiness, both today and as installations transform. A safe, reliable energy infrastructure and dependable, long-term energy supply will be paramount to the transformed installations' success in housing, training, and deploying the force. Future Combat Systems may demand new types of energy delivery or support strategies. Further, emerging force protection issues may mandate built-in security measures, both in energy supply and distribution systems and in facilities vulnerable to chemical, biological, and radiological (CBR) threats.

Energy research by the U.S. Army Engineer Research and Development Center (ERDC) will be used in the "Fort Future" modeling and simulation (M&S) process. Transformation of the Army's installations offers major opportunities to make these small "cities" future world-class examples of sustainable, reliable, and energy-efficient facilities.

Background

For the last quarter century, federal energy policy emphasized conservation. During this time, DOD has been challenged with increasingly stringent energy-reduction targets. The Army initiated aggressive programs to meet these requirements and is the only Service that has consistently met or exceeded all energy-reduction goals. More recent DOD energy strategy incorporates sustainable energy design considerations to address life-cycle costs of installation energy investments. Initiatives like privatization of utilities also have taken on increased emphasis. DOD's energy focus is again evolving to now encompass energy security. The following major events triggered this shift of emphasis:

- Energy shortages in the United States during the 2001 heating season and in California that summer caused rolling blackouts and large short-term energy price increases.
- The tragic events of September 11, 2001, and the follow-on anthrax attacks demonstrated both the fragility of the Nation's infrastructure and its impact on personal safety.
- The bankruptcy of Enron, one of the largest energy companies in the world, raised questions about the long-term availability and viability of the nation's energy supplies.

Energy security will clearly be a key aspect of the Nation's energy focus for the foreseeable future. Energy conservation and sustainable design will also continue to be important. Thus, the collective challenge now is to address the need for a safe and reliable energy infrastructure and a dependable, long-term energy supply without losing the successes achieved for energy conservation and sustainable design.

Future Installation Strategies

As the Army installations of today transform, the use of safe, dependable, and environmentally sound energy technology is essential. Army soldiers and their families must live and work in facilities where embedded energy technology maximizes personal and environmental safety and relies on secure sources of

A safe, reliable energy infrastructure and dependable, long-term energy supply will be paramount to the transformed installations' success in housing, training, and deploying the force.

electricity, heating, and cooling energy. Realizing this ambitious energy goal is vital to achieving a sustainable, high quality of life for soldiers.

The first step in achieving this goal is to develop an integrated and strategic planning philosophy for how energy resources will be managed at future installations. Integrated strategic energy planning will require looking beyond the building level, beyond the installation fence, and even beyond the surrounding region to a national, if not global, perspective. Good planning will forecast which energy technologies and strategies will be best integrated into a diversified portfolio of energy supply options. Issues that must be considered include reliability, security, and sustainability from an environmental standpoint. In addition, energy conservation, energy use reduction goals, utility privatization, and utility deregulation will factor into the decisionmaking process. Once policies and plans are established, they will need to become part of the business processes for the Army's new Transformation of Installation Management organization.

Second, future Army installations and individual facilities must be sustainable. Army documents define sustainability as the "design, construction, operation and reuse/removal of the built environment—infrastructure as well as buildings—in an environmentally and energy efficient manner ... meeting the needs of today without compromising the ability of future generations to meet their needs."

Next, secure sources for electricity, heating, and cooling must be identified. An emerging, promising trend for realizing our future electrical energy needs is a shift from purchasing electricity generated by large, company-owned, central-generation plants to small, high-efficiency power sources located at the point of consumption. Distributed electrical energy systems can include solar photovoltaics, fuel cells, gas-fired microturbines, and wind turbines. These systems offer the security and flexibility of onsite electricity generation and are extremely environmentally sustainable.

Finally, the technologies used for heating, cooling, and lighting individual Army buildings must maximize human security, comfort, and productivity while minimizing energy consumption and cost. Promising new heating, ventilation, and air conditioning (HVAC); boiler; chiller; lighting; and direct digital control (DDC) technologies are continually emerging. Future Army facilities must take advantage of these technologies, but only if they can be installed and commissioned to operate correctly when new and throughout the facility life cycle. The best energy technology is of no value if it cannot be properly installed, operated, and maintained.

Some of ERDC's energy research relevant to installation transformation is described below.

Strategic Energy Planning

ERDC is developing a coordinated methodology for installation strategic energy planning (ISEP). The methodology will evaluate short- and long-term utility and energy issues while integrating energy demand and supply issues. When applied to an installation, the ISEP process will result in an investment strategy mixing privatization, utility-company use, third-party initiatives, and programmatic funding vehicles to achieve the desired energy goals. This type of energy investment plan will be integrated with other funding strategies for transforming installations. More information is available at **http://www.cecer.army.mil/SEP/index.htm**.

Stationary fuel cells, which allow onsite electricity production, could give future installations a reliable power source for critical facilities.

SPiRiT And Other Tools

ERDC has developed a rating tool that will identify and measure sustainable principles during construction project planning. The Sustainable Project Rating Tool (SPiRiT) is designed to be an easily understood Microsoft Excel worksheet that will allow self-scoring by building delivery teams either during the charrette process or by an independent panel. The U.S. Army Corps of Engineers requires its designers to use SPiRiT and strive to achieve a "bronze" rating for all future projects. The Army may also require sustainable development on a DD Form 1391, which is used to request all military construction projects within DOD. To view the current version of SPiRiT, go to **http://www.usace.army.mil/inet/usace-docs/eng-tech-ltrs/etl1110-3-491/a-c.pdf**.

Other ERDC-developed tools may be linked to the suite of M&S tools for Fort Future. They include the Renewables and Energy Efficient Planning Program for energy and water analysis and EnergyPlus, which is the Department of Energy's new tool incorporating ERDC's Building Loads Analysis and System Thermodynamics Program.

DOD Fuel Cell Program

Stationary fuel cells, which allow onsite electricity production, could give future installations a reliable power source for critical facilities. They are also nonpolluting. ERDC manages the DOD Phosphoric Acid Fuel Cell (PAFC) Demonstration Program, which has the following objectives:

- Demonstrate fuel cell capabilities in real-world situations,
- Stimulate growth and economies of scale in the fuel cell industry, and
- Determine the role of fuel cells in DOD's long-term energy strategy.

PAFCs were installed at 30 U.S. military bases between 1994 and 1997, making this the largest demonstration of PAFC power plants in the United States. A follow-on program, the Residential Demonstration Program, is targeted at installing 21 small Proton Exchange Membrane fuel cells at DOD sites.

A major success story in fuel cells research was the installation of five fuel cells, connected in parallel to produce 1 megawatt of electricity, which are now the primary source of power for the U.S Postal Service Mail Processing Center in Anchorage, AK. It is the Nation's largest assured-power commercial fuel cell system to date and, for the first time, a fuel cell system is part of an electric utility's grid. This type of application has important implications for providing an uninterrupted power supply at future installations. More information about the DOD Fuel Cell Program is located at **http://www.dodfuelcell.com**.

Interoperable DDC Controls

Emerging "smart" HVAC controls could play an important role in ensuring safe operation and efficient energy use in existing and future facilities. HVAC and other energy systems in modern buildings are typically controlled by state-of-the-art DDCs, which allow building energy systems to be operated in a safe, efficient manner while maximizing occupant comfort and productivity. DDC systems can also be networked together so that multiple buildings can be controlled from a central location, but until recently all the networked systems had to be from the same manufacturer.

As the Army transforms its existing installations to support the Interim and Objective forces, energy is a critical consideration.

Recent developments in the controls industry may have made it possible to interconnect multivendor systems. This is important to the Army because the government's competitive procurement process has, over the years, meant that Army individual DDC systems were purchased from many different manufacturers. Effectively connecting multivendor DDC systems will enable Army installation energy managers to fully implement installation-wide energy security and conservation strategies. An initial demonstration of an interconnected multivendor system is underway at Fort Hood, TX. More information about this project can be obtained at **http://www.cecer.army.mil/td/tips/docs/finney_fthood.pdf**.

HVAC CBR Protection

The recent anthrax attacks at the Hart Senate Office Building and other facilities have demonstrated that HVAC systems can play an important role in minimizing the impact of a CBR attack. As part of the Fort Future effort, ERDC is now developing an HVAC CBR M&S capability to help installation planners and facility designers optimize the level of protection that a facility's HVAC system can provide against a CBR attack. ERDC is also working with individuals associated with the Defense Advanced Research Projects Agency's Immune Buildings Program to develop HVAC hardware with improved CBR protection and improved design methods for implementing CBR protection in facilities.

Conclusion

As the Army transforms its existing installations to support the Interim and Objective forces, energy is a critical consideration. The energy technology associated with the facilities at these new installations must provide soldiers and their families with first-class facilities that maximize safety, comfort, and productivity at minimal energy cost. The shift in the Nation's energy focus from conservation to security, the emerging technology from the energy industry, and the research results from ERDC and other organizations offer the Army tremendous opportunities to make these future installations world-class examples of sustainable, reliable, and secure facilities.

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TERRORIST THREAT PROTECTION

Dr. Reed L. Mosher

Introduction

After the terrorist bombing of the Khobar Towers in Dhahran, Saudi Arabia, DOD established directives that made commanders responsible for implementing plans and procedures within their organizations to enhance force protection from terrorist attack. While anti-terrorist plans and procedures were developed for our U.S.-based installations, the perceived threat was believed to be very low, with the greatest threat to our military and civilian personnel deployed overseas. However, the September 11, 2001, attack on America has highlighted our vulnerability to attack by transnational terrorists. With this threat far greater than previously assessed, DOD installations have had to significantly increase security well beyond their prior anti-terrorist plan. The cost of increased security has yet to be determined in terms of dollars, manpower, and readiness.

The trend during the past 25 years has been to make DOD installations more integrated with the surrounding communities, with many of the installations open to the public with little or no perimeter control. This policy of openness was well founded at the time and provided significant benefits to installations and communities, but this trend is problematic when it is necessary to increase the Army's security at times of heightened threat.

The Army's installations must be transformed to support the Army transformation to the Objective Force while continuing to serve the ongoing needs of the Legacy Force. The Army transformation will have a major impact on installation infrastructure, services, personnel, the environment, and surrounding communities. Prior to September 11, anti-terrorism force protection issues were a consideration in the Army installation transformation process. After September 11, they are a driver and must be addressed upfront in the planning process for transforming installations to support the Objective Force.

Threat Protection Research

The U.S. Army Engineer Research and Development Center (ERDC), via the Army's Survivability and Protective Structure Research, Development, Test and Evaluation Program, is developing technology to protect the occupants of buildings from terrorist bomb attacks. This protection can be enhanced by an appropriate balance between better security procedures, including the enforcement of increased standoff distances, and the use of blast hardening and mitigation techniques. ERDC's research addresses the blast hardening and mitigation and required standoff distance aspects of the problem. The goal is to develop technology to protect people inside buildings from terrorist bombs through blast mitigation techniques. Injuries and deaths come from two primary sources in terrorist bombing incidents: structural collapse and flying debris. While structural collapse accounts for the majority of deaths, flying debris can also result in deaths and causes the most injuries. The research focuses on mitigating these effects.

To achieve this, program personnel conduct research aimed at developing physics-based models for assessing the vulnerability of conventional construction to terrorist weapon threats, developing cost-effective construction materials and techniques to protect building occupants, and developing the associated analytical method necessary for their design.

Vulnerability assessment methods are necessary to determine the potential hazard an installation would face in the event of a terrorist bombing. To support the transfer of the results of the research to the warfighter, ERDC has developed an Anti-Terrorism Planner (AT Planner) tool to assist the commander's staff in planning and implementing protective measures required for force protection. The AT Planner provides users with a computerized analysis tool, running on a notebook computer, for evaluating critical assets in terrorist threat scenarios based on aggressors, tactics, and weapon systems.

Threat conditions dictate a number of security measures from Field Manual (FM) 5-114, *Engineer Operations Short of War*, which the user must consider and possibly employ. These measures are cumulative from the lowest to the highest threat level and are presented by the AT Planner in a concise and user-friendly format. Emphasis has been placed on the evaluation of structural components, windows, personnel, and other limited critical assets. Structural components are defined for frames, walls, and roofs from common construction materials. Damage to the building components is calculated using physics-based algorithms that relate damage to pressure-impulse curve, with the user providing the distance of the explosive charge from the building.

AT Planner can also provide the required standoff for a given explosive charge. Once the appropriate standoff is determined based on expected explosive size and an acceptable level of building damage, the program provides information on protective barriers and a vehicle velocity calculator to aid in barrier and obstacle selection. Extensive information is available on various types of obstacles and protective barriers in the "Help" file, and the information source is referenced.

AT Planner also provides a basis for design and analysis of wall and window retrofits. The capability is available to view facility or site images, locate assets on the site

image, and show building damage in 2-D and 3-D graphical formats. Blast walls can be placed in front of structures, and the resulting damage to a protected building can be calculated. Glass hazard calculations have been incorporated along with user-defined pressure-impulse curves to give structural engineers more flexibility in evaluating structures.

AT Planner is updated on a regular basis to include user feedback and recommendations. Recent enhancements include additional capabilities allowing more editable material properties for structure definition, better visualization of personnel injuries and structural damage, and additional retrofit measures and their analyses.

AT Planner is being used by the Joint Services Integrated Vulnerability Assessment Teams in conducting assessments of more than 500 military facilities worldwide for the Joint Chiefs of Staff (JCS), in assessing embassy facilities for the Department of State, and in assessing vulnerability of key facilities worldwide for the CIA. AT Planner has been used to develop the physical security plan for the U.S. Capitol complex to assist the U.S. Capitol Police and to provide assessments of the Pentagon for the JCS. It has more than 400 registered users. Based on threat, mission, and site considerations, AT Planner provides a tool for evaluation of protective measures, expedient structure designs, and standoff guidance. It has reduced the time needed to analyze building damage and required safe standoff distance from weeks to less than a day.

Force Protection Modeling

The "Fort Future" concept (see article on Page 14), in very simplistic terms, is a modeling and simulation (M&S) environment similar to the Simulation and Modeling for Acquisition, Requirements and Training (SMART) initiative. Fort Future will enable planners to use virtual technology in deciding among multiple, complex options for posturing Army bases to meet future Army transformation requirements. While force protection is a thrust in the Fort Future system concept, its primary focus had been on the integration of models to evaluate the building design at each phase for the effects of terrorist explosive and chemical/biological attacks. With force protection now a top priority of DOD installations, it is clear that there is need for the force protection portion of the Fort Future M&S environment to be significantly strengthened to support a more robust capability that addresses the full range of threats for not only the individual building, but for groups of buildings, overall installation protection, and protection to its lifelines and lines of communication.

This need could be fulfilled through an Anti-Terrorist Protection Planning and Analysis System with a robust M&S environment, capable of evaluating the full range of terrorist threats (high explosive, standoff weapons, and chemical/biological). The detection, denial, protection, and mitigation of multithreat terrorist attacks could be assessed through a "system-of-systems" approach to the layered security concept (perimeter control, external threat protection, and invasive threat protection). The system will allow analysis at the building and at the installation, and provide lifelines and lines of communication. Each level will be analyzed for critical systems and subsystems, including the interrelationships that will provide for vital defense in-depth.

New technologies that provide increased protection of current and future DOD facilities through integrated protection systems, mitigation of effects from multiple threats, and increased perimeter security could be evaluated to maximize the protection versus cost. Physics-based 3-D visualization tools (visual as well as other spectral regions) could be employed to enhance the design and planning process with the ability to analyze the impact of integrating structures, barriers, and physical security requirements (e.g., line-of-sight and illumination analysis and radiant temperatures for infrared camera locations). The common underlying security principles of detect, assess, deter, and respond would provide the basis for a holistic integration of security technologies and processes to ensure life safety and mission readiness.

In addition, a complete installation force protection analysis could become a crisis response planning and training tool for the installation command and first-responder teams. The command will be able to exercise and train all installation support agencies (military police, medical, fire, directorate of public works, safety, and other members of the garrison command staff) in various threat scenarios as defined by the command and under adverse conditions (threat posture, holiday, time of day (e.g., rush hour), and adverse weather).

Conclusion

With force protection a top priority for DOD installations, transforming them to support the Army transformation to the Objective Force will require the integration of assessment, detection, denial, protection, and mitigation technologies for multithreat terrorist attack into the planning process. A robust capability that addresses the full range of threats for not only the individual building, but for groups of buildings, overall installation protection, and protection to its lifelines and lines of communication will be needed to provide the holistic integrated security necessary to ensure life safety and mission readiness.

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INTEGRATED GEOSPATIAL SYSTEMS TO VISUALIZE FUTURE ARMY INSTALLATIONS

Kelly M. Dilks and John Krajewski

Introduction

The Army approaches information dominance with the stance that a common view of the terrain will provide more coherent command and control on the battlefield. Developing systems for training, planning, and implementing operations requires access to integrated databases containing terrain, weather, and battlespace environment data. The same concept is critical to the overall life cycle of planning, acquiring, and operating installations.

The introduction of the Army's new Transformation of Installation Management (TIM) regional centers has placed an even greater premium on common access to comprehensive data concerning installations. The ability to tie planning and operations activities together at the installation, major command (MACOM), and TIM levels depends on integrated information databases that facilitate a common picture for all involved. This is especially true when exploiting "Fort Future"-type modeling and simulation (M&S) tools that are described in more detail in other articles in this magazine.

A special challenge in providing this capability is in accessing the different types of critical geospatial data needed to support the M&S process. (For the purposes of this article, geospatial data refer to the metadata, attribute, and locational components of the data.) These data need to be closely linked to the primary information used for installation management, as well as provide the basis for in-depth analysis of complex issues such as environmental consequences of training, security and protection, and energy utilization. Historically, geospatial data have not been centrally stored, managed, or shared among those agencies that maintain the data.

Nearly every decision made during installation transformation will be supported in some fashion using geospatial data. Thus, the Army needs accessible, current geospatial data and initiatives that promote data sharing, integration, and compatibility at the global, regional, and local levels. To serve this need, the Office of the Assistant Chief of Staff for Installation Management (OACSIM) is developing the enterprise Geospatial Information System Repository (GIS-R). This data warehouse will provide foundational data necessary to support the collaborative M&S concept in Fort Future and support business processes within the Army's new TIM regional centers.

Background

Three key enabling technologies—remote sensing, Global Positioning System, and Geographic Information System (GIS)—have given battlefield commanders a profound advantage in dominating the "infosphere." Joint Vision 2010—the Joint Warfighting Strategic Plan—recognizes information superiority as the foundation for joint warfighting doctrine and concepts as we move toward 2010. GIS provides a toolbox to integrate data from diverse sources and visually analyze it to support decisionmaking many times faster than alternative methods. Installation commanders and other stakeholders can similarly gain information superiority by making strategic use of geographic data to support the life cycle of installations from operations to master planning.

During the past 20 years, MACOMs and installations have invested in a variety of GISs and associated geospatial data. These data have been developed and gathered to enable the installation to more efficiently perform tasks such as master planning, environmental assessments and studies, military construction programming, range operations, emergency response and management, maintenance, scheduling, real estate management, and a host of other installation functions.

Since the early 1990s, the Army has invested in computer-aided drafting and design (CADD) and GIS standards across the Services (i.e., via the CADD/GIS Technology Center—**http://tsc.wes.army.mil**). This effort does not eliminate differences in data storage formats between platforms but is a major step in ensuring that consistent data attribution is found in each system.

A common repository for geographic information can offer a portal through which all stakeholders can extract useful planning information about Army installations guided by mutually agreed-to data views. This portal would support "single data access" at all levels and simultaneously support multiple users at all levels. Use of a widely accessible data repository enables stakeholders at different levels to control what data are available for viewing, plan for and monitor periodic updates, and provide one auditable source for use when presenting data outside the Army.

Common and coordinated geospatial data from Army installations can provide valuable planning insights. The GIS provides a visual, as well as an analytical, view of data by displaying spatial relationships. These relationships add extra value to other installation data and represent a more complete picture of conditions affecting Army installations (e.g., range development and endangered species habitats).

Data Management Issues

Management of geographic information has posed many challenges for installations. Because GIS capabilities emerged through a largely unplanned

process, geospatial data management traditionally received limited support. It was difficult to justify expenditures to decisionmakers who did not understand the technology or its capabilities as a decision support tool.

Geospatial data are not generally accessible or shared for several reasons: the data are not in digital format or digital data is in a nonstandard format; components of the data, such as metadata and attributes, are missing or incomplete; acquisition is not coordinated; and it is handled and stored on diverse hardware, software, and databases.

The result has been isolated "islands" of geospatial technology, creating a communication barrier that precludes the Army from realizing full benefits of the investment in geospatial data. Further, reliance on specialty servers, stand-alone systems, and local interfaces drives up the cost of systems administration and management.

Geospatial Data

GIS-R is a Web-based enterprise decision-support framework for Army installation geographic information. It is modeled after a similar effort by the U.S. Army Training and Doctrine Command (TRADOC) called the TRADOC Corporate Database. GIS-R will incorporate Army activities worldwide and interface with existing databases (e.g., Installation Status Report or Integrated Facilities System). Development is being coordinated with the other Services to ultimately provide a DOD-wide repository.

GIS-R is intended to be one of several tools in a suite of decision-support tools to be used at all levels (headquarters, region, and installation). Its goals include the following:

• Be an easy-to-use interface with links to multiple data to get an integrated, spatially enabled solution;

• Provide instant access to summary information needed for briefings, information requests, and research;

• Provide embedded standards for geospatial data required for decision-making; and

• Be compatible with the use of commercial, off-the-shelf software.

GIS-R is not intended to replace local GIS efforts. The objective is to standardize efforts and have installations at the "minimum reporting requirements" level, which can be built on to meet local planning needs.

GIS-R Status

To date, the prototype repository has been completed for five installations: Forts Bragg, Meade, and Benning; Camp Swift; and Darmstadt, Germany. Developers are expanding an ArcView software application to allow for analysis across all installations at the world, U.S., Europe, and vicinity levels. "Inside the installation boundaries" will be incorporated as installations begin to provide data in the required format. As with any effort to insert new technology into existing business practices, GIS-R requires supporting policy and guidance.

OACSIM has issued interim policy and guidance for GIS technologies as well as a strategic plan for GIS-R. The plan provides guidance to facilitate the analysis and implementation of geospatial data within the installations' organizational business process. It is designed to assist installations in assessing the need, recognizing the impacts, and defining a process-oriented strategy for the development and maintenance of geospatial data. The plan establishes the shared vision for geospatial information management, top goals and objectives, measures of performance, strategies to accomplish the goals, and benefits of achieving the goals.

In addition to providing policy and guidance, OACSIM will help integrate GIS-R across all installation management functional areas. This includes providing assistance to installations in converting to the spatial data standards for facilities, infrastructure, and the environment, and in developing the required geospatial data layers for use in the GIS-R.

Benefits

An enterprise geospatial data repository improves the efficiency and effectiveness of geospatial data management at the local level. Specific benefits include the following:

• A "one-stop" common repository is provided for GIS activities that are dispersed at all levels.

• All aspects of geospatial data—the spatial, the metadata, and the attribute components—are included.

• GIS analysts can spend more time providing decision support assistance and less time filling requests for data.

• With a common, agreed-upon framework for data storage, upload, and download, less staff time is spent on designing solutions that are ad hoc.

• Connection to applications is more straightforward in a system based on a database management system than in a system based on data read directly from files.

Conclusion

The GIS-R development is timely to meet emerging requirements for M&S in support of Army installation transformation. This enterprise data repository will increase the power and accuracy of models to predict how our installations will need to evolve to support the Objective Force. For further information, go to the GIS-R Web site at **http://gisr.belvoir.army.mil** or contact Linda W. Smith, OACSIM Plans and Operations Division, at (703) 692-9222, DSN 222-9222, or **linda.smith@hqda.army.mil**.

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OUTSOURCING INNOVATIONS SUPPORT ARMY TRANSFORMATION

Dr. David L. Johnson and Gary W. Schanche

Introduction

The single most dominant characteristic of Army transformation is change—both for the Army's forces and the installations that support them. One area of installation support that is undergoing rapid change is the sourcing of goods and services. The Army has a long history of relying on the private sector for some critical goods and services to supplement the support provided by its in-house workforce. For instance, it hired private companies to feed its cavalry horses during the Revolutionary War.

Although the Army has contracted out goods and services for many years, the Army transformation requires efficiency improvements and performance enhancements that exceed the limit of the old approach to simple contracting. In particular, the transformation will require rapid response and flexibility as Army forces adapt to change. Today, innovative concepts for outsourcing are available to meet this challenge and many are already being tried by the military. If adopted, these innovations can produce changes that will revolutionize the outsourcing process and allow the Army to go beyond conventional contracting.

This article presents a summary of outsourcing innovations that could support Army transformation, including sections on strategic sourcing, partnering, regional contracts, and performance-based contracts.

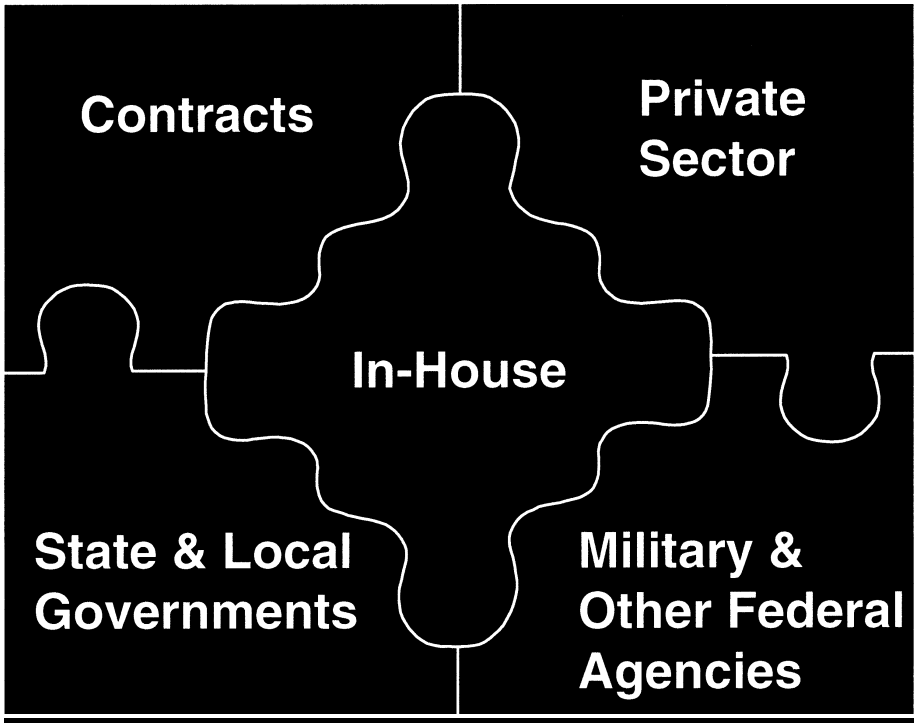
Strategic Sourcing

The most powerful innovation in outsourcing is the DOD Strategic Sourcing Program. Started in FY00, this program is based on an innovation from the private sector, which has become a dominant part of the business strategy of highly successful new companies like Cisco Systems. It is also a vital part of the new business model being adopted by established companies like Ford Motor Co.

DOD created its version of the program to provide the Services more flexibility in achieving installation support goals. After engaging for many years in commercial activity studies under Office of Management and Budget Circular A-76, DOD established the more flexible and broader Strategic Sourcing Program in which the Services can voluntarily participate. In the new program, the A-76 study is just one tool in the strategic sourcing toolbox.

A key principle in this innovation is the opportunity to devise a sourcing strategy that fits the unique environment of a particular installation. The accompanying figure illustrates the idea of an installation devising an optimum sourcing strategy using the partnering and contracting options available to it. Because the sourcing opportunities available to an installation can vary dramatically from one site to another and with time, this flexibility is essential. Of course, Army transformation imposes another requirement for flexible sourcing because it is a critical driver of change for installation support.

The most important element of this program is that it enables installations to undertake a business and process reinvention initiative. The program includes business process reviews, which installations can use to eliminate, improve, and streamline processes. Such reviews are vital in helping installations shift from the traditional focus on functional elements ("stovepipes") to business processes that deliver support to the warfighter. The program also enables installations to achieve goals through re-engineering, restructuring, consolidating, adopting best business practices, applying activity-based



Strategic sourcing provides the flexibility for installations to devise an optimum strategy for partnering and contracting that takes advantage of opportunities available in its vicinity.

costing and management, and eliminating obsolete functions or practices.

The concepts for this program were pilot-tested at the Crane Naval Surface Weapons Center in Crane, IN. The results showed that the business and process reinvention effort could achieve more savings than typical A-76 studies and also improve execution. For example, one organization was able to cut response time to customer requests for critical parts from 7 days to 1 day.

In addition, the test results indicate that the overall strategic sourcing approach has the potential to achieve savings without the negative impact on morale and the turmoil of transition that have been shown in past A-76 studies. Thus, the strategic sourcing approach is much more people-friendly and allows installations to carefully manage key institutional knowledge assets that are vital to support the military.

Partnering

Many strategic sourcing innovations are more appropriately described as partnering rather than traditional contracting. To understand this, remember that the conventional concept of contracting calls on the government to maintain an arms-length relationship with the contractor and provides funds in exchange for services. But in innovations such as the residential communities initiative, the contractor provides capital investment funds and the Army supplies land and family housing units in a long-term (up to 50 years) relationship that is best described as a partnership. Indeed, the Army is expected to accomplish much of its installation support projects in the future through the widespread use of project teams.

A very powerful innovation with extraordinary potential is the enhanced-use leasing initiative that was enacted into law in 2001. This method provides much greater flexibility and incentives for installations to enter into partnerships with a variety of potential partners. The power lies in its potential to resolve the current Army dilemma of excess infrastructure. DOD currently estimates that it has between 20 and 25 percent more infrastructure than is needed for the force, but no base closures are possible before 2005. The enhanced-use leasing initiative empowers installations to enter into agreements with partners who use the excess capacity and frees up funds for Army transformation. Moreover, this approach provides the following important advantages over divestiture:

- Much greater flexibility because the decisions are reversible and installations can respond quickly as more is learned about the Objective Force and its requirements.
- Vastly improved result for cash flow. This is important because cash flow has been the Army's biggest problem related to excess capacity.
- A better transition path to potential divestiture in the future because of the greatly reduced economic shock potential to local communities.

Regional Contracts

In addition to partnering opportunities, there are potential contracting innovations that take advantage of the large size of the installation support business. The single biggest advantage that the government has in contracting activities is the use of "economies of scale" to achieve efficiencies. The key concept here is to combine activities from many installations into a single individual contract that will provide services at a lower price and better performance. Regional contracts are already available from several agencies for use by Army installations and some are already being used for a few Army functions such as energy savings performance contracts. It is a natural step to transition to the regional contracts as the Army transitions to Transformation of Installation Management regional centers.

Indeed, the Army has already agreed on establishing the Army Contracting Agency, a field-operating agency that will consolidate and provide oversight for Army contracting activities. Although the final concept is still under development, it is currently envisioned to have two regions in CONUS and will control regional installations, contingency contracting, and standardization and oversight for specialty contracting offices. The two regions will concentrate on their areas' contracts, and installations will still have a contracting office with a size determined by its unique requirements.

Performance-Based Contracting

Performance-based contracting is another innovation already being tried by the military. DOD estimates that 20 percent of all its service contracts are performance-based and is focusing on achieving President Bush's goal of 50 percent by the year 2005. The key concept behind the performance-based contract is that it specifies the agency's performance objective, but does not prescribe how the contractor is to achieve it. By setting measurable outcomes and comparing the contractor's performance to the standards, this approach was found to increase contractor accountability and produce higher quality service. Giving contractors leeway in achieving the objective will be especially important as Army installations are impacted by transformation.

Conclusion

The Army faces an extraordinary challenge in making the changes necessary for transformation. The only thing certain about the future is change and that we will not have a single, fixed end state on which to base our plans for the future. It is imperative that we have the flexibility and responsiveness to adapt to change. The business process innovations described in this article can provide these critical attributes in addition to the efficiencies and performance enhancements needed by Army installations to support transformation.

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SUSTAINABLE RANGES FOR A TRANSFORMED ARMY

Dr. M. John Cullinane,
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Introduction

Effective training of soldiers, leaders, and units is vital to ensuring that the Army is ready to successfully accomplish its battle-focused missions. Effective training should allow soldiers and leaders to practice individual and unit mission-essential tasks under realistic and challenging conditions. To facilitate effective training, the Army developed and continues to improve its training infrastructure. This infrastructure includes combined-arms training centers and a vast array of training areas, ranges, and target systems designed to increase individual skills and unit tactical and technical proficiency with a variety of sophisticated weapon systems.

Maintaining individual, leader, and collective skills and ensuring the readiness posture of the force is critical to meeting Objective Force training requirements and requires intense management of the Army's considerable investment in training ranges. As the Army's transformation progresses, these same ranges must support Interim and Legacy Forces into the year 2015, with some installations simultaneously supporting all three force types. This will put extreme pressure on training lands. Environmental issues and public opinion already have a serious impact on training and must be key considerations in planning, designing, operating, and maintaining future ranges if the Army is to sustain its training capability and force readiness.

The Army, a predominantly land-based force, requires substantial land area for maneuver and live-fire training. As the Army transitions to the Objective Force, with its anticipated increased footprint, the land area requirements for effective training are expected to increase. The acquisition of new training lands is politically and economically problematic. This situation makes maximum effective use of current Army-owned lands an imperative to support the training needs of the Objective Force.

Background

The Army's ability to maintain its training mission has been adversely affected by a variety of range and training land issues. These issues have evolved in recent years and are likely to continue at an accelerated pace. First, installations must comply with a tremendous number of new and demanding environmental regulations. These regulations cover multiple environmental aspects related to installation support and training missions. Second, many installations are no longer isolated pieces of ground. Many installations are surrounded by urban and suburban populations that no longer view the installation and its economic benefit to the community as major factors in long-term development. As a result, public scrutiny of installation activities has increased. Third, the military force is transforming. In past years, modernization to faster, heavier, more capable weapon systems had an impact on the availability of training lands, and this trend is anticipated to continue. Finally, previous training activities have either contaminated or degraded thousands of acres, making them unusable for training.

The Army must manage range sustainment pressures at all major installations, training sites, and proving grounds. This will minimize environmental and public conflicts and future constraints, and support the ability to train to proficiency. Range designs and maintenance procedures must integrate explosive safety, cleanup, environmental compliance, pollution prevention, and natural resources management to ensure training environment availability both now and in the future.

The U.S. Army Engineer Research and Development Center (ERDC) conducts research supporting installation transformation toward usable and sustainable ranges. One area of this research involves development of better, cheaper, faster, and safer methods of assessing and remediating contaminated training lands and restoring them to beneficial use. Other research focuses on live-fire range design and maintenance to meet the Army's current and future training needs. Both efforts provide information and tools that support "Fort Future" modeling and simula-

tion activities. Another article on Fort Future begins on Page 14 of this issue of *Army AL&T*.

Cleanup Research

Site Characterization and Monitoring. The current focus of this research is the characterization of unexploded ordnance (UXO) on contaminated lands. The limited capabilities of current technologies to detect, identify, discriminate, and remediate UXO are well documented. ERDC research is quantifying the effects of the environment, geology, and manufactured non-UXO objects (clutter) on candidate UXO detection, discrimination, identification, and location approaches and developing technologies to mitigate these effects.

Laboratory and field measurements are used to quantify and model the electromagnetic, magnetic, and ground-penetrating radar (GPR) signatures emanating from UXO and non-UXO targets under a variety of environmental and geophysical conditions. The collected information and the validated models will be used to specify sensor selection, detection survey and sampling procedures, and signature analyses based on site-specific environmental and geologic conditions.

Specific technologies under investigation include time and frequency domain electromagnetic induction; high-resolution, fully polarimetric GPR; magnetometers and gradiometers; and high-accuracy navigation and tracking systems. Advanced signal and image processing algorithms and multisensor data fusion techniques are being developed to support expert system or neural network applications (algorithm development) as well as automatic target recognition methods.

The projected 90 percent reduction in the number of false alarms will reduce the cost and time required to remediate UXO-contaminated sites by 75 percent. The demonstrated detection capability for the full range of UXO types to their maximum penetration depths will enhance acceptance by regulators and local stakeholders and will expedite the transition of ranges to productive use.

Risk Quantification and Assessment. Sustainable environmental management of active firing ranges requires the use of risk assessment tools and data to assess contaminant release, contaminant fate and transport, and contaminant effects. Currently, Army environmental restoration project and range managers are faced with constraints on both the quantity and quality of information needed to conduct credible risk assessments necessary to make informed and supportable decisions regarding restoration options. Limited information on the fate, transport, and toxicology of military-unique chemicals results in risk estimates that are highly uncertain and extremely conservative. Continued overreliance on such approaches has resulted in overly conservative cleanup levels that can only be attained using cost-prohibitive environmental remediation strategies.

The goal of risk quantification and assessment research is to produce new techniques that allow timely and accurate risk assessments. Land managers use these assessments in making land-use decisions. Research conducted under this thrust area provides more certain knowledge of the toxicology, fate, and transport of military contaminants, and the streamlining of the risk assessment process. The procedures and methodologies developed under this research effort are available through the Army Risk Assessment Modeling System (ARAMS). Developed through formal, collaborative interactions with several other federal agencies, ARAMS will be used outside the Army to evaluate cleanup operations at other contaminated sites.

Although the costs associated with remediation activities are expected to greatly exceed those of assessing the site risks, assessment costs alone can be substantial, ranging from $25,000 to more than $1 million per site. Using ARAMS will reduce the time required to conduct a risk assessment from years to months and result in more realistic cleanup targets.

Live-Fire Range Research

ERDC is developing a range design risk assessment model to evaluate range site selection, design, and construction requirements against current and future environmental compliance requirements. Existing and conceptual (Objective Force) ranges will then be assessed using this model to determine the critical conflicts or choke points that might affect the sustainability of future range and training land operations. Future efforts include erosion control and development of selected critical range design specifications for use in new construction, retrofit, and range upgrade to reduce and facilitate maintenance and cleanup operations. A range compliance monitoring and carrying capacity methodology that focuses on weapons use will also be provided. Finally, researchers will examine surveillance technologies that control access to ranges and training areas.

To ensure accuracy and adequacy of all aspects of the live-fire range research effort, both the environmental and training communities will be involved in coordinating and reviewing the development, demonstration, validation, and implementation of products associated with this effort. To accomplish this, an initial execution team has been established to provide expertise in the critical elements. The Army Training Support Center ensures that the effort

While efforts to upgrade training land and ranges to support the Legacy Force have been accomplished through range modernization, even greater capabilities will be required to support the Objective Force. Further, the Army in transition will need access to all available lands.

maintains its military requirement focus. ERDC will perform or manage the research and development of the required technologies. The Army Environmental Center will provide demonstration, validation, and implementation support for selected tools. The U.S. Army Engineering and Support Center, Huntsville, AL, will provide engineering and demonstration and standardization support through the Range Mandatory Center of Expertise.

This research effort will assess and model internal and external environmental risk to training ranges; identify and develop range design elements that can be modified to reduce and mitigate environmental compliance risk; determine weapon carrying capacity to predict operation and maintenance requirements; and identify technologies to control access to ranges. To determine the carrying capacity of these models as well as their modeling capabilities, researchers will use demonstrations to field-validate and improve those target models that identify range and training land environmental compliance risk and mitigation responses. In addition, at least three selected range design options will receive a full-scale field demonstration. In the case of the risk model, the demonstration will identify high-priority environmental issues. For range design packages, the demonstration will be conducted in association with approved range Military Construction, Army projects. The munitions carrying-capacity model will be demonstrated in conjunction with the present Army training and testing area carrying capacity methodology.

Conclusion

While efforts to upgrade training land and ranges to support the Legacy Force have been accomplished through range modernization, even greater capabilities will be required to support the Objective Force. Further, the Army in transition will need access to all available lands. Thus, remediating contaminated ranges and returning them to training use is essential. Our mission from the Army leadership is clear: W*e must ensure that the U.S. Army remains the superior combat power now, 25 years from now, and beyond*. To accomplish this, installation and range planning must address environmental issues affecting land availability and the capacity to train to requirements. The Army's environmental quality research will give planners the technologies they need to make strategic decisions about land use now and as the Objective Force evolves.

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FASTER FIELDING OF MISSION-CRITICAL EQUIPMENT

LTC Tim Moshier, Ronald P. Pojunas, and Dr. Max Klein

Introduction

The Army is continually seeking ways to shorten the materiel acquisition cycle to be better able to respond to today's rapidly evolving threats. One of the organizations dedicated to this mission is the Edgewood Chemical Biological Center's (ECBC's) Engineering Services Business Unit (ESBU), located at the Soldier and Biological Chemical Command (SBCCOM), Aberdeen Proving Ground, MD. The ESBU is credited with quickly and efficiently fielding improved chemical and biological (CB) defense equipment, especially during contingencies such as Operations Desert Storm and Noble Eagle. Its approach is exemplified by the recent rapid reconfiguration and fielding of eight trailer-mounted biological point detection systems to monitor the air around a critical Defense installation.

Capabilities

The ESBU operates the Computer Aided Engineering (CAE) and Experimental Fabrication (X-Fab) Team facilities at ECBC. Together, this team includes more than 50 engineers, scientists, technicians, specialists, and craftsmen. The team can be mobilized to design, develop, prototype, and produce equipment on short notice, driven by schedule, cost, and performance. The team's strength lies in its ability to link virtual design, modeling, and prototyping capabilities with virtual testing, which eliminates the need for costly physical mock-ups.

Various designs can be explored analytically by computer until performance and configuration are optimized. The final computerized design can then be reduced to engineering drawings and provided directly to the model shop where master craftsmen can immediately "bend metal" to fashion prototypes and even engage in small-scale production.

The drawings and specifications can also be translated instantly into part of the technical data package for the item. Their application of the "engineering-for-production" concept allows the team to bypass incremental design changes and incorporate expertise from the shop floor with virtual design and test. This allows the team to proceed directly to the best manufacturable product that meets the needs of the customer while being mindful of logistics and sustainability issues. Lead time and overall development costs are also reduced as a result of this integrated approach.

A Case Study

The need for early detection of biological threats has never been greater than since the anthrax incidents that followed the terrorist attacks of September 11, 2001. The Joint Program Office for Biological Defense has been developing the Joint Biological Point Detection System (JBPDS) as the next-generation system to meet those needs for all the Services. The JBPDS is the successor to the Army Biological Integrated Detection System, the Navy Interim Biological Agent Detector, and, eventually, the Joint Portal Shield Network Sensor System.

The JBPDS provides an increase in the number of agents that can be identified over previous systems and decreases detection and identification time, while increasing detection and identification sensitivity. With two operational assessments already completed, the JBPDS holds great promise for detecting and presumptively identifying biological warfare agents faster and with greater sensitivity than existing systems. Platform-specific variants of the JBPDS include versions for Navy ships, Army and Marine Corps tactical vehicles, and a man-portable version for the Air Force and Marine Corps.

In October 2001, the timeline for fielding the JBPDS was shortened considerably when the Deputy Secretary of Defense directed that CB detection and identification equipment be procured for protection of high-priority Defense sites. The JBPDS, because of its capacity for full automation and lower cost of operation than existing systems, was specifically identified for fielding.

To meet this directive, the Product Manager (PM), JBPDS turned to the ESBU (the CAE/X-Fab Team) with a challenging set of constraints: this JBPDS variant had to look nonmilitary, be capable of remote stand-alone operation, be capable of rapid movement and deployment, and meet Army standard safety and human factor requirements. Eight fully configured systems were required, and it all had to be done in 4 weeks.

After receiving the mission, a team of PM, JBPDS and ESBU personnel immediately gathered and decided that a commercial utility trailer would be the best platform. This configuration became the JBPDS Homeland Defense (HLD) Trailer. The trailer chosen by the team is a 12-foot commercial box trailer with a gross weight of 3,500 pounds. The design called for the trailer to be fitted with two compartments. The forward compartment would contain the Basic Biosuite Unit of the JBPDS, a refrigerator (for consumable storage), a generator control panel, an operator station, and stowage space. The rear compartment would contain a 10-kilowatt generator, batteries, a fire extinguisher, and lighting. The commercial trailers in the process of being fitted for the JBPDS are shown in the photo on Page 30.

Commercial trailers being fitted for the JBPDS

Challenges

The challenges to the ESBU were numerous in that the power supply, specialized ventilation, electrical system, sensor ports, and environmental control unit had to be installed in each trailer to support the various components of the JBPDS. Emergency backup power had to be provided to support the generator and associated fuel tank and exhaust ports. Interface panels were also installed to support communication links as well as the capability to provide power from an external line power supply.

To ensure that the necessary components could be fabricated, CAE/X-Fab master tool and die makers were pulled from the shop floor and made part of the design team, where their experience was integrated with the design strategy to guarantee parts manufacturability. Additional flexibility was built into the design so that improved biodetector units could be swapped in the field. However, in the short timeframe of this effort, the CAE/X-Fab Team did not even have an actual biodetector unit to help design the system; they were employed elsewhere.

Personnel from PM, JBPDS worked with the design team and provided recommendations based on their operational expertise. They were impressed to see parts coming off the shop floor, sometimes being assembled with empty spaces left for parts that were not yet built. The CAE/X-Fab Team's ability to accurately model the components in virtual space allowed for rapid parallel fabrication and installation outside the expected sequence.

The biggest challenge in developing the HLD Trailer was time. However, by Nov. 26, 2001, just 4 short weeks after ECBC received the request, all eight trailers were completely outfitted. But the ESBU's work was not yet finished. Prominent among the operational requirements for the JBPDS HLD systems were operability, reliability, and safety of its operators, including civilian and contractor personnel. A safety evaluation was conducted to minimize any potential hazards to the operators. The results of the evaluation revealed how thoroughly the ESBU team had considered operability in their design because no operational hazards were identified. Safety recommendations were limited to the addition of labels and guidelines on how to unload the HLD Trailer during transport.

Even then, the ESBU could not rest on its laurels. On Nov. 20, 2001, the PM, JBPDS accepted an additional task to integrate the Automatic Chemical Agent Detector Alarm (ACADA) within the JBPDS HLD Trailer. Thus, the same JBPDS computer control display would allow an operator to monitor the ACADA. ESBU and PM, Nuclear, Biological and Chemical Defense personnel successfully procured and installed the ACADAs. Much of the work had to be performed onsite without interrupting the ongoing biological detection mission. By Nov. 28, 2001, JBPDS and contractor team personnel had installed the JBPDS HLD Trailers around the Defense site.

Conclusion

The successful, rapid development and deployment of the JBPDS HLD configuration is a standout example of the synergistic benefits made possible by the close teaming of materiel developers with Army engineering centers. The ESBU's CAE/X-Fab Team applies an approach to design and fabrication that integrates virtual design with the expertise of master craftsmen. This approach drastically reduces the time and expense to get urgently needed equipment to the field. The rapid deployment of eight newly configured JBPDS systems in the short span of 4 weeks is the latest in a series of successes for the CAE/X-Fab Team. It is also testament to the value that the broad skill base found in Army engineering centers can bring to the materiel development and acquisition mission.

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INFORMATION STOVEPIPES: MAKE 'EM WORK FOR YOU!

Dr. William E. Howard III

Introduction

A military "stovepipe" is a product or service that is developed for and funded by a particular user community. Stovepipes satisfy Service requirements and are driven by funding priorities to support Service missions. Stovepipe products tend to remain with the user community that initiates their development. Stovepipes also tend to be fostered by an acquisition process characterized by tight budgets and the user community's funding priorities.

Stovepipes have existed since the military began about 200 years ago. Early intelligence systems were usually stovepipes and included human-intelligence and code-breaking collection products. More recent stovepipe systems include data collection by aircraft, satellites, and sensors.

The community responsible for funding a stovepipe is normally the initial user, and information products sometimes migrate into that user's planning and operations. Stovepipes often result from the efforts of technologists to develop specialized products for the initiating user. Since World War II, stovepipes have become a high-tech approach to achieve Service initiatives.

The user community tends to keep stovepipe-derived information to itself because funds are not available for sharing it and because older technologies make sharing difficult. In addition, there is often shortsightedness by initiating Services, and the need for sharing has rarely been apparent to other potential users. However, information becomes more valuable to potential users when it is widely shared and fused with other pieces of information. Combined, this information can be used to ensure greater success in conflict. The need for information is especially important in today's terrorism environment, when quick responses and short decision timelines are necessary.

Background

In the past, communication stovepipes served each user community well. Today, however, the Services and the joint staff are slowly recognizing their timeline limitations. Without information sharing, operations slow down, decisionmaking timelines get longer, units operate more autonomously than they should, and operational tempo suffers.

In World War II, technical advances in communications and information collection began to shorten the timelines of conflict. The desire for better connectivity among the Services and Allied commands was prompted by the need for more precise timing and coordination of tactics such as land invasions, joint air-land operations, pinpoint bombing, and close air support. The increased sophistication of these tactics revealed serious flaws in a stovepipe acquisition process that hampered operations involving disparate units. The Services began to realize that combatants' lives and the success of military operations were impacted by short timelines and that information sharing was of increasing critical importance.

Rigid command attitudes, stringent budgets, and "in-the-box" thinking led to a "knowledge-is-power" mentality which, in turn, promoted an antisharing, go-it-alone posture. But joint operations demand shortening the timelines of conflict, and stovepipes came under even more criticism. Yet stovepipes have been deeply embedded in the military psyche, and it has never been clear how to share valuable pieces of information collected by disparate groups of users.

There have been attempts to address the insularity fostered by stovepipes, such as the Army's horizontal technology integration effort. These attempts have been impeded by an acquisition process that is difficult to change. Because the acquisition process crosses Service lines, it is extremely difficult for one Service to solve the problem without other Services also addressing the problem.

The same technologies needed for developing information stovepipes have led to innovations that also increase the pace of conflict. However, the connectivity problems caused by stovepipes have slowed other processes down, particularly decisionmaking. Often, this is the result of incomplete information. The very success of stovepipes has fostered their criticism. Fortunately, those same communication technologies that prompted criticism can now be used to fuse stovepipe-derived information together, allowing information to be accessed by a larger group. The seeds of the problem can be the seeds of the solution!

Sowing The Seeds Of Success

Efforts by the Office of the Secretary of Defense (OSD), the joint Services, and other agencies led to important improvements in information sharing. For example, joint battlefield and intelligence systems were developed to serve joint users at high echelons. Some of these systems include military and commercial satellites and aircraft, missile detection systems, and the Joint Surveillance Targeting Acquisition Radar. Most of these systems, however, are slow and do not support the much faster timelines needed by lower echelons in conflict. This causes the lower echelons to suffer from limited access to data and a limited ability to task the collection system. In principal, however, quick distribution of critical information across the traditional, limited user boundaries is now both technically possible and affordable, particularly in our growing digital environment.

Technologies have emerged that will enable shared information to be distributed among lower echelons in timeframes that will meet their needs. These technologies include aided target recognition; smart portals; mobile wireless (e.g., pagers and personal digital assistants); techniques for data extraction, information fusion, and presentation (displays and visualization); automatic data routers and procedures for assigning priorities; techniques for synchronizing distributed databases; and technologies to permit information collection and distribution in a secure environment.

Automatically collected, prioritized, and routed data, quickly displayed at each echelon, will be key to the success of future military conflicts and to employment of rapid counterterrorism measures. Once these efforts are accomplished, voice communications will convert displayed information into the synchronized knowledge needed to generate operational orders. Digital techniques will also permit information sharing between military and civilian units—another critical element in countering terrorism.

Resolution

We must harness information collected by stovepipes, not fight the way stovepipes are acquired. Stovepipes serving our high echelons already deliver information that is shared among those echelons. Sharing is slow, but it's getting faster. Voice and data connectivity is improving among high echelons of the Services and with our allies. The Services are using digital techniques to make it easier to display information in formats that can be quickly understood by all echelons. The Navy is adopting a concept of network-centric warfare that quickly shares information among its fighting platforms at data rates appropriate to each platform. Additionally, the Army's Future Combat Systems will use digital information to transform the way soldiers communicate with each other and with their support elements.

Information stovepipes can be made to serve almost every echelon in the military while data collection is performed. The challenge now is to harness that information: sort it, determine who needs it, prioritize it, and route it to appropriate users in formats they can understand, in quantities that can easily be displayed and digested, and in timeframes that conform to each user's planning and operations cycle.

OSD and the Services have conceived a virtual database—the Global Information Grid (GIG)—into which information can be fed and quickly shared. Everyone feeds the GIG, and everyone shares the information available in the GIG. But the devil is in the details. The Navy's concept of network-centric warfare and the Army's concept of the tactical infosphere are two major manifestations of how the GIG can be used to derive databases, collect information smartly, and pass relevant information quickly.

Conclusion

Challenges in harnessing information from stovepipes are formidable, but straightforward. Data sharing must be accomplished in ways that will not flood moving units with information that is too complex, too voluminous, and too late to be useful. We must decide which types of data should be automatically passed up and down the chain of command, and lower echelon commanders must have the ability to quickly obtain specialized information that is not routinely passed downward. We must more effectively share lower echelon information with lateral and supporting units and with higher echelons. We must develop effective "bell-ringers" (i.e., attention-getting mechanisms) that will differentiate high-priority, timely information from routine transmissions. Further, we must tailor available and emerging technologies to help us accomplish this more effectively.

Digital costs are declining, making the harnessing of information more affordable. The approach discussed in this article will minimize frustration, optimize information sharing, and harness our stovepipes to more effectively work for us. Our efforts are succeeding, but we must continue to develop better techniques for gathering, sorting, prioritizing, distributing, and displaying information in user-friendly ways. This process of tailoring information will make future warfighting simpler to understand and easier to execute. Now let's get on with the job!

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STANDARDIZATION AGREEMENTS IN A CONTINGENCY ENVIRONMENT

MAJ Jaimy S. Rand and Marius Fara

Introduction

You've just arrived at a Southwest Asian country bordering Afghanistan. You're a contingency contracting officer (CCO) and need to establish a Joint Contracting Center (JCC) to support U.S. forces deployed to Operation Enduring Freedom. The local people have mixed reactions about your presence. The military members, however, are anxious to work with you and the other NATO members who are arriving. You mull through your contracting support plan.

You must rapidly acquire supplies and services to support the initial buildup and sustainment of U.S. forces entering theater. You contemplate what requirements arriving U.S. forces might have, and you continue a list you began when you were notified of your deployment. The list already includes water, food, gravel, and portable toilets. You add interpreters, fuel, and leased vehicles to that list.

You're now at the point of learning what the market will bear. How can you acquire these things at all, let alone rapidly? Armed with your bulk fund, a book of *Purchase Order-Invoice-Voucher* forms (SF 44s), and accompanied by your Class A Agent, you question where the sources are. Will this economy support your requirements? What's the locally accepted currency?

Realizing that your Class A Agent only has U.S. currency, you wonder where to go from here. You look around and notice the British contingent commander in deep conversation with his German counterpart. The British commander ends the conversation, shakes hands with the German officer, and walks away with a signed Standardization Agreement (STANAG). A light bulb goes on in your head: a STANAG is the answer to your questions!

What Is A STANAG?

A STANAG is a form referred to as a Standardization Agreement 3381. It is used to acquire various items and services covered under an Acquisition and Cross-Servicing Agreement (ACSA) established between two nations. Items authorized for STANAG transactions include food; clothing; petroleum, oil, and lubricants; transportation (to include airlift); port services; medical services and base operations support; facility use (to include billeting); spares and components; communication services; ammunition; storage services; training services; and repair and maintenance services. Items prohibited from STANAG transactions include weapon systems, initial quantities of replacement parts, guided missiles, naval mines and torpedoes, and nuclear and chemical ammunition.

A STANAG serves as a contract (usually, but not necessarily) with a host nation. It does not follow typical Federal Acquisition Regulation (FAR) contracting guidance. Any commander can place an order on a STANAG; in addition, personnel designated by their commander and trained by the commander's chief of resource management can be delegated that authority as well. In regional areas of responsibility (AOR) other than the European Command, this authorization is often delegated to comptroller personnel. In U.S. Army Europe (USAREUR), authorized personnel include warranted contracting officers and, usually, designated comptroller personnel trained on the ACSA process. Warranted contracting officers are familiar with the requirements and are therefore a good resource for executing a STANAG.

What Is An ACSA?

An ACSA is an agreement between DOD or its representatives and the ministry of defense (MOD) of another nation. Additionally, DOD can acquire support under an ACSA from countries that have a defense alliance with the United States, permit stationing of U.S. troops, allow pre-positioning of U.S. assets, or host U.S. forces for exercises or operations. Under an ACSA, countries agree to acquire, provide, or exchange logistics support for military use. Logistics support is acquired through cash reimbursement, replacement in kind (RIK), or equal value exchange (EVE).

A Contingency Environment

An ACSA can be very valuable in a contingency scenario. If DOD has an established ACSA with the host nation and/or other nations supporting the contingency, a commander, his designated representative, or a CCO in some cases, can order supplies and services required by U.S. forces. In USAREUR, commanders and/or their designated representative may obligate up to $25,000 to purchase supplies and services and have authority for selling support or executing EVE or RIK transactions. Conversely, contracting officers have authority to buy supplies or services up to the value of their individual

warrant; however, USAREUR Regulation 12-16 restricts that authority to the U.S. Army Contracting Command Europe (USACCE). CCOs deployed by USACCE can easily coordinate STANAG approval for any requirement.

Just as in FAR contracting, before placing a STANAG order, comptroller personnel must first commit certified funds to cover the cost of the requirement. Even if the order will be acquired through RIK or EVE, to avoid an antideficiency violation, the value of the transaction should be obligated on the STANAG 3381. After the items or services are ordered, if the United States cannot fulfill the RIK or EVE, cash reimbursement can be executed instead. Conversely, if the RIK or EVE is successfully executed, the cash value can be deobligated. There are many former Eastern bloc nations that cannot afford to pre-fund their STANAG orders. This is something to keep in mind if selling supplies or support.

There are statutory annual ceilings for worldwide U.S. use of ACSA with NATO and non-NATO countries. In a declared contingency, however, they do not apply. Additionally, there are never restricted ceilings on RIK and EVE transactions unless they are converted to cash transactions.

The value of having an ACSA in place not only with the host nation, but also with other nations participating in the contingency, is enhanced when nations can fulfill each other's requirements by exchanging commodities that they possess or have delivered to the operation. Additionally, if the use of STANAG is coordinated early in a contingency, costs can be better controlled, the logistics tail can be reduced, and the acquisition process can be streamlined by circumventing aspects of U.S. procurement law otherwise applicable under FAR contracting.

If you served as a CCO in the Balkans, you may have encountered the scenario described in the following paragraphs. It refers to a deployment at Operation Joint Guardian, Camp Able Sentry, Skopje, former Yugoslav Republic of Macedonia (FYROM). During this deployment, the G-2 requested use of the Skopje Airport to fly missions with the Hunter unmanned aerial vehicle (UAV). Under the NATO Military Technical Agreement, participating nations are not exempt from reasonable charges for services requested and received. Knowing that the airport charges fees for landing, air traffic control, and handling, and that the United States has an ACSA with FYROM, you realized that a STANAG had to immediately be established so that Hunter could fly its intelligence-gathering missions.

To put the STANAG in place, you determined that the ministry of transportation (MOT) was the authority providing the services, and you realized that you must coordinate use of MOT services through the MOD. A STANAG could be established if the MOT agreed to let Hunter use the airport, if the MOD agreed to let the MOT invoice the U.S. Army directly for the services, and if the U.S. Army subsequently paid (via cash reimbursement in this case) the MOT directly. You needed to be sure of this agreement because you recalled hearing that in former Eastern bloc nations, money has a tendency to vanish if it is not channeled directly to the correct ministry. Next, you obtained an average price per month of what the airport usage fees for a UAV would be, ensured they were fair and reasonable, then obtained certified funding from the task force comptroller.

Finally, you wrote a cover letter to coordinate agreement between ministries on the STANAG. Your reliable Macedonian Procurement Assistant, Blagoj, personally delivered the letters and the STANAG. After several weeks, the State Secretary of the MOD responded by signing the STANAG. The funds were then obligated, and Hunter landing fees could be invoiced against the STANAG on a monthly basis. You now had an order issued to the MOD as the "prime contractor," with execution through the MOT as the "subcontractor." Mission accomplished.

Even though a service was acquired using a STANAG in this case, supplies can be acquired as well, and they can be acquired from other participating nations having an ACSA with the United States, not just the host nation. When writing STANAGs, ensure that proper bank account numbers are included to guarantee correct direct payment. This important feature allows the MOD between two nations to coordinate support, then establish and execute the transaction even though the MOD is not necessarily the ministry or agency directly providing the supplies or services.

Who To Contact

If you're a CCO, determine which AOR's regional commander-in-chief you report to before you are notified to deploy. Contact the J-4 and get a current list of the countries having signed ACSAs with the United States. Obtain copies of the ACSAs pertaining to countries with which you may deal. Find out if a commander's trained, designated representative is available and bring him or her along. If the value of the purchase does not exceed $25,000 or if the transaction is an EVE or RIK, that person can execute the transaction and assist in the contingency contracting mission.

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RIGHT-SIZING AND PERSONNEL CONSIDERATIONS

William N. Washington

Introduction

In the future, as the Army reduces staffing costs to provide funding for procurement and repair actions, we should not lose sight of our end goals in terms of readiness. That is, we should not be so focused on the cost-savings aspect that we lose sight of whether the organization retains the operational capability to accomplish its missions. This can and does happen. When it does, it becomes necessary to either rehire former employees or hire new ones to bring the organization's staff back to a sufficient readiness level. Likewise, we should minimize the personnel and organizational disruptions that occur during a right-sizing effort. This way, the remaining personnel are able to focus on their jobs rather than on anxieties about their continued employment and concerns about fellow workers. To these ends, there are basically three general concepts that can be used to minimize negative personnel impacts: involve employees early in the process, plan the right-sizing, and retain quality employees.

Employee Involvement

By involving employees early in the process, one might be pleasantly surprised at the results. For instance, employees may be able to propose cost savings and efficiencies that were not evident to management (e.g., redesigning work processes, using alternative work hours, participating in early retirements, and accepting downgraded positions). This concept was used successfully in the airline industry when both United and Southwest Airlines saved millions of dollars by involving their personnel, as part of their stock ownership process, in ways to improve operations. This concept allows a collaborative effort rather than a one-sided approach. In addition, secretive decision processes relative to personnel actions do not long remain so and, when they are discovered, tend to alienate employees. Further, subsequent rumors may be created that are even more destructive to morale than the intended reduction.

Plan The Right-Sizing

First, across-the-board cuts do not usually work very well. This sacrifices planning for the sake of perceived fairness. It also relinquishes control over the direction of the organization in accomplishing its future missions. A further downside to this practice is that it can easily lead to eliminating more positions than are optimal to the organization's operation. Across-the-board cuts may result in mission failures because of a lack of knowledgeable or skilled personnel for special tasks.

Next, avoid repetitive waves of right-sizings because they can lead to lower employee morale and, subsequently, to lower productivity. Like the abovementioned across-the-board cuts, this action may also be an attempt to be "fairer" by not cutting many positions at one time, but it ends up creating an environment where employees become uncertain when the next right-sizing axe will strike.

Finally, jobs should be redesigned as part of the effort. This involves planning which jobs and functions to cut and what procedures to modify, given a smaller workforce to accomplish the missions. As part of this process, special emphasis must be given to eliminating unnecessary tasks and inefficient operations. Redesigning functions is perhaps one of the most critical considerations in a right-sizing effort because only through adapting the work processes can a more efficient and effective organization be achieved.

Retain Quality Employees

The government has spent a considerable amount of resources on the education and training of its workforce, especially its acquisition personnel. As such, it does not make sense to consider them as billets on an expense ledger. This is demonstrated by the fact that private industry leaders usually consider government workers as key to accomplishing outsourced government missions and actively recruit both retired and current employees for their government contracts. In addition, the top talent within an organization will probably be the first to jump ship in a right-sizing process, resulting in the loss of skilled individuals from your organization. Consequently, every attempt should be made to retain the organization's most skilled personnel by involving them in the decisionmaking process during the right-sizing effort and making them aware that their skills and knowledge are both appreciated and needed.

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THE CENTRAL FLORIDA TECHNOLOGY DEVELOPMENT CENTER

George M. Burmester and Robert A. Sottilare

Introduction

The Central Florida Technology Development Center (CFTDC) is a state-of-the-art modeling and simulation (M&S) research and development (R&D) facility at the Central Florida Research Park. Established in March 2001, the CFTDC is home to the Army's Center of Excellence for Modeling and Simulation. The CFTDC is a partnership linking the U.S. Army Simulation, Training and Instrumentation Command (STRICOM); the Army Research Institute (ARI); and the University of Central Florida Institute for Simulation and Training (UCF/IST). The CFTDC is also home to STRICOM's technology base business area. More than 80 individuals from STRICOM, ARI, UCF/IST, and industry, as well as UCF students, work in the facility. A highly successful and expanding partnership exists between CFTDC and the state of Florida and UCF/IST. The center includes more than 27,000 square feet of office, laboratory, and test bed/experimentation space, and houses 18 testbeds, a simulation theater, simulation tools and equipment, and a network infrastructure. As the Army's tool for exploring, developing, and transferring M&S technologies to military and civilian applications, the CFTDC is also used for developing partnerships with industry, academia, and other government agencies. The CFTDC welcomes visitors from around the world to view its M&S capabilities.

Multimedia Capabilities

The CFTDC is a fully networked multimedia facility with extensive data, video, and audio capabilities. More than 60 miles of cable for data, voice, and multimedia applications were used in the facility's construction. Communication to the outside world is aided through more than 600 network data ports, more than 200 voice ports throughout the facility, and multiple wide area networks including the Defense Research and Engineering Network (DREN), the UCF Research Network, and the STRICOM Corporate Network.

The CFTDC contains a simulation theater that accommodates more than 30 individuals for a completely immersive experience. Additionally, the Innovation Center in the CFTDC contains a complete multimedia suite with a real-time video teleconferencing capability. The center's 18 testbeds are interoperable and cover live, virtual, and constructive simulation technologies. Testbeds can also be reconfigured to accommodate the ever-changing requirements for this state-of-the-art M&S facility. In addition to the DREN, the CFTDC will soon have additional capabilities for wide area networks that encompass the National Guard's GuardNet and the Internet II, both via UCF.

Homeland Defense

CFTDC supports homeland defense by providing R&D in medical simulation and individual virtual environment technologies (IVET). Medical simulation technologies are designed to allow civilian and military personnel to achieve the skill level necessary to save lives on the battlefield and in the United States. For example, the Combat Trauma Patient Simulation System (CTPS) can simulate combat casualty care from the initial point of injury, through assessment, triage, initial treatment, and evacuation, all the way to hospital-level care.

CTPS is used for initial, refresher, and sustainment training of individual medics and medical teams. Furthermore, CTPS provides a means for mission rehearsal, test and evaluation, and after-action review for the collective tasks of medical operations involving weapons of mass destruction incidents.

The goal of IVET is to develop immersion technologies that make a combatant's experience more realistic. These technologies focus on training small-unit leaders (team, squad, or platoon leaders) in specific tactics, techniques, and procedures. Another application involves training first responders, the personnel that deal with weapons of mass destruction incidents (nuclear, biological, and chemical), through the Virtual Emergency Response Training System.

Experimentation

The CFTDC also provides a means by which Objective Force experimentation applies M&S technology to develop and evaluate new Army concepts, including those of the Future Combat Systems and the Objective Force. The DREN is currently used in the CFTDC for experiments and integration with the Research Development and Engineering Center Federations, the Joint Virtual Battlespace Program, and for experiments with the Battle Labs at Fort Knox, KY, and Fort Rucker, AL. Other recent efforts include M&S experimentation in support of the Integrated Situational Awareness and Targeting Advanced Technology Demonstration and the Bradley Integrated Army Active Protection System. In the future, the DREN will also be used for experimenting with and testing other programs such as the Advanced Robotics Semi-Automated

Forces Program, the Immersive Technologies Program, and the Embedded Simulation and Training Technologies Program.

Distributed Simulations

The CFTDC is a distributed M&S tool. Distributed simulation technologies enable the interoperation and reuse of current and future simulations, components, and tools. The Modular Interoperable Synthetic Environment (ModISE), a prototyped open and extensible architecture that focuses on interoperability, compatibility, and drag-and-drop simulation composition done dynamically over the Web, is an example of efforts in this area in the CFTDC. The ModISE API (application programming interface) supports a subset of the IEEE (Institute of Electrical and Electronics Engineers) 1516 High Level Architecture specification. This program supports DOD's vision of constructing M&S environments from affordable, reusable components that interoperate through open systems architectures to maximize utility and flexibility. This program also supports the establishment of standards and protocols that promote Web-based data exchange, open system architecture, and software reusability of M&S applications.

Distributed Learning

The CFTDC supports advanced distributed learning (ADL) through a multiyear Army Science and Technology Objective (STO) program (one of many STO/ATD (advanced technology demonstration) programs at STRICOM). In partnership with ARI, the ADL research and development program supports the Army Distance Learning Program (TADLP) by researching collaborative Web-based training and simulation solutions to provide true "anytime, anywhere" training to the soldier. The TADLP will introduce an Intelligent Tutoring System. TADLP's goal is to provide a truly instructorless automated training environment by monitoring student's planning and execution. Using case-based reasoning, the Intelligent Tutoring System will be used to compare student performance to subject matter expert performance in the same scenario. Based on the soldier's performance, remedial coursework and similar scenarios may be assigned to ensure their understanding of Army doctrine.

Community Efforts

The CFTDC is a learning center for M&S, an R&D center, and a technology incubator for industry, academia, and government agencies. While co-hosting the 39th National Junior Science and Humanities Symposium (JSHS), the CFTDC welcomed to central Florida more than 240 of the best and the brightest high school students from across the country. The theme was "Discovering New Frontiers: Virtual Exploration of Science and Technology." The CFTDC is also a partner in the National JSHS Program, which is a tri-Service sponsored effort aimed at encouraging and recognizing the next generation of scientific talent.

Following the successful educational outreach support of the 39th National JSHS Symposium, STRICOM's Commanding General BG Stephen Seay directed the development of a Central Florida high-tech outreach initiative that would link academia, industry, and government in a Web-centered network. By using knowledge-management software and by tapping expertise in the Central Florida Research Park and adjoining UCF, all three sectors work toward launching a network that will create a dynamic interface between the educators, industry partners, and government agencies. Schools and scholars will have a user-friendly tool that gives them access to the more than 3,800 high-tech firms in central Florida. Corporate partners in the high-tech sector will achieve a reliable and efficient path to coordinate their educational outreach. Central Florida government and public service entities, including the Florida High Tech Corridor Council and area economic development commissions, will have a vehicle to accelerate development of an internationally competitive workforce.

Conclusion

The CFTDC involves a unique partnership among STRICOM, ARI, and UCF/IST and is a means to achieve training, analysis, and acquisition goals at STRICOM. The CFTDC not only supports development of the Army's critical training technology, but it also provides a nexus for partnering and transitioning dual-use technologies to local government, industry, and academia. Additionally, the CFTDC provides a learning environment for engineers and students as well as an infrastructure for R&D of simulation and training technology for the Army's Objective Force. STRICOM has cooperative agreements for technology development in the areas of embedded simulation, advanced robotics, medical simulation, immersive simulations, synthetic natural environments, and advanced distributed learning tools. The CFTDC is truly the wave of the future in M&S facilities.

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THE ARMY AIRBORNE COMMAND AND CONTROL SYSTEM

Carol Cooper

Introduction

As the Army transforms to a more strategically responsive force that is dominant across the full spectrum of military operations, commanders must have comprehensive situational awareness to succeed in the complex operating environment of the 21st century battlefield. The Army Airborne Command and Control System (A2C2S) will help the Army do this through development and fielding of a highly mobile, advanced, on-the-move C2 system hosted on the UH-60L BLACK HAWK helicopter.

The A2C2S is specifically designed to meet the maneuver commander's requirement for an airborne C2 vehicle command post. The A2C2S provides the commander with the ability to "see" his portion of the battlespace, exercise C2 from any location, control his part of the battle, and rapidly respond to fluid combat situations. The A2C2S provides the maneuver commander an airborne tactical command post (TACCP) with the same digital capabilities he has in his ground TACCP. This versatile command post allows the commander to exploit the third dimension of the battlespace as he commands and controls his units.

Description

The A2C2S is an on-the-move C2 system that will enable commanders and their staffs to maintain digital connectivity while operating from a temporary remote site or moving through the battlespace at speeds up to 300 kilometers per hour. The C2 system consists of two components: an A-Kit and a B-Kit. The A-Kit is permanently affixed to the host aircraft, the UH-60L BLACK HAWK, and will consist of antennas, wiring, floor modifications, and aircraft interfaces (power, structural, etc.) to enable installation of the B-Kit in the aircraft.

The B-Kit consists of operator workstations, computer systems, and the necessary communications equipment to host and support the C2 process. The system will have voice and data equipment that provides battlefield information processing and connectivity equivalent to a TACCP, a jump tactical operations center, and the commander's vehicle. It provides the warfighter the communication and data processing capabilities necessary to interface with subordinate and adjacent forces and receive taskings from higher headquarters. The A2C2S provides both voice and data interoperability with U.S. military Services and voice compatibility with government agencies, civilian agencies, and services of allied nations.

The Army's current utility helicopter, the UH-60L BLACK HAWK (and newer models), will host the Army's new A2C2S. The A2C2S allows the commander and his staff to maintain voice and digital connectivity with required command-post elements. The A2C2S replicates the systems and connectivity found in a digitized ground brigade commander's TACCP. It provides the maneuver commander a rapidly deployable means of C2, which he can deploy worldwide to support any mission.

Commanders can use the A2C2S to command and control units engaged in military operations ranging from humanitarian assistance to high-intensity conflict. This gives the commander great flexibility by providing him with the C2 systems he uses on the ground, while allowing him to quickly position himself at the decisive point on the battlefield.

A-Kit And B-Kit

The selected A2C2S A-Kit and B-Kit design approach, derived from incremental evolution of the validated and demonstrated open architecture Aviation Applied Technology Directorate (AATD) baseline, meets all performance requirements through a low-risk development program with high growth potential. The A-Kit is similar to the AATD demonstrator configuration except that the replacement flooring for the UH-60L supports all of the tie-downs for standard loading configurations, thus increasing platform utility.

The B-Kit design also evolved from the AATD demonstrator configuration. It incorporated all designs into one electronic model containing the aircraft systems critical to B-Kit design and installation.

B-Kit components are segregated into communications and maneuver commander's environment (MCE). The MCE console includes mounting provisions for the intercom system when in the A2C2S conference configuration.

Source Selection

The A2C2S acquisition was conducted as a negotiated procurement with full and open competition. An informal source selection was conducted to select a single proposal that offered the government the best value, considering cost and price and other noncost factors.

Consideration for the award was based on management, technical, cost, and past-performance factors. The technical factor was slightly more important than management; management was more important than cost; and cost was more important than past performance. All noncost evaluation factors combined were significantly more important than cost. The signifi-

cant subfactors of each factor, corresponding to the significant objectives of the program, were evaluated and assigned one of five possible adjectival ratings, ranging from unsatisfactory to excellent.

The Award

The contract award was made to the offeror whose proposal provided the best value to the government. The basic contract was awarded on a cost-plus-incentive-fee (CPIF) basis for delivery of a software integration system, four A2C2S trainer/demonstrator systems, six A2C2S prototypes, and achievement of airworthiness qualification of the system. The prototype systems will be used for in-plant contractor development and testing, special operation aviation regiment integration, and the limited user test leading up to a Milestone C decision authorizing entry into low rate initial production (LRIP). A key data deliverable from the design and test effort will be the modification work order authorizing the A-Kit installation to the UH-60L airframe.

The contract includes fixed-price incentive options for 12 LRIP A2C2Ss consisting of 12 B-Kits and 17 A-Kits, and 17 full-rate production A2C2Ss consisting of 17 B-Kits and 20 A-Kits. The options were structured to allow the purchase quantity to be tailored to the funds available at the time the option is exercised.

The contract includes several special provisions and clauses. The first special provision assigns total system responsibility to the contractor. This provision requires the contractor to fully integrate the various A2C2S components onto the UH-60L platform, regardless of the source (nondevelopmental item, commercial off-the-shelf, contractor-furnished equipment, or government-furnished equipment). A second special provision details the contractor's responsibilities for receipt, inspection, maintenance, storage, and security of government-furnished (GF) UH-60L aircraft. This provision complements the requirements of the government property (cost-reimbursement contracts) clause. The contract also includes the ground and flight risk clause to cover contractor responsibilities while operating the GF aircraft.

Summary

The A2C2S was acquired by a team of professionals from the U.S. Army Aviation and Missile Command's (AMCOM's) Acquisition Center, Redstone Arsenal, AL, using acquisition reform initiatives (ARIs) in the procurement process. An integrated product team prepared the requirement documents, the Statement Of Work, and the Request For Proposal (RFP). One of the team's actions was to develop a requirement that took advantage of all available technologies in the marketplace.

The RFP was issued via electronic media as a paperless, full and open, best-value, performance-based competitive solicitation. Five offerors submitted proposals. The best-value approach for a full and open competitive acquisition strategy included a proper balance between technical, management, cost, and past-performance factors.

The RFP was structured to encourage prime contractors submitting proposals to use small and disadvantaged businesses as subcontractors to the maximum extent possible. This was an evaluation factor during the source-selection process. This approach ensured increased small and disadvantaged business participation. The procurement lead time for this acquisition was very short and required a commitment to teamwork to ensure that the evaluation allowed for best-value considerations and took advantage of evolving technologies in the marketplace. The delivery schedule imposed by the Army was extremely ambitious. The evaluation considered risk in all aspects of the contractors' proposals to determine performance capability, and the risk factor was significant in the evaluation process.

Two aspects of the evaluation process that enhanced and accelerated the evaluation were oral presentations by offerors to the evaluation board members and the use of an online electronic database tracking system for the evaluation of proposals. The government evaluation team heard each contractor's oral technical presentation, asked follow-up questions, and clarified each offeror's concerns.

The oral presentations saved time and resulted in more open communication between industry and government. They also resulted in an increased understanding of the work to be performed and the contractor's approach. The evaluators were able to gain a clearer insight as to the particulars that made up the contractors' proposals. Those areas requiring clarification were addressed during this process. As a result, the evaluation time was significantly reduced. The use of an online electronic database tracking system for evaluation of proposals at the factor and subfactor levels streamlined the evaluation process, reduced the evaluators' response time, and allowed immediate accessibility and critical collaboration capability among board members.

During the proposal process, each offeror was instructed to execute and sign a model contract as part of their final proposal. This initiative reduced the lead time for contract award. Once the winning proposal was identified, the contract was awarded within 2 days.

The contract uses a hybrid of contract types, including CPIF, fixed-priced-incentive, and cost-plus-fixed-fee. The total proposal, evaluation, and contract award time for this performance-based, best-value procurement was 147 days. The projected dollar savings resulting from competition and the use of ARIs during the process is 10-15 percent of the total contract value.

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VISION IS TRANSFORMING TEST AND EVALUATION

Mike Cast

Introduction

The events of September 11, 2001, gave tragic emphasis to the urgent need for U.S. military forces that are rapidly deployable, able to operate in urban terrain as well as rugged landscapes, light but lethal, and prepared to conduct a full spectrum of operations—from combat to humanitarian aid. Some of the Army's senior leaders have understood this need for some time, a fact that Army Chief of Staff GEN Eric K. Shinseki underscored when he officially announced the Army transformation campaign at the Association of the United States Army Conference in October 1999.

This transformation is not only resulting in revolutionary changes in force configurations, doctrine, logistics, and training, but in the fielding of new weapon systems and other equipment. Some of the systems and equipment will come from off-the-shelf commercial sources, some are under development, and some are still just concepts. The reliability of these systems will depend heavily on state-of-the-art technologies, both hardware and software. Testing and evaluating these new systems, and correcting problems as early as possible in their developmental stages, will be critical.

Transformation Of Testing

An innovative transformation of the Army's test and evaluation capabilities is occurring hand in hand with the Army transformation, says Dr. David Brown, Director of Test and Technology at the Army Developmental Test Command (DTC), Aberdeen Proving Ground (APG), MD. Brown also notes that the developmental-testing component of the new Army Test and Evaluation Command is continually striving to improve its test technologies to capture the best data it can and to provide it to test customers as soon as possible. The command is also working to streamline test schedules, reduce costs, and keep pace with the Army transformation through technology initiatives such as the Virtual Proving Ground (VPG), which integrates live testing with modeling and simulation technologies and high-performance computing to support test programs.

DTC checks the performance and safety of vehicles.

VISION For Future Testing

One of DTC's innovative programs is the Versatile Information System-Integrated ONline (VISION), which uses state-of-the-art data-collection technologies. With the aid of a digital data library accessible to test customers through the Internet, VISION gives the Army quick access to critical information on which to base acquisition decisions.

VISION employs a variety of "intelligent" instruments known as Advanced Distributed Modular Acquisition Systems, developed by a team of engineers at DTC's Aberdeen Test Center (ATC) in Maryland to collect diverse test data. These data include engine fluid temperatures, power output, engine speed, shock and vibration, stresses and strains on gears and equipment, gun accuracy, and other data used to pinpoint problems.

During the early stages of the Army transformation, when Initial Brigade Combat Teams were being established at Fort Lewis, WA, VISION provided performance information about vehicles brought to ATC for a bid-sample evaluation. The Army's source-selection board used this information in selecting the Light Armored Vehicle III as the basis for

infantry-carrier and mobile-gun-system variants of the Army's Interim Armored Vehicle (IAV) (now named Stryker). The IAV, which the Army plans to field in 2002, will be the operational mainstay of the brigade combat teams.

To demonstrate the value of the VISION Program, a team from ATC traveled to Fort Lewis in January 2002 to equip vehicles on loan to the Initial Brigade Combat Teams with instrumentation to record a variety of performance data. This information will help the Army further adjust its test program and make any needed improvements to the IAV and other future systems the Army develops.

The data recorded by this instrumentation was relayed to ATC via VISION technology and uploaded to the VISION Web site. ATC engineers envision similar "smart" instrumentation being built into military systems, thus enabling testers, operators, and other decisionmakers to acquire a variety of performance and logistic data.

FCS Virtual Testing

As its Interim Force takes shape, the Army is also looking into creating an Objective Force by 2010. This force will represent what can be done to equip, organize, and train units to assimilate the best aspects of the heavy, light, and interim forces. In tandem with this effort, the Army also teamed with the Defense Advanced Research Projects Agency to entice creative weapons developers into formulating concepts for its proposed Future Combat Systems (FCS). FCS is conceived as a networked "system-of-systems" that will include robotic reconnaissance vehicles and sensors; tactical mobile robots; mobile command, control, and communication platforms; networked fires from futuristic ground and air platforms; and advanced 3-D targeting systems operating on land and in the air. If the Army decides by FY03 to go forward with this concept, the goal will be to equip the first unit with FCS by FY08 and reach initial operational capability by FY10.

"One of the integral parts of Army transformation is a distributed warfighting capability," Brown explained. He added that the FCS will not be a single system where all of its capability is integrated into a single vehicle or item. The Army can't get everything at a single test center at a single time, so it must be able to simultaneously link multiple test centers and capabilities across the country, including contractor capabilities and traditional test sites, typically Army ranges. The Army must be able to stimulate some sort of scenario across them, and that's where the VPG comes in.

The Army must also be able to collect data and save time in a distributed fashion. That means it must have smart sensors and instrumentation systems on various pieces of a system and be able to reconfigure and control them from afar. No longer will testers, data collectors, or anyone else in the chain be with the system; they could be thousands of miles away.

Testers and data collectors must also be able to query instrumentation and get data. The data must be sent right off the system as rapidly as possible, or almost instantly get into some sort of "wire-neutral" communication system—via satellite links, cellular links, or high-speed data links. That's where VISION comes in.

Virtual Information

As the Army's premier center for testing tracked and wheeled land combat systems, ATC developed VISION primarily to capture and share test data on these types of systems, says Dr. Samuel Harley, an ATC Scientist who was instrumental in developing the program. He adds that because VISION can also be configured for use on missiles, aircraft, and other types of systems under test, it will be a valuable commodity for use in DTC's entire test program.

The data collection devices are small enough in size, large enough in processing power, low enough in power consumption, and robust enough to function for extended periods in any harsh environment in which the military might operate. They share a common device architecture, making it relatively easy to add devices as new requirements surface. The Army is looking at embedding these ruggedized data-collection devices into equipment when it is manufactured—to get diagnostic information from the developmental phase, through operational testing, to actual use in combat.

While VISION is founded on these data-collection devices, its capstone is the digital data library, which test customers and other authorized users can access via the Internet to pull information from disparate databases. This library is not fully developed but will eventually include a separate database of meta-data, which is information tagged to facilitate searches for specific types of test data from all the databases linked into the library.

Information Engineering

Harley terms ATC's effort "information engineering," which is determining what users need and building systems that meet those needs. ATC is using the VISION Program to continue its development of data-collection instrumentation and to integrate developmental and operational testing.

During the next several years, the VISION Program will undergo continuous improvement with the addition of new capabilities. ATC is also working on the program with other test centers and expects to develop an integrated communications hierarchy.

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Improving Warfighter Capabilities . . .

MISSION PLANNING AND REHEARSAL TOOLS FOR THE LEGACY, INTERIM, AND OBJECTIVE FORCES

MAJ Stephen Milton and MAJ Richard Williams

Introduction

"The winner of an engagement will usually be decided by the soldier or aircrew that gains surprise, acquires the target, and accurately fires the fastest." This quote from Field Manual (FM) 1-112, *Attack Helicopter Operations* (U.S. Army 1997), unequivocally expresses the importance of "visual acuity" on the battlefield and shows Army aviation's foresight into what has evolved into two key enablers of the Objective Force: information dominance and situational awareness.

At the tactical level, Army warfighters in such systems as the AH-64 Apache Helicopter, the M1-Abrams tank, and the M2/M3 Bradley Fighting Vehicle visualize the battlefield most often through thermal sensors. Soldiers use Forward Looking Infrared (FLIR) sensors to navigate, to orient on engagement areas, and to acquire and identify targets prior to ordnance release. Yet, at the tactical level, the Army does not have a fielded system capable of predicting FLIR performance or even the capability of providing predictive FLIR imagery of the battlespace. Warfighters using FLIR systems must rely on their own visual interpretation of the battlespace based on two-dimensional topographic maps and low-resolution visual animations.

Weather conditions and target-terrain relationships significantly enhance or degrade FLIR sensor performance. Degraded FLIR images make navigation, target detection, and target identification more difficult to the warfighter who must visually acquire and identify enemy threats. Generally, weapons-effective ranges exceed the warfighter's ability to visually identify vehicular threats in FLIR. The inability to predict FLIR sensor performance (because of weather, line-of-sight considerations, and target-to-background terrain relationships) further compounds the problem. This situation increases time required to detect and identify targets, increases exposure time, and often decreases the advantages of standoff. Achieving situational awareness in FLIR is a most challenging endeavor.

Concept Experimentation

The Concept Experimentation Program (CEP) is a separately funded program that provides the Army Training and Doctrine Command Battle Laboratories the ability to evaluate and capitalize on emerging technology, materiel initiatives, and warfighting concepts. The CEP facilitates experimentation to determine the military use or potential of a concept to become a Doctrine, Training, Leader Development, Organization, Materiel and Soldiers solution to the future operational capabilities. Normally a 1-year program, the CEP process consists of one submission cycle that is augmented by a quick-reaction identification and execution capability. The CEP is an effective and efficient method by which the research and development community can quickly determine value added to warfighter capability.

An Army science and technology objective entitled 3D Dynamic Multi-spectral Synthetic Scene Visualization began in FY99 to provide DOD with 3-D visualization tools for battlefield terrain and environmental information as they apply to infrared (IR) and millimeter wave sensor performance. In a collaborative effort, researchers at the U.S. Army Engineer Research and Development Center (ERDC) and Defense contractors supporting the Air Force Research Laboratory (AFRL) have produced the first-ever capability to provide warfighters in tactical or training settings with predicted FLIR scenes. This capability provides FLIR users with predicted, physics-based IR scenes prior to mission execution. The system operates using a client-server architecture, standard Internet browser, and soldier-oriented graphical user interface. The system ingests forecasted weather data, terrain, and target data to produce static and animated predicted IR scenes that replicate the parameters (fields of view, magnification, resolution, etc.) of user-specified FLIR sensors of choice (Figure 1). Capabilities also include a "look-back" feature that presents friendly vehicle IR signatures from the enemy's FLIR perspective.

Army Aviation Applications

Recognizing this as a challenge and a remarkable opportunity for Army attack aviation and future applications to the Objective Force, the Air Maneuver Battle Laboratory and the Aviation Directorate of Combat Developments at Fort Rucker, AL, sponsored a CEP experiment in predictive FLIR tech-

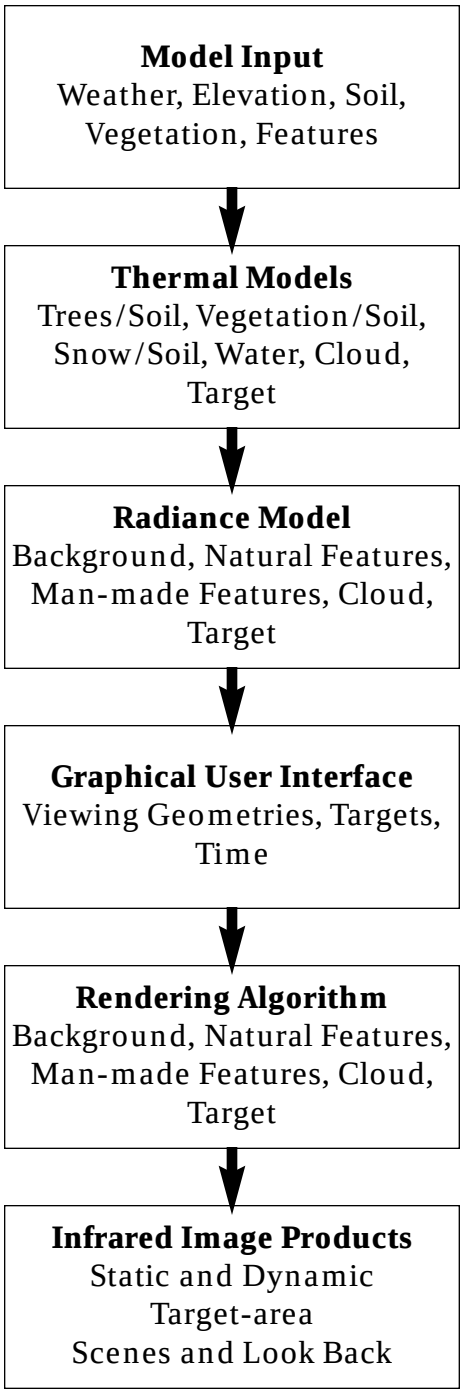

Figure 1.
Flowchart of the process to predict IR scenes

nologies. The purpose of the experiment was to determine the military use and benefit that physics-based, predicted IR scenes of the battlespace would have on Army attack pilot performance. Specifically, the CEP would explore and document whether measure of performance improvements were realized in the areas of battle position selection and target detection.

CEP Experiment

The experiment was conducted July 9-13, 2001, at Fort Hood, TX, and was administered by the Aviation Test Directorate, U.S. Army Operational Test Command. The purpose was to quantitatively measure the performance improvement that predicted FLIR scenes would have on attack helicopter operations. Specifically, the experiment measured whether predicted scenes improved mission planning (the pilots' ability to evaluate, rank order, and select the best battle positions) and mission rehearsal (resulting in faster and more accurate target detection during mission execution).

Thirty AH-64 Apache pilots were cross-leveled (by flight experience) and placed into two groups: the baseline group and the enhanced group. All company-level officers were represented (WO1 through captain). Both groups were tested on the same mission profiles and presented with mission planning and rehearsal tools used in attack aviation today (operations order, topographic map, operational overlay, Aviation Mission Planning System (AMPS), and line-of-sight application). In addition, the enhanced group was presented with static and dynamic predicted thermal views from each

To Determine Battle Position: NORMA

N—*Nature of target* (i.e., moving/stationary—seek flank or rear of enemy)

O—*Obstacle clearance* (i.e., height of terrain, vegetation, man-made obstacles in battle position)

R—*Range to target* (i.e., seek standoff greater than 2 kilometers)

M—*Multiple firing positions* (i.e., battle position should allow multiple firing positions per aircraft)

A—*Adequate area* for proper dispersion between aircraft

To Determine Firing Positions: BRASSCRAF

B—*Background:* aircraft should blend in with background

R—*Range to target:* seek firing position greater than 2 kilometers

A—*Altitude:* altitude of firing position is same or higher than engagement area

S—*Sun:* place sun at back of aircraft

S—*Shadows:* shadows should envelop aircraft

C—*Cover and concealment:* protection from direct fire and observation

R—*Rotor wash:* minimize and conceal rotor wash

A—*Adequate maneuver area:* battle positions should allow multiple firing positions per aircraft

F—*Fields of fire:* target must be visible for acquisition and tracking

Figure 2.
Aviation planning criteria

battle position to the engagement areas at the exact time the mission was to occur (notionally 24 hours in advance).

The experiment was conducted in a classroom environment. Enhanced group pilots received no formal training on how to use or interpret the predicted scenes. Actual AH-64 FLIR Target Acquisition and Designation Sight video was obtained through scripted Apache helicopter HELLFIRE missile engagements on a single target vehicle over complex Fort Hood terrain.

All 30 pilots were tested on their ability to properly rank order 10 potential battle positions in 2 separate engagement areas. CW5 Stephen Mitchell, an Army Standardization Instructor Pilot (SIP), determined the correct rank order based on aviation doctrine and a myriad of operational and tactical aviation planning criteria (NORMA/BRASSCRAF (Figure 2) and Mission, Enemy, Terrain, Troops and Time Available). The measure of performance was the rank order correlation of each group compared to the SIP. To test predictive FLIR scene effects on target detection, pilots were tasked to detect enemy vehicles in eight target detection vignettes (using multiple engagement areas and varying terrain, distances, and environmental conditions). Measures of performance were target detection time (seconds), number of false detections (detecting an object other than the target), and nondetections (failure to acquire the target). The CEP concluded with a written questionnaire.

Experiment Results

Predicted FLIR scenes improved pilot performance in all areas tested. Battle position selection was improved. The enhanced pilot group had a 75 percent agreement with the SIP rankings, statistically much more correlated than the control group. In the area of target detection, enhanced group pilots realized a substantial improvement in their ability to consistently detect targets, with 41 percent fewer false detections. Specifically, pilots exposed to the pre-mission visualization products improved target acquisition by 61 percent and target detection by 41 percent. Additionally, pilots in the enhanced group decreased their time required to detect a target by 6.5 percent on average, with the highest decrease in a single engagement of 32 percent (a 19-second reduction). Interestingly, the engagement with the largest time improvement presented the most challenging terrain and adverse FLIR conditions.

Further, enhanced group pilots showed an 8 percent improvement on the engagement area with the farthest standoff range (approximately 3.7 kilometers). In this engagement, the enhanced group had 11 fewer false detections and 6 fewer nondetections than did the baseline group.

Finally, predicted IR technology received positive reviews, with 100 percent of the pilots surveyed stating that Infrared Target Scene Simulation Software (IRTSS) improved mission planning; 96 percent stating that IRTSS improved the intelligence preparation of the battlefield process; and 93 percent reporting improvements in confidence, situational awareness, and risk mitigation.

Future Applications

Predicted FLIR technologies support the goals and objectives of the Army's Objective Force by enabling information dominance and improved situational awareness. Specifically, this technology provides warfighters with an immediate understanding of environmental and atmospheric effects on FLIR sensors for direct application in the mission planning and rehearsal processes. Moreover, predicted FLIR allows warfighters, at the collective-individual levels, the capability to preview, in 3-D, FLIR scenes of the battlespace. Three-dimensional terrestrial views in the thermal spectrum enable warfighters and mission planners to evaluate and select the optimum location and time on target as they directly relate to terrain, weather, and target arrays. The capability is the first to combine high-resolution terrain data, vegetation effects, terrestrial line-of-sight applications, and target geometries in the IR spectrum into a medium that can be digitally rendered and delivered to the warfighter via a standard browser. By taking vegetation into consideration, delivery software greatly enhances mission planning and rehearsal products under development such as the Joint Mission Planning System and the AMPS.

Overall, predicted FLIR scene technology demonstrates significant military worth and usefulness to the aviation warfighter, improving mission planning, rehearsals, and mission execution. ERDC and AFRL researchers contend that this technology can be applied to Legacy, Interim, and Objective Force combat vehicles and serve as a key enabler to the tactical capability of joint collaborative mission planning and rehearsal within a digital (onboard) environment.

Conclusion

The CEP process has proven an efficient, timely, and cost-effective method to debut and quantify the military use and operational and tactical benefits of predicted FLIR scene technology. If the decision is made for predicted FLIR capabilities to enter the formal materiel acquisition process, the technology is mature enough now to enter the life cycle at the system development and demonstration phase, thereby significantly reducing the time required for fielding.

MAJ STEPHEN MILTON is a Research and Development Coordinator at ERDC. Formerly an infantry officer, he is now in the Army Acquisition and Technology Workforce. He holds a B.S. in education from the University of Kentucky and an M.S. in computer information systems from the University of Phoenix.

MAJ RICHARD WILLIAMS is a Test and Evaluation Officer at the Aviation Test Directorate, Operational Test Command, Fort Hood, TX. He has 12 years experience as an AH-64 Apache pilot and is now a member of the Army Acquisition and Technology Workforce. He holds a B.B.A. from Texas A&M at Corpus Christi and an M.S. in systems acquisition management from the Naval Postgraduate School.

SENIOR SERVICE COLLEGE SELECTIONS

James M. Welsh

Introduction

Acting Deputy Director for Acquisition Career Management COL Mary Fuller is pleased to announce the selection of civilian members of the Army Acquisition Corps (AAC) as Senior Service College (SSC) Fellows for class 2003 at the Industrial College of the Armed Forces (ICAF) located at Fort McNair, Washington, DC. The ICAF course is held annually from August to June. ICAF class 2003 begins Aug. 12, 2002, with graduation scheduled for June 13, 2003.

Background

As part of the consortium of Senior Service Colleges that fall under the SSC Fellowship Program, the ICAF offers a unique opportunity for civilian members of the AAC to gain advanced education, leadership training, and experience specifically designed for senior acquisition leadership positions.

The Senior Acquisition Course at ICAF is the pre-eminent acquisition course for DOD acquisition professionals. It encompasses the entire 10-month ICAF curriculum, which is enhanced for designated acquisition students through four major elements: the core curriculum, mandatory acquisition advanced studies, advanced studies electives, and research. Separate attention is given to acquisition course work while retaining the benefits of mingling with students from operational and other functional communities. SSC Fellows at ICAF earn 15 continuous learning points (CLPs) per semester hour and 30 additional CLPs in the year they graduate. In addition, they receive an M.S. in national resource strategy upon graduation.

The AAC is annually allocated seven of the Army's nine ICAF seats. This year, the AAC also received an at-large seat, raising the number of AAC selections to eight. A Department of the Army (DA) selection board, comprised of senior Army acquisition leaders, makes all AAC selections to attend ICAF. Once the DA board recommendations are approved by the Office of the Secretary of the Army, selected individuals are notified and their names are submitted to the National Defense University (NDU) as Army nominations. NDU is the final decision authority in the selection/admissions process. Completion of ICAF is a highly desirable experience for civilians who aspire to Senior Executive Service (SES) positions.

Selectees

Listed alphabetically, the AAC members selected as new SSC Fellows are as follows:

James R. Bozzard is a Senior Acquisition Procurement Analyst assigned to Headquarters, Army Materiel Command, Alexandria, VA. He has more than 20 years experience in a variety of acquisition assignments. Bozzard is a 1989 graduate of the Program Management Course at the Defense Systems Management College (DSMC), Fort Belvoir, VA. In 1993, he served as a Legislative Fellow with Congress. He holds a bachelor's degree in mathematics and master's degrees in both business management and systems management. He is also Level III certified in contracting.

Robert F. Golden is Project Manager, Defense Communications and Army Transmission Systems, Fort Monmouth, NJ, assigned to the Program Executive Office for Enterprise Information Systems (PEO, EIS). Prior to his present duties, he was Product Manager, Tactical Endurance Synthetic Aperture Radar, Fort Monmouth, NJ. Golden is a 1992 graduate of DSMC's Program Management Course and a 1999 graduate of DSMC's Executive Program Managers Course. He has a bachelor's degree in electronic, electrical communications. Golden is Level III certified in program management; systems planning, research, development and engineering; and quality assurance, manufacturing and production.

Dr. Myra S. Gray is Product Manager, Counterintelligence/Human Intelligence Management Systems, Fort Belvoir, VA, assigned to the Program Executive Office for Command, Control and Communications Systems (PEO, C3S). Gray has more than 20 years experience in a variety of key acquisition assignments. She has a bachelor's degree in mathematics, a master's degree in business, a Ph.D. in engineering, and is a 1998 graduate of DSMC's Advanced Program Management Course. She is Level III certified in test and evaluation engineering; program management; information technology; and systems planning, research, development and engineering.

Robert W. Morris is Project Manager, Tank and Medium Caliber Armament Systems, Picatinny Arsenal, NJ, assigned to the Program Executive Office for Ground Combat and Support Systems (PEO, GCSS). He has held a variety of acquisition assignments in a career spanning more than 20 years. In his previous assignment, Morris was assigned to the Office of the Secretary of the Army as a Program Executive Staff Officer. A 1993 graduate of DSMC's Program Management Course, he holds a master's degree in systems management, a master's degree in

business management, and a master's degree in contracting and acquisition management. He is Level III certified in program management.

Daniel Pierson is Director for Systems Integration in the Office of the PM, Objective Force, assigned to PEO, GCSS. He has more than 20 years experience in a variety of key acquisition assignments. In his previous position, Pierson served as Lead Systems Engineer for Combat Training Centers at the U.S. Army Simulation, Training and Instrumentation Command. A 1998 graduate of DSMC's Advanced Program Management Course, he has a bachelor's degree in business and a master's degree in management of technology. He is a member of the year group 2000 Competitive Development Group and is Level III certified in program management and in systems planning, research, development and engineering.

Clifton O. Reynolds is a Senior Computer Specialist in the Office of the Director of Information Systems for Command, Control, Communications, and Computers, Office of the Secretary of the Army. He has more than 20 years acquisition experience in a variety of information technology assignments. Reynolds holds both bachelor's and master's degrees in mathematics. In addition, he is a graduate of DSMC's Advanced Program Management Course and the Advanced Information Systems Acquisition Management Course, a member of the year group 1998 Competitive Development Group, and is Level III certified in information technology and program management.

John T. Schatz is Director of Systems Integration on the Objective Force Task Force, Crystal City, VA. He has held a variety of key acquisition positions throughout his Army career. His previous assignment was as Principal Assistant to the PEO, Intelligence, Electronic Warfare and Sensors, Fort Monmouth, NJ. Schatz is a graduate of DSMC's Advanced Program Management Course, and the Modeling and Simulation Staff Officers Course at the Defense Modeling and Simulation Office. Schatz holds a bachelor's degree in electrical engineering and a master's degree in business administration and management. He is Level III certified in test and evaluation engineering; systems planning, research, development and engineering; and program management.

Christopher G. Vuxton is a Senior Procurement Analyst in the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. He has more than 15 years experience in contracting and procurement assignments. Vuxton is a 1996 graduate of the Executive Contracting Course and a 1997 graduate of DSMC's Advanced Program Management Course. He has a bachelor's degree in sociology, a master's degree in clinical and medical sociology, and a master's degree in business administration and management. Vuxton is Level III certified in contracting and program management.

Application Process

The SSC Fellowship Program is open to GS-14/15 civilian members of the AAC (or equivalent personnel demonstration broadband level) who currently occupy a critical acquisition position (CAP) and meet CAP requirements. In addition, applicants must meet the following requirements:

- Have or be able to attain a Top Secret clearance with a special background investigation that will not expire during the ICAF school year.
- Be identified by the organization as being eligible for executive level service.
- Develop a Post Utilization Plan as outlined in the application instructions in the *Army Civilian Training, Education and Development System Training Catalog.*
- Be Level III certified in primary acquisition career field (ACF). In addition, applicants should be Level III certified in an additional ACF.
- Possess an undergraduate degree.

Applicants should also possess a graduate degree in an ACF listed in DoD Directive 5000.52-M, *Career Development Program for Acquisition Personnel*. Additional consideration will also be given to graduates of DSMC's Advanced Program Management Course.

Application packets must be submitted in accordance with Army civilian personnel policy and the requirements listed in the *Acquisition Education, Training and Experience Catalog*. Please refer to both of the following Web sites for more information on applying to attend ICAF:

- Army Civilian Personnel: **http://cpol.army.mil/train/catalog/ch02icaf.html**
- Army Acquisition Corps: **http://dacm.rdaisa.army.mil/**

Dates for the 2003/04 SSC selection board have not yet been announced; however, it normally convenes in January each year. As such, the DA requires application packets to arrive during the month of November. Selection board results are usually released in the February/March timeframe.

For additional information on the SSC Fellowship Program, contact Vernessa Carter, HQDA, at (703) 325-2456 or Jim Welsh, Acquisition Support Center, at (703) 604-7116.

JAMES M. WELSH is an Educational and Training Specialist in the Acquisition Support Center, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. He holds a bachelor's degree in management from National-Louis University.

FROM THE DIRECTOR ACQUISITION SUPPORT CENTER

Some of you may not be aware that our internal organizational transition is still ongoing. It is quite a challenging task combining the functions of our former Acquisition Career Management Office, the former Army Acquisition Executive Support Agency, and other activities. The greatest challenge in this effort is ensuring that we focus on the right operations, issues, and services. Our goal, of course, is to serve you, the acquisition workforce, while simultaneously addressing the needs of today's changing Army. In addition to our internal reorganization, we are fully engaged in realignment of Army program executive offices and the Army Contracting Agency, and in the HQDA reorganization. The Acquisition Support Center (ASC) is at the heart of these efforts.

I want to direct your attention to Page 2 of this issue of *Army AL&T*, which features an exclusive interview with Claude M. Bolton Jr., the new Assistant Secretary of the Army for Acquisition, Logistics and Technology and Army Acquisition Executive. That interview contains some very valuable insights.

During my first few months as ASC Director, I have taken the opportunity to meet with many of our dedicated acquisition professionals to determine which issues are of greatest importance and concern. This information, combined with the objectives of the Army's transformation and the Army's vision, has helped me in formulating the direction of the ASC. I am not alone in this pursuit. I have initiated several ASC integrated process teams and working groups to address the future of the ASC. We are committed to creating an organization that is supportive of our warfighters and at the same time responsive to our acquisition workforce.

To better serve acquisition workforce members, especially during our internal reorganization, *Army AL&T* magazine will continue to publish responses to some of your most frequently asked questions (*Ask the Acquisition Support Center* on this page). Your suggestions for improving our operations *are* important to us. We count on you to flag issues we may be missing during our transitional period. There is, however, one constant—you can always count on total commitment from the ASC to provide you the best possible support.

Army AL&T magazine also plays a key role in supporting you. A reader survey conducted earlier this year (results on Pages 54-55), revealed that a large number of respondents prefer articles dealing with career development and training. On that note, the *Army Acquisition Corps Career Management Handbook 2002* and the 2002 *Acquisition Education, Training and Experience Catalog* are now available to you through the AAC home page at **http://dacm.rdaisa.army.mil**. These are two important career management tools.

Finally, I'd like to recommend the article on the eight civilian members of the AAC who have been selected as Senior Service College Fellows for class 2003 at the Industrial College of the Armed Forces (Page 45). In addition, be sure to check both the list of selectees from the latest Army Acquisition Tuition Assistance Program Competitive Selection Board and the 33 Materiel Acquisition Management Course graduates listed on Page 48. Congratulations to everyone for a job well done! I look forward to personally working with all of you.

COL Mary Fuller
Director
Acquisition Support Center

Ask The Acquisition Support Center

I am an infantry battalion commander writing an Officer Evaluation Report (OER) for one of my best company commanders, who was branch-transferred to the Army Acquisition Corps (AAC) but has not yet attended the transition course. I am looking for the best three future jobs to recommend on his OER. Can you help or provide me a point of contact who can?

Because your captain will be competing for major against other AAC captains, we advise that you recommend him for good infantry/operations career field branch qualifying jobs (S3, executive officer, etc.). Once he makes major as an AAC officer, it would be appropriate to recommend him for lieutenant colonel level AAC positions such as product manager or acquisition commander.

2002 AUSA Meeting, AAC Ball Announced

The 2002 Association of the United States Army (AUSA) Annual Meeting will be held at the Marriott Wardman Park and Omni Shoreham Hotels in Washington, DC, Oct. 21-23, 2002. The theme of this year's meeting is "Realizing the Army Vision." The 3-day meeting will feature events such as the Army Ten-Miler road race, military and family forums, and numerous military and industry exhibits.

A special highlight on the weekend will be the annual Army Acquisition Corps (AAC) Ball. Tickets for this gala event are limited, so visit the AAC home page at **http://dacm.rdaisa.army.mil** for the latest information, or contact Mary McHale at **mary.mchale@saalt.army.mil** to reserve your table.

Army Tuition Assistance Program

The Acquisition Support Center is pleased to announce results from the first FY02 Army Acquisition Tuition Assistance (ATAP) Competitive Selection Board, which was held in October 2001. Congratulations to the following workforce members selected to participate in ATAP. Well done!

Aldridge, Karen
Ambrose, Joyce
Anderson, Elois
Arnaud, Joseph
Aubuchon, Gloria
Bair, Tammy
Barnes, Kim
Baxter, Hillis
Bokinsky, Doris
Chunn, Dimetria
Coleman, Barbara
Coleman, Christine
Cook, Cynthia
Dahm, Bruce
Dickens, Debra
Eadie, Linda
Felder, Judith
Gill, Edward
Golaszewski, Raymond
Golden, Gloria
Grasso, Robert
Gray, Debra
Hansen, Barbara
Harbour, Jeffrey
Harris, Laura
Hodor, Diane
Honey, John
Hurst, Peggy
Janes, Mimi
Jennings, Jean
Johnson, Candace
Kalmanir, John
Keebler, James
Llovet-Zurinaga, Xinia
Lucas, Robert
McBride, Gwendolyn
McDonald, Kenneth
McGrath, Thomas
McGraw, Tracey
McPherson, Taryn
Mendoza, Cathy
Miles, Kimberly
Munoz, Pamela
Neal, Ondrea
Nelson, Elaine
Nicoles, Odis
Osborn, Mary Anne
Pearson, A. Elaine
Radford, Dennis
Ragland, Ella
Renteria, Linda
Rifkin, Jerome
Robinson, Craig
Rott, William
Ryals, William
Sanchez, Joan
Sanchez, Kimmie
Schneider, Daniel
Sheldon, Laura
Simmons-Healy, Melinda
Small, Nancy
Smith, Deborah
Space, Nan
Spellman, Rosa
Stallard, Cassandra
Stowell, Kathy
Swaim, Joni
Tama, Rebecca
Taylor, Diana
Tremayne, Terry
Venters, Michelle
Vincenc, Karen
Walton, Eugene
Whitehead, Kathryn
Williams, Carol
Willoughby, Jeanette
Winkler, Rebecca
Wise, Shirley

33 Graduate From MAM Course

On March 15, 2002, 33 students graduated from the Materiel Acquisition Management (MAM) Course, Class 02-003, at the Army Logistics Management College, Fort Lee, VA. International officers from the Philippines, Malaysia, and Greece were among the graduates.

The Distinguished Graduate Award was presented to CPT Nickolas Kioutas. CPT Matthew Jury, CPT Vernon Myers, MAJ David O'Connell, and MAJ Adam Stroup were Honor Graduates. CPTs Terry Crank and Ronald Ryder earned the Commandant's List Award.

The 7-week MAM Course provides a broad perspective of the materiel acquisition process and includes a discussion of national policies and objectives that shape it. Areas of coverage include acquisition concepts and policies, research and development (R&D), test and evaluation, financial and cost management, acquisition logistics, force integration, production management, risk assessment, and contract management. Emphasis is on developing midlevel professionals to effectively participate in managing the acquisition process. Graduates are awarded equivalency with two Defense Acquisition University courses, ACQ 101 and ACQ 201.

R&D, program management, testing, contracting, requirements generation, logistics, and production management are some of the materiel acquisition work assignments offered to MAM Course graduates. The names of the graduates follow.

Cahill, Michael CPT
Cockerham, John CPT
Crank, Terry CPT
Evans, Mark CPT
Finch, Kevin CPT
Franklin, Francene CPT
Gonzalez, Tarolyn CPT
Harris, Stanley (CIV)
Henson, Juanita (CIV)
Herrmann, Carl MAJ
Hill, Kim CPT
Huff, Tom CPT
Juanito, Rudy LTC
Jury, Matthew CPT
Kioutas, Nickolas CPT
Koutsougras, Vassilios CPT
Lauro, Paul CPT
Loving, James (CIV)
McGuire, Keith CPT
Myers, Vernon CPT
O'Boyle, John CPT
O'Connell, David MAJ
Oderkirk, Andrew CPT
Oquendo, Gregory CPT
Overbey, Gerard CPT
Padilla, George CPT
Ryder, Ronald CPT
Satterfield, Anthony CPT
Shuhaimi, Bin Ag MAJ
Simpson, Andrew CPT
Smith, Granville CPT
Stroup, Adam MAJ
Walker, David MAJ

PERSCOM Notes . . .

AY02/03 Senior Service College Slate Announced

The U.S. Total Army Personnel Command recently announced that the following Army Acquisition Corps officers are slated to attend Senior Service College at the schools indicated during academic year (AY) 02/03.

Name	School
Abercrombie, Henry LTC	Army War College
Barber, Jesse LTC(P)	Army War College
Bonheim, Michael LTC	Industrial College of the Armed Forces
Brewster, Robert LTC(P)	Industrial College of the Armed Forces
Chasteen, Gregory LTC	Industrial College of the Armed Forces
Colon, Angel LTC	Industrial College of the Armed Forces
Coutteau, Charles LTC	Industrial College of the Armed Forces
Crizer, Scott LTC(P)	Army War College
Davis, Darrell LTC	University of Texas (Austin)
Driessnack, Charles LTC(P)	Army War College
Goddette, Timothy LTC	Industrial College of the Armed Forces
Greene, Harold LTC(P)	Army War College
Hansen, Richard LTC	Army War College
Harris, Earnest LTC	University of Texas (Austin)
Jones, Kermit LTC	University of Texas (Austin)
Jones, Raymond LTC	Industrial College of the Armed Forces
Kidd, Scott LTC	University of Texas (Austin)
Langhauser, Craig LTC	Air War College
McNerney, Catherine LTC	Army War College
Moshier, Timothy LTC	University of Texas (Austin)
Mullin, Edward LTC	Air War College
Scarbrough, Jess LTC	Army War College
Sutton, Brian LTC	Army War College
Williams, Curtis LTC	Industrial College of the Armed Forces

Candidates Sought For Advanced Civil Schooling

The Army's Advanced Civil Schooling (ACS) Program provides military personnel with the opportunity to attend graduate school at an accredited university on a full-time, fully funded basis. The Army Acquisition Corps (AAC) places the highest priority on technical programs in the engineering and science disciplines, but a variety of business and management programs are also available. Regardless of the discipline, approved programs support AAC requirements and long-range goals.

Each fiscal year, the U.S. Total Army Personnel Command's (PERSCOM's) Acquisition Management Branch (AMB) receives a specific number of ACS quotas. AMB anticipates receiving approximately 50 quotas for AAC officers to attend graduate school in FY03.

AAC officers interested in attending graduate school must formally apply for admission to the ACS Program. The AMB conducts two ACS selection boards each fiscal year during January and July. The next board, scheduled for July 24-26, 2002, will consider officers with proposed start dates between October 2002-March 2003. The second selection board for FY03 ACS quotas is scheduled for Jan. 14-16, 2003. This board will review applications with start dates between April-September 2003.

During the selection process, ACS board members consider information such as the program and school requested, academic transcripts, graduate-level entrance examination test scores, military personnel files (specifically evaluation reports and promotion potential), and career timelines.

The AAC is committed to the continued professional development of officers through high-quality educational programs. For the latest information on ACS application procedures, go to AMB's Web site at **http://www-perscom.army.mil/OPfam51/ambmain.htm**.

TWI For AAC Military Officers

The Army's Training With Industry (TWI) Program is a work-experience training program designed to take selected officers out of the military environment and expose them to the latest civilian business practices, organizational structures and cultures, technology development processes, and corporate management techniques. The companies that participate with the Army in this training program are developers of innovative cutting-edge technologies and/or established leaders in their respective fields.

The scope of training available at these corporate sites varies greatly from company to company, but ultimately the training will be in one or more of the following areas: acquisition, contracting, research and development, test and evaluation, program management, systems automation, computer science, and engineering.

The Army Acquisition Corps (AAC) solicits a specific number of TWI quotas each fiscal year. Once the quotas are received and the participating industries have been confirmed, the U.S. Total Army Personnel Command's (PERSCOM's) Acquisition Management Branch (AMB) convenes a selection board that competitively selects individuals to participate in the 1-year training program.

AAC officers selected for the TWI Program come from a variety of military backgrounds. They usually have served a minimum of 10-12 years in the Army and have worked at least 24 months in an acquisition assignment. The officer's acquisition experience may be drawn from any of the acquisition career fields. In addition, most officers have a master's degree.

Once placed in an industry assignment, officers are assigned a coordinator who introduces them to the company, assists during their transition to the corporate world, and serves as a point of contact while in the program. Ideally, a mentor or advisor is also designated to assist the TWI participant.

TWI officers prepare a training plan during their first month at the company. The plan is a joint effort between the officer and the company coordinator and identifies

individual goals and objectives. The TWI training plan will typically expose the officer to daily issues at middle- and senior-management levels. In addition to hands-on work experience, individuals are encouraged to participate in any training programs available through the company. At the end of the training year, officers receive a formal evaluation from the company in the form of an Academic Evaluation Report (AER). The AER is placed in the officer's permanent military personnel file.

Officers selected for the TWI Program are military professionals with the initiative to immerse themselves in a corporate work environment with minimal guidelines and flexible learning conditions. The result is a career-broadening experience that has the potential to strengthen their technical competency, problem-solving skills, and leadership abilities.

For additional information on the TWI Program and application procedures, go to the AMB Web site at **http://www-perscom.army.mil/OPfam51/ambmain.htm**.

IMPORTANT NOTICE

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

- Civilian members of the Army acquisition workforce must submit address changes to their Civilian Personnel Advisory Center (CPAC).
- Active duty military personnel must submit address changes to their Military Personnel Office (MILPO).
- Army Reserve personnel must submit address changes to the U.S. Army Reserve Personnel Command (ARPERSCOM) in St. Louis, MO.
- National Guard personnel must submit address changes to the Army National Guard Acquisition Career Management Branch at **acmb@ngb.army.mil** or call DSN 327-9073 or (703) 607-9073.

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

NEWS BRIEFS

Edgewood Patents New Chemical Neutralization Technology

The Edgewood Chemical Biological Center (ECBC), Aberdeen Proving Ground, MD, has patented a technology designed to neutralize chemicals that have been released into a specific area. The technology consists of neutralizing enzymes that can be added to water or any water-based application system (e.g., aircraft de-icing solutions, aqueous degreasers, or laundry detergent).

In an incident where chemicals may have been released, these enzymes can quickly neutralize the chemicals before they contaminate a wider area. The catalytic enzymes are nontoxic, noncorrosive, environmentally safe, and affordable, and can neutralize a wide range of chemicals. ECBC expects to enter licensing agreements with foam manufacturers and research and development (R&D) firms to make this technology available for commercial use.

ECBC is the Army's principal R&D center for chemical and biological defense technology, engineering, and services, and is under the auspices of the U.S. Army's Soldier and Biological Chemical Command. ECBC has achieved major technological advances for national Defense, civilian needs, and industrial competitiveness, with a long and distinguished history of providing the Armed Forces with quality systems and outstanding customer service. For a list of other press releases or more information on ECBC, go to **http://www.sbccom.apgea.army.mil/RDA/ecbc** or contact the ECBC Public Affairs Office at (410) 436-4347.

NEWS BRIEFS

Study Looks At Joint Logistics

Military logisticians and commanders often must sort through a barrage of reports from deployed units at diverse locations to determine the mix of resources they need to sustain complex military operations. The job is hard enough at the major command or individual Service level, but when joint forces are involved in large-scale operations, it becomes a rigorous mental exercise that poses challenges for even the best and brightest logisticians and tacticians.

The U.S. Army Developmental Test Command (DTC), the developmental tester for the Army Test and Evaluation Command, is seeking to make the job easier by sponsoring a joint feasibility study for improving joint logistics planning processes. Called Joint Logistics Planning Enhancements (JLOG/PE), the study began in August 2001 and is scheduled to conclude in September 2002. It will result in a report to DOD's Deputy Director for Developmental Test and Evaluation. If given the green light by the deputy director, the JLOG/PE concept will be chartered as a 3- to 4-year joint test and evaluation program.

Elizabeth Murter, the Technical Director for the feasibility study, says that the study team will look at joint-level requirements to fight the battle or sustain troops in the field (what is needed, where it is needed, who has it, and how to get it). She describes JLOG/PE as not so much a set of information technologies, but business process enhancements that will improve the use of existing logistics systems and help joint-Service level logisticians and commanders get the best use of current, accurate information.

Murter adds that although new logistics information technology systems are being fielded, until now, there has been no comprehensive look at the logistics planning processes used by joint-force commanders. The team will look at reporting frequency, the accuracy and completeness of report information, and the actual fidelity of the information. This applies to all classes of supply, although JLOG/PE is initially focusing on munitions and fuel.

LTC Chris Jubok heads the feasibility study team, which includes DTC staff in addition to employees of Computer Sciences Corp. and SRS Technologies, two California-based companies that provide information technology services for government and private industry. Team participation from all military Services and Service commanders-in-chief will be sought if the program goes into testing.

Transformation Event Slated For APG

The Science and Technology Board at U.S. Army Aberdeen Proving Ground (APG), MD, will host a major event June 5, 2002, titled "Army Transformation—Executing the Army's Vision at APG." The event will showcase APG's diverse research, development, and testing capabilities as well as organizations at APG and their respective roles in transforming the Army.

Scheduled speakers include GEN Paul J. Kern, Commanding General, U.S. Army Materiel Command; Rep. Curt Weldon, R-PA; and MG John Doesburg, Commander, U.S. Army Soldier and Biological Chemical Command. Weldon was instrumental in establishing the Mid-Atlantic Research Consortium (MARC), bringing together the expertise of private industry, academia, and government to find joint solutions to technology challenges. He is expected to address key technology issues from a MARC perspective.

The event will also feature informative exhibits, static displays, dynamic demonstrations of transformation technologies, and will culminate in a live-fire demonstration. Attendees should dress casually because this event will encourage hands-on participation in an outdoor environment.

For further information, contact Stephen Clark at DSN 298-1267 or (410) 278-1267.

PERSONNEL

Martinez-Lopez Takes Over Army Medical Research And Materiel Command

MG Lester Martinez-Lopez, MC, former Commanding General, U.S. Army Center for Health Promotion and Preventive Medicine, has assumed new duties as Commanding General, U.S. Army Medical Research and Materiel Command. He succeeds MG John S. Parker, MC, who has retired.

A veteran of nearly 24 years Active military service, Martinez-Lopez served earlier tours as Command Surgeon, U.S. Forces Command, Fort McPherson, GA; Commander, U.S. Army Medical Department Activity, Fort Benning, GA; Commander, U.S. Army Medical Department Activity, Fort Campbell, KY; and Commander, 86th Combat Support Hospital, Fort Campbell.

Martinez-Lopez received both his M.D. in general medicine and his B.S. in biological science from the University of Puerto Rico, and a master's degree in public health from Johns Hopkins University. He also completed family practice internship and residency at the Womack Army Hospital, Fort Bragg, NC, and aerospace medical residency at the Academy of Health Sciences, Fort Sam Houston, TX. In addition, he completed the Army Medical Department Officer Basic and Advanced Courses, the Army Command and General Staff College, and the Army War College.

Listed among his military honors are the Legion of Merit with two Oak Leaf Clusters (OLCs), the Defense Meritorious Service Medal, the Meritorious Service Medal with 4 OLCs, the Army Commendation Medal with OLC, the Army Achievement Medal with OLC, and the Senior Flight Surgeon Badge.

CONFERENCES

Mines, Demolition And Non-Lethal Conference And Exhibition

The National Defense Industrial Association, in conjunction with the U.S. Army Armament Research, Development and Engineering Center, has announced that the 2002 Mines, Demolition and Non-Lethal Conference and Exhibition will be held June 3–5, 2002, in Tampa, FL. This year's theme is "Meeting the Needs of a Transforming Force."

The Army's evolving requirements for the future force demand flexibility of response, greater situational awareness, and continuing compliance with international agreements—all within lighter, more rapidly deployable packaging. Programs to meet these needs will be presented at the conference. Additionally, industry and the international community will present alternative solutions and discuss technological innovations and research. Possible topics of discussion include sensors and communications for future mine programs, technology initiatives in military demolitions, nonlethal innovations effecting personnel targets, and fuzes and energetics impacting future mine programs.

To view conference and registration information, go to **http://register.ndia.org/interview/register.ndia?~Brochure~2500**. For further inquiries, contact Derek Jenks at (703) 247-2582 or via e-mail at **djenks@ndia.org**.

50th Defense Working Group On NDT

The 50th Defense Working Group (DWG) on Nondestructive Testing (NDT) will be held Nov. 18-21, 2002, at the Renaissance Portsmouth Hotel, Portsmouth, VA. The meeting will be hosted by the Commander, Naval Air Forces, Atlantic Fleet, Norfolk, VA.

Attendance is restricted and tightly controlled, with the focus on information exchange and problem solving without regard to contractual considerations. This annual meeting of engineers, scientists, and technicians provides the only forum for military, Defense Logistics Agency, and Defense Contract Management Agency representatives to freely exchange information and discuss problems pertaining to NDT methods, equipment, and applications.

Additional information on the 50th DWG meeting is available at **http://hometown.aol.com/dodndt**, or contact Todd Stelzig, Shore Intermediate Maintenance Activity, Norfolk, VA, at (757) 444-1954, Ext. 3420, or DSN 564-1954, Ext. 3420, or by e-mail at **tstelzig@marmc.spear.navy.mil**.

ACQUISITION EXCELLENCE

Progress Report On Commercial Acquisitions

The use of Federal Acquisition Regulation (FAR) Part 12 is designed to provide DOD greater access to commercial markets with increased competition, better prices, and new market entrants or technologies. To achieve the DOD-directed goal of increasing commercial acquisitions using FAR Part 12, the following Army goals are planned:

• Double the dollar value of FAR Part 12 contract actions awarded in 1999 by the end of FY05. The 1999 baseline is $2.479 billion.

• Increase the number of FAR Part 12 contract actions awarded to 50 percent of all Army contract actions by the end of FY05.

Note: For purpose of these goals, a contract action is defined as any new contract award and/or new delivery order with a value greater than $25,000.

Progress is tracked using the *Individual Contracting Action Report* (DD Form 350). FY01 data indicate that the dollar value of FAR Part 12 contract actions awarded by the Army is $3.770 billion, a 52 percent increase over FY99. This equates to 18 percent of *all* Army contract actions during this period and shows that the Army is on track to reach the two goals by FY05.

Part 12 usage, as currently captured in DD Form 350 data, does not represent a comprehensive measure of Army efforts to incorporate commercial and commercial-like practices. In addition, market research and FAR Part 15 procedures are used to incorporate best practices from these types of commercial arrangements whenever possible. Construction, a significant part of Army contracts with business arrangements widely available to the general public, is also not counted under FAR Part 12.

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

The Project Surgeon: A Troubleshooter's Guide to Business Crisis Management

By Boris Hornjak

Project Management Institute, 2001

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.

Few projects proceed in perfect precision from initiation to completion. What to do when things go wrong is a challenge faced by most project managers at one time or another. In *The Project Surgeon: A Troubleshooter's Guide to Business Crisis Management*, author Boris Hornjak offers a disciplined methodology for putting troubled projects back on track.

According to Hornjak, a good project surgeon will apply three therapies: emergency management, crisis management, and crisis prevention. An emergency is a short-notice situation that demands immediate action to alleviate the current symptoms. A crisis is a long-term situation that requires and allows action to cure the causes. Project managers must deal with both.

In treating troubled projects, Hornjak applies the analogy of medical triage; that is, in situations involving large numbers of injured patients, some will probably survive with little treatment, some will probably survive if treatment is applied soon, and some will probably not survive regardless of any treatment provided. In project terms, he describes three comparable situations: (1) the project can be put back on track within existing resources; (2) the project can be put back on track with the expenditure of additional resources; and (3) the project cannot be put back on track and some kind of failure is inevitable. He defines the boundary between (1) and (2) as the *break-even point* and the boundary between (2) and (3) as the *point of no return*.

The book begins with a review of traditional approaches and their shortcomings. As an alternative, the author offers a five-step framework that departs from the old ways and focuses on competency, urgency, and a project mindset as the means of crisis resolution.

Part I deals with emergency management. Upfront, Hornjak suggests two kinds of emergency responses. A *recovery* operation will put a project back on budget and schedule with or without additional expenditures depending on whether it is undertaken before or after the break-even point. A salvage operation occurs after the point of no return and attempts to gain whatever benefits may be possible—anything from cutting the losses to saving the entire project.

Hornjak introduces concepts through a conversational, question-answer format that is particularly user-friendly. His situation analysis method is based on earned value management augmented by several new performance measures such as completion variance, schedule recovery requirement, and schedule recovery index.

In his project triage, he adds a number of metrics, including potential loss, potential interim loss, recovery cost, salvage cost, and final project loss. He manipulates these metrics to produce various indices for further consideration. Hornjak counsels readers to make their best estimate of metric values and move forward to action. Waiting for more precise data can make the situation worse.

Understanding the comprehensive examples requires basic familiarity with spreadsheets and a little dedicated time. It is not something to be scanned in an airport waiting area. Because this section provides a new approach for many readers, a little more explanation and perhaps some direct mapping from text to examples would be helpful. As is, readers who take time to assimilate all in detail will benefit the most.

Part II addresses crisis management. Information on failure modes and effects and on system mapping may be familiar to many. The section on data collection and analysis merits specific attention, for here is where the hurdles in crisis management lie. The author provides a seven-step model and a frank discussion that clarifies what otherwise could be a careless process. He provides partial metrics that both inform readers and challenge them to think by filling in the missing data.

Hornjak includes an extensive discussion of decisionmaking in which he addresses foundations, processes, and specific tools such as payoff matrices and decision trees. He closes with sound advice regarding constraints, biases, and traps.

Part III on crisis prevention is deceptively short. It contains much wisdom, including the view that prevention is a function of system, organizational, and human factors. The author discusses and integrates all three and follows with a case study that shows concepts in practice.

Many books on project management tell how to do things right. *The Project Surgeon: A Troubleshooter's Guide to Business Crisis Management* takes a different approach. Recognizing that things will go wrong, it tells what to do next. In the real world of uncertainty and potential failure, it is a refreshing, unique, and essential resource.

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

ARMY AL&T SURVEY RESULTS

The *Army AL&T* editorial staff expresses its sincere appreciation to the large number of individuals who responded to a reader survey that was e-mailed earlier this year to 1,000 randomly selected military and civilian subscribers. Your responses will greatly help us in producing a more valuable product. The survey consisted of eight questions and a comments section. What follows is a brief analysis of the survey results.

The vast number of respondents reported that during the past year, they read all six issues of the magazine. In addition, 91 percent of those surveyed indicated that they receive the magazine on time (Figure 1). Of those who do not, some commented that they are overseas.

The overwhelming majority of magazine recipients also find the magazine useful in keeping them informed about matters related to their career fields. Of the small number who find it "seldom useful" or "not useful" in their career field, some said they would like to read more about installation-level contracting. We hope that this issue, which highlights installation transformation, will benefit those individuals.

Survey participants were also asked to select the type of subject matter they prefer from several categories. New technology ranked first, followed closely by career development/training and then interviews, conferences/announcements, letters to the editor, awards, and book reviews (Figure 2).

Survey recipients were also asked how they would rate *Army AL&T's* subject matter overall. Eighty-seven percent believe it is excellent or good. By a very wide margin, respondents prefer the short, news-type articles rather than

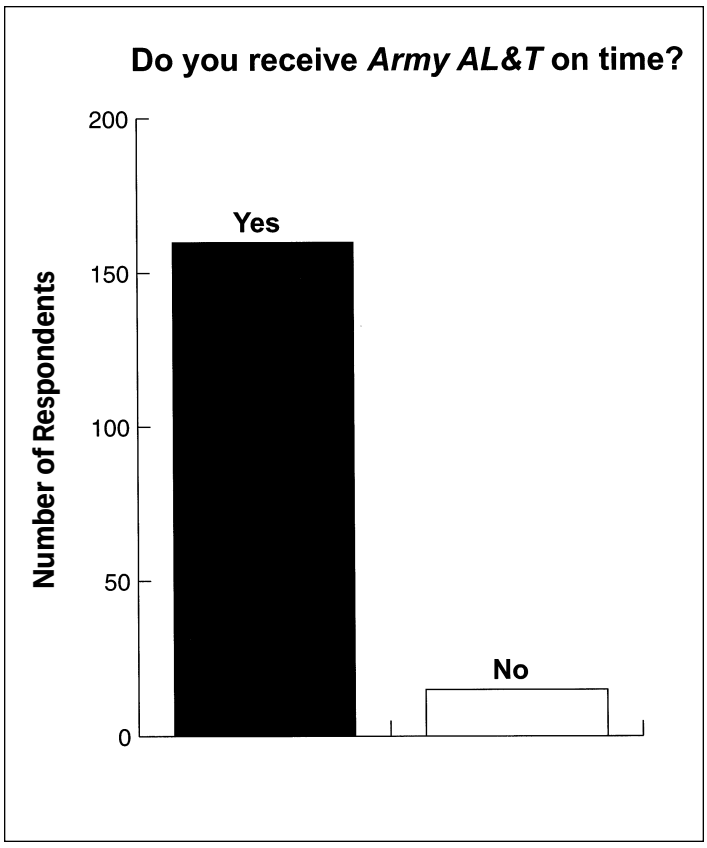

Figure 1.

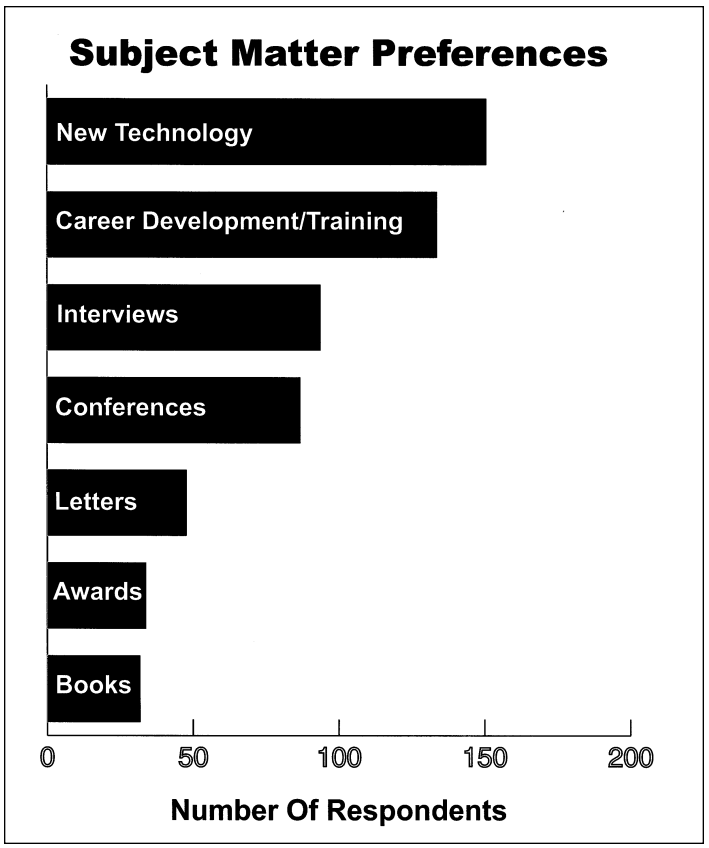

Figure 2.

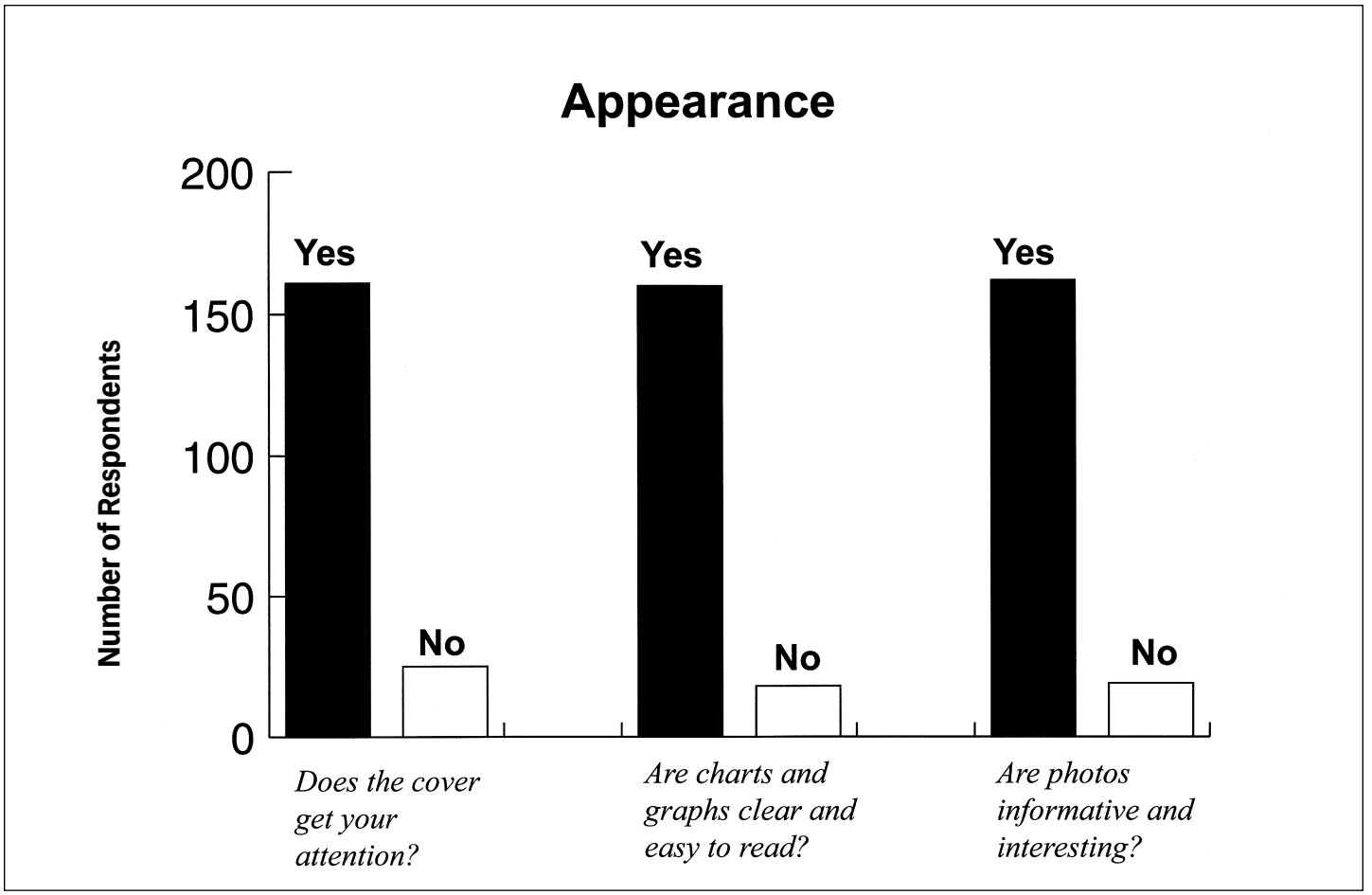

Figure 3.

the long feature articles. Also by a large margin, respondents gave high marks to the layout and general appearance of the magazine, including photos, charts, graphs, and cover design (Figure 3).

Comments

Many survey respondents provided interesting and informative comments. Listed below is a sampling of some of those comments we would like to share with you.

• *Publish an article on the new Army requirements streamlining process and how it will affect operational requirements documents.*

• *Suggest publishing an article on one PEO [program executive office] in each issue.*

• *Need more insight from the user community on how it applied technology and its value to their mission.*

• *There has to be a better way of updating our military addresses. It took the Army 16 months to get my new address to you!*

• *Would like to see an article that explores the forbidden topic of civilians and military competing for the same PM slots.*

• *Would appreciate more information meaningful to acquisition workforce personnel who are not directly located in a PEO or PM office.*

• *I prefer the shorter, more cryptic articles. I don't fully read the longer ones.*

• *Limit the number of people pictures or show people in different settings. For example, PMs of the year should be shown with their weapon vice their award.*

• *Provide more articles on information systems security and security engineering.*

• *Stop trying to cram an overabundance of information into a limited amount of space. A few very good articles are preferable to lots of marginal material.*

• *I save certain issues for reference at a later date.*

• *Articles are too long and tedious to read.*

• *I enjoy reading the real life stories about solving acquisition problems.*

• *Need more in-depth coverage of new processes similar to the issue you published on Army knowledge management.*

ARMY AL&T WRITER'S GUIDELINES
http://dacm.rdaisa.army.mil/

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

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Purpose

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

Subject Matter

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

Length of Articles

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

Photos and Illustrations

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

Biographical Sketch

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

Clearance

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

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

Submission Dates

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

Submission Procedures

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

Attention Army AL&T Authors . . .

DIGITAL PHOTO SHOOTER'S GUIDE

The current revolution created by digital cameras allows individuals to take and instantly download photos to their computer. This revolution, however, presents challenges to publications, including *Army AL&T*. For printing purposes, the *Army AL&T* magazine editorial staff needs photos shot at the highest resolution and in the largest frame size that the digital camera allows.

We prefer to receive glossy prints from traditional film cameras. This allows us to scan and work the photos in our publishing software and ensures each electronic image has the high-quality resolution we require. However, if you must send us electronic photos, please read the following steps.

• **Shoot the Picture.** When taking a picture, set the camera on the largest image size and the highest quality resolution settings that the camera will allow. The largest image size is usually "Full" or "XGA." The highest resolution settings are usually called "High," "Super Fine," or "Ultra-High." (Cameras set at "Standard" or "Basic" quality produce images only good enough for Web sites.)

Do not shoot a small photo on a low-resolution setting to save data storage space in your camera. Shooting small images at low resolution will allow you to take more photos per shooting, but we won't be able to publish any of them. Higher settings create larger photos and files, and generally a higher quality product.

If your camera gives you the option, shoot the photo as a PC TIFF file. We also accept JPEG files. When saving a file as a JPEG, choose a quality setting of "Maximum" or "10" and the format option of "Baseline (Standard)."

• **Download the photo in raw data .** When downloading a file from your camera or its removable storage card to another drive, save the image in raw data. Do not manipulate the data by resizing or editing the image. Let *Army AL&T* take care of that.

And please don't try to "beef up" the resolution of the small, low-resolution photo you shot. For example, shooting a 500-kilobyte image and enlarging the pixels per inch until the file size is 1.5 megabytes will not make the image clearer—it only makes the image larger (bigger dots, not more of them).

• **Send us the digital photo.** Following the first two steps will create a large file for each photo. One way to get your photos to us is to save them on a 100- or 250-megabyte Zip disk or a CD and mail or express ship them to DEPARTMENT OF THE ARMY, ARMY ALT, 9900 BELVOIR RD, SUITE 101, FORT BELVOIR, VA 22060-5567. In some cases, a JPEG file will fit on a 3.5-inch floppy disk, but do *not* resize the JPEG photo to make it fit.

You may be able to e-mail photos one at a time. Be sure each message with a photo attached includes a caption of who's doing what, when, and where in that image; the title of the article it is intended to illustrate; and the name and phone number of the author.

If you have questions, call Debbie Fischer-Belous, Executive Editor, *Army AL&T* at (703) 805-1038 or DSN 655-1038 or e-mail **fischerd@aaesa.belvoir.army.mil**.

The majority of our digital shooters are not professional photographers. *You* are our authors and photographers—soldiers and civilians in the Army Acquisition and Technology Workforce. Help us illustrate your article with your photos—follow these instructions for taking and sending us digital photos. ***Good Shooting!***