

MARCH-APRIL 2001

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PROGRAM MANAGER



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DAU PRESS PUBLISHES NEW ACQUISITION
MANAGEMENT FRAMEWORK CHART

ALSO IN THIS ISSUE:

**TECHNOLOGY REFRESHMENT
WITHIN DoD**

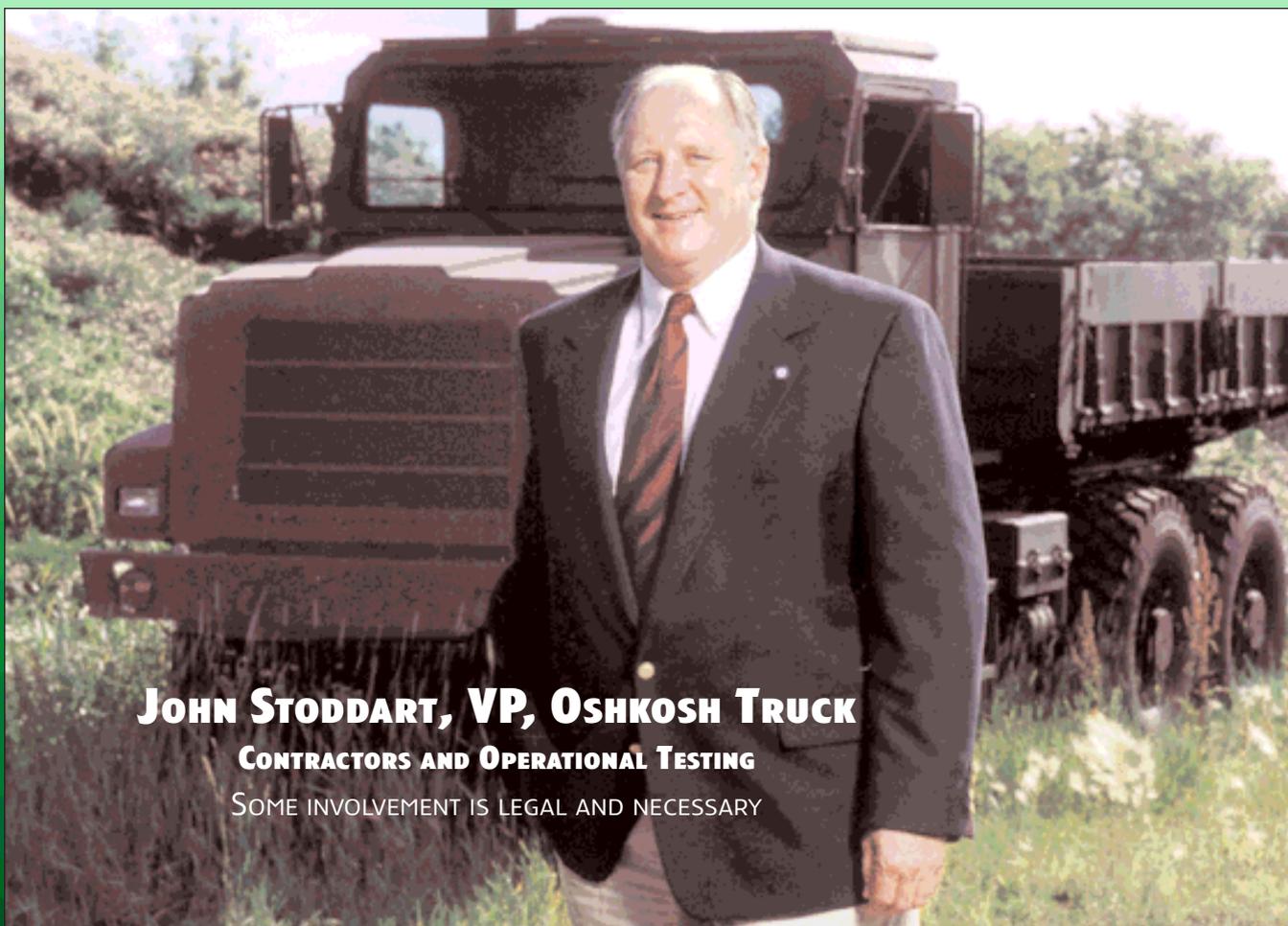
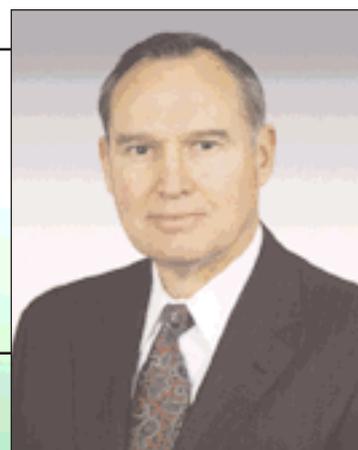
**DEFENSE ACQUISITION NEEDS TO
CHANGE COURSE**

**ARMY TEAMS WITH UNITED
DEFENSE ON HYBRID-ELECTRIC
VEHICLE**

**DAU REACHES OUT TO
STRATEGIC PARTNERSHIPS,
ALLIANCES**

**Dr. Jerome F. Smith Jr.
DoD Chancellor for Education and
Professional Development**

DoD Chancellor's Metrics of Excellence Task Force Set to Validate Academic Quality and Academic Resource Reporting Standards.



JOHN STODDART, VP, OSHKOSH TRUCK

CONTRACTORS AND OPERATIONAL TESTING

SOME INVOLVEMENT IS LEGAL AND NECESSARY

PROGRAM MANAGER

Vol XXX, No.2, DAU 161

Some photos appearing in this publication may be digitally enhanced.

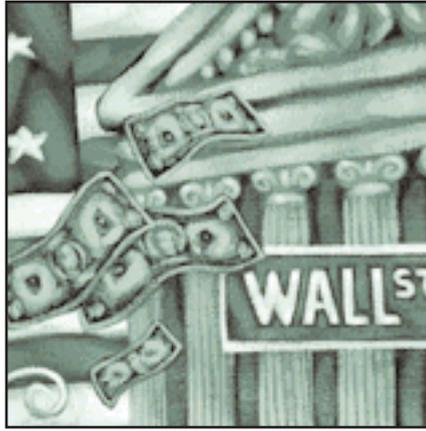


4

Contractors and Operational Testing

Col. John Stoddart, USA (Ret)

Some involvement of contractors in operational testing, according to Oshkosh Truck Vice President John Stoddart, is both legal and beneficial.

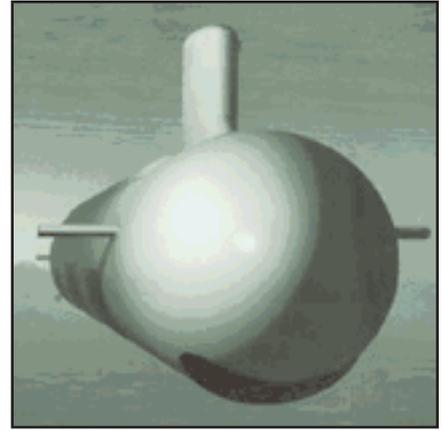


10

Defense Acquisition Needs to Change Course

Phil W. Bolin

The defense acquisition landscape has changed more than most people think. The Department of Defense needs to take additional steps to improve the process of acquiring U.S. defense products.

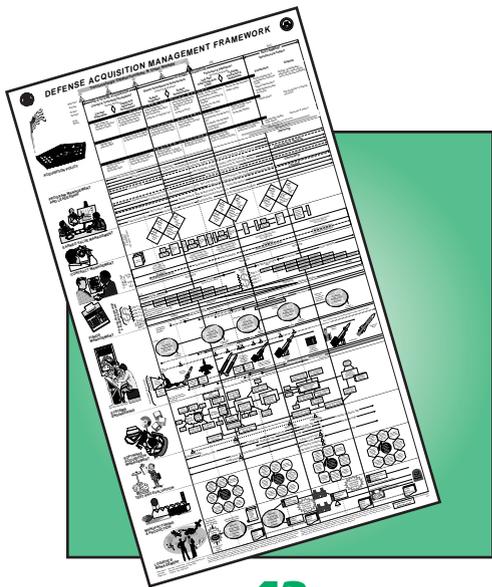


22

Technology Refreshment Within DoD

Linda Haines

A proactive Technology Refreshment Plan offers DoD programs significant performance, cost, and schedule benefits.

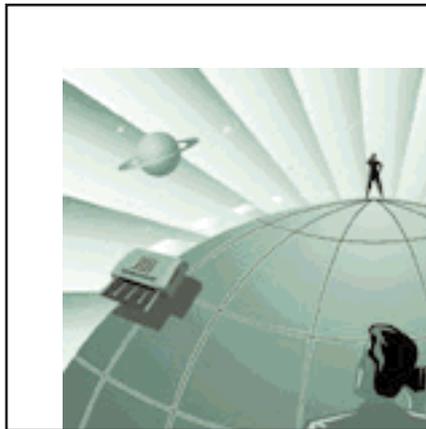


42

The Acquisition Management Framework Chart

Larry Heller

Newly updated and back by popular demand, the Acquisition Management Framework Chart is a pictorial road map for use by Integrated Product Teams throughout the System Life Cycle.



48

Leadership and the Myers-Briggs Type Indicator

Pearl Young

APMC 00-3 graduate relates her experiences with, and initial exposure to, the Myers-Briggs Type Indicator (MBTI) at DSMC; and how she applied the MBTI in a virtual team setting.



64

Academic Quality in DoD Civilian Educational Institutions

Beverly J. Anderson • Beverly Popelka

DoD Chancellor's Office facilitates development of academic standards, metrics, and quality levels for Metrics of Excellence Project (MEP).



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MARK YOUR CALENDARS NOW FOR ACQUISITION & LOGISTICS REFORM WEEK 2001, THE WEEK OF JUNE 4. MORE DETAILS COMING SOON!



30

Will It Work Anytime, Anyplace, Under Any Conditions?

Mike Cast

Army Test and Evaluation Command sponsors workshop to exchange ideas on testing in natural environments.



34

DAU Reaches Out to Strategic Partnerships, Alliances

Paul T. McMahon

Broadening continuous learning opportunities for the Defense Acquisition Workforce.

Also

President to Nominate E.C. "Pete" Aldridge as USD(AT&L).....	2
DAU Establishes New Web Site.....	28
Keep Up With Current AT&L Policy.....	33
Annual Defense Report for 2001 Now Available.....	33
Oliver Releases New <i>Guide to Performance Based Payments</i>	37
Largest Small Business Award Goes To Three Vendors.....	38
University Research Awards Announced.....	47
SHARE A-76 Web Site.....	51
University Research Initiative Awards Announced.....	52
Integrating Government Compliance Requirements with Commercial Business Realities.....	56
Incentive Strategies for Defense Acquisitions.....	60
Fiscal 2001 Advanced Concept Technology Demos Announced.....	62
DoD Conference on Civilian Education and Professional Development.....	66
Commercial Operations & Support Savings Initiative (COSSI).....	67
Fiscal 2000 Refined Packard Acquisition Workforce Count Now Online.....	67
Soldiers Register For eArmyU.....	68
Electrifying the Arsenal.....	70
List of Top 100 Defense Contractors Now Available.....	72
DSMC Team Shares in Hammer Award.....	77
Army Brig. Gen. Harrington Joins DCMA as Director.....	78
Enhancing the Rulemaking Process Via the World Wide Web.....	79
Predator Missile Launch Test Totally Successful.....	81
Thirteenth Annual Software Technology Conference.....	83
"Star" Encounter for DAU Execs Visiting Port Hueneme.....	84
Wolfowitz Sworn in as 28th Deputy Secretary of Defense.....	85
Surfing the Net.....	87
DSMCAA 18th Annual Symposium.....	Inside Back Cover

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Managing Editor **Collie Johnson**
Chief, Layout and Design **Paula Croisetiere**
Editor **Sylwia Gasiorek**
Photojournalist **Sgt. Kenneth E. Lowery II, USA**

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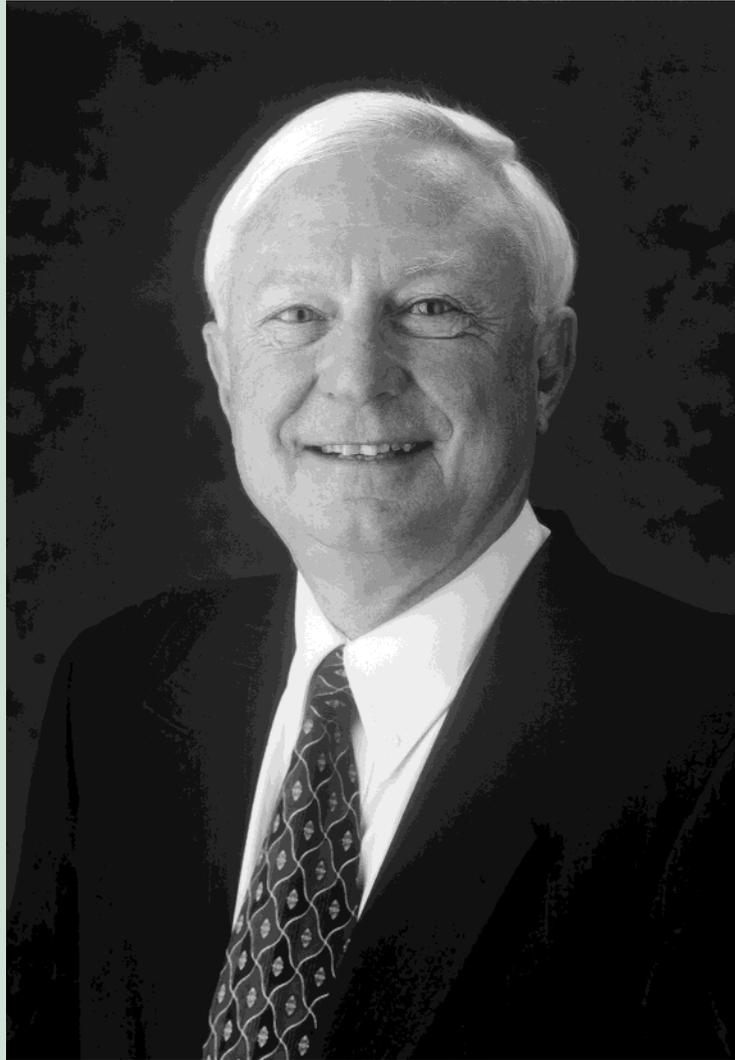
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President to Nominate E.C. "Pete" Aldridge Jr. Under Secretary of Defense (Acquisition, Technology and Logistics)



President George W. Bush announced his intent on March 7, 2001, to nominate E.C. "Pete" Aldridge Jr., to be Under Secretary of Defense (Acquisition, Technology and Logistics). Aldridge is currently the Chief Executive Officer of The Aerospace Corporation in Arlington, Va. He held the post of Secretary of the Air Force from 1986 – 1988, and he has held a variety of positions within the Department of Defense. He has received several awards, including the Secretary of Defense Meritorious Civilian Service Award, the Department of Defense Distinguished Civilian Service Award, and the Department of Defense Distinguished Public Service Award. He is a graduate of Texas A&M and received his master's degree from Georgia Tech.

FRANK W. SWOFFORD

*Holder, Forrestal-Richardson Memorial Industry Chair
Defense Acquisition University*

“Contractors and Operational Testing”

The article by John Stoddart, beginning on the next page, is a timely and hard-hitting article on a critical subject: how to improve the fielding of systems to the warfighters, particularly schedule, cost, and capability. John is the Chairman, Industrial Committee on Test and Evaluation, National Defense Industrial Association. He makes a sound case for some involvement of contractors in operational testing.

Research on past DoD best practices reveals that prior to and during World War II, contractors were integrally involved in all aspects of systems design, development, and testing. The success of this



partnership is self-evident: the United States fielded quality systems at reduced cycle times that defeated two determined adversaries. Why don't we learn from history?

Today, program managers establish a win-win plan when they ensure their contractor support teams — whether they be design, development, or fielding — are an integral part of their integrated product teams. DOT&E will welcome the early involvement and planning, which will be of great benefit when development and operational testing occur. I have great confidence that DoD will reap the benefit of products delivered better, faster, and cheaper.

Contractors and Operational Testing

Some Involvement is Legal and Beneficial

COL. JOHN STODDART, USA (RET)

This article reflects the voice of the industrial members of the ICOTE (Industrial Committee on Operational Test and Evaluation) and their concept of what it would take to help decrease the cost and schedule, and improve the outcome for Defense Operational Test and Evaluation and the warfighter. On behalf of the Committee, Stoddart offers their insights and recommendations to stimulate dialogue between the government and contractor operational test community.

According to a popular myth, contractors, by law, can not be involved in any aspect of operational testing of their equipment. This misunderstanding, and the strict and inappropriate application of this myth to all areas of operational testing, is contrary to the principles of acquisition streamlining. It leads to longer acquisition periods, adds cost to the program, and weakens the close teamwork necessary to meet the challenges of providing the best equipment to the field.

The Law and Operational Test and Evaluation

The benefits of operational testing are obvious to everyone. It should be a common goal of the testers, the Program Manager, and the contractors to pass all tests, in a timely manner, providing the best possible system to the soldier, sailor, airman, or Marine. "An Operational Test

Stoddart is a retired Army colonel and currently Vice President of Oshkosh Truck Corp. He serves as Chairman of the ICOTE and is also on the National Defense Industrial Association Committee.



Retired Army Col. John Stoddart, Vice President, Oshkosh Truck Corp. Stoddart is standing in front of an MK23, the U.S. Marines' new state-of-the-art medium tactical wheeled vehicle, which evolved from the Medium Tactical Vehicle Replacement (MTVR) program, a joint remanufacturing effort between the Army, Marines, and Oshkosh Truck Corp.

and Evaluation is the field test, under realistic combat conditions, of any item of (or by component of) weapons, equipment, or munitions for the purpose of determining the effectiveness and sustainability of the weapons, equipment, or munitions for use in combat by typical military users; and the evaluation of the results of such test.”¹



The operational test is required, and the independence of the operational testers from the proponents or the systems being tested is recognized. “For ACAT [Acquisition Category] I and II programs for conventional weapons systems designed for use in combat, a beyond Low-Rate Initial Production [LRIP] decision shall be supported by completed independent initial operational test and evaluations as required by 10 U.S.C. 2399...”²

Congress has enacted laws to ensure the independence of the testers and the impartiality of contractor testing personnel.

“In the case of a major defense acquisition program ... no person employed by the contractor for the system being tested may be involved in the conduct of the operational test and evaluations required under subsection (a) of this code.”³

Also, “A contractor that has participated in (or is participating in) the development, production, or testing of a system for a Military Department or Defense Agency (or for another contractor of the Department of Defense) may not be involved (in any way) in the establishment of criteria for data collection, performance assessment, or evaluation activities for the operational test and evaluations.”⁴

Application of the Law

Nowhere in the law does it say that the contractor can not have some involvement in the operational test such as being allowed to observe the test; having access to copies of relevant documents like the Test and Evaluation Master Plan (TEMP), including the operational test portion; being allowed to participate as an observer in Integrating Integrated Process Teams and Overarching Integrated Process Teams; or even being provided early test data. These benign actions could give the contractor a better, more timely understanding of problems encountered, useful information for necessary improvements, or a head start on required fixes. It would reinforce the concept of a team trying to get the best product to the field.

Consequences of an Unnecessarily Strict Application of the Law

No contractor involvement in the operational test phase will hinder acquisition streamlining, because the recovery period after the test will be made longer. The contractor will have to wait until the end of the test before any fixes can be applied and tested. This will make the total test time longer and more expensive. The total acquisition period will also be longer, again raising total program cost.

The strict application of the law also places an unnecessary “veil of secrecy” on the whole process, creating an unhealthy “we vs. they” relationship among the testers, the Program Manager, and the contractor. This results in a counterproductive influence on the team's effort to bring the best equipment to the field.

Lifting the Veil

The contractor should be allowed to observe the test, albeit with no access to the systems or prototype being tested, but with knowledge of what is taking place. This will enable the contractor to get an early start on planned fixes and follow-on contractor tests. Again, it appears counterproductive to react to rumors that surround the test rather than actually learning first-hand as an observer.

The contractor's No. 1 concern is to field the best possible piece of equipment. With that in mind, before the test even starts, the contractor should have access to the TEMP and be afforded the opportunity to anticipate potential problems. Obviously, any advance knowledge of the planned testing will help in the design phase and contractor test phase. A piece of equipment rated *suitable* the first time saves time and money.

To integrate industrial members into the test and evaluation process to the point where they truly believe they are “one of the team,” observer status in the working groups or Integrated Process Team meetings would be of great benefit, not only to the contractor, but also the group. The law does not prohibit this, and there

ICOTE Charter

PREAMBLE

The purpose of the Industrial Committee on Operational Test and Evaluation (ICOTE) is to provide a forum for the senior operational test and evaluation representatives from the Defense Department and senior executives of representative U.S. defense system manufacturers to periodically meet and review issues of common interest and concerns. Topics for discussion will include test and evaluation policies and procedures that impact military systems development, procurement, and use.

OBJECTIVES

The objectives of the ICOTE are to:

- Provide a forum for discussion and exchange of views.
- Gain feedback from senior industry representatives.
- Discuss Office of the Secretary of Defense and Service policies that affect relationships with suppliers.
- Discuss emerging issues in government and industry that affect the readiness and capabilities of U.S. defense system producers.
- Cooperate on various projects of mutual benefit to the ICOTE participants.

should be no secrets going into the test. The Program Manager could strictly enforce the “rules of observation.”

The contractor should have access to early test data to “get a jump” on follow-on actions. The last thing contractors need is for the stockholders to hear of test problems before they do. If early test data were provided, fixes could be planned and mitigation efforts worked out before problems were surfaced.

Role of the Program Manager

Program Managers are in a position where they can act as an intermediary between the operational testers and the contractors to the benefit of everyone.

They can assist in lifting the veil of secrecy of the testers, while simultaneously upholding the law and not allowing the contractor to be involved in the conduct of the test.

The Program Manager is responsible for developing the TEMP, including all of its contents and its preparation. The part of the TEMP that covers operational test and evaluation (OT&E) is the responsibility of the independent operational test organization, including its preparation, contents, and coordination. The Program Manager should establish early liaison with the operational testers to assist the Operational Test Director with the integration of OT&E requirements into the TEMP. This is frequently done using a test planning working group or Integrated Process Team. Keeping the contractor informed on the process and nature of the TEMP would not violate any law; rather, it would benefit everyone.

Responsibility of the Contractor

The areas of the operational test where the contractor would be allowed to be involved should be an agreement among the operational testers, the Program Manager, and the contractor. The contractor would be responsible for the education of contractor personnel to the extent they could be involved in the test. The contractor would also be responsible for policing the actions of contractor personnel to ensure compliance with those items of allowable involvement.

In the spirit of the law, contractors must ensure their personnel are not “participating in the conduct of the test.” The observation of a test or the test site does not imply any interface with test personnel – it means *observation*. A copy of the TEMP would be provided for information, not for critique or comment. For a contractor to divulge any provided test data to anyone, other than contractor personnel, would be a violation of the partnership, and a good reason for the government to revert to a narrow interpretation of Title 10. Misuse of the data would also be a violation of the government's trust.

Likewise, observation of an Integrated Process Team would mean a seat in the room, without any participation in discussions unless asked a question.

Concurrent Developmental and Operational Tests

“A combined developmental test and operational test [DT/OT] approach is encouraged to achieve time and cost savings. The combined approach shall not compromise either developmental or operational test objectives. A final independent phase of operational test and evaluation shall be required for beyond Low Rate Initial Production [LRIP] decisions.”⁵

A typical result of concurrent DT/OT is the successful completion of the developmental test, and a rating of unsuitable for the equipment based on the operational test. The developmental test is to determine whether engineering is complete, to identify design problems, to recommend redesign, to determine whether solutions are on hand, to support decision makers, and to provide a decision as to the readiness of the system to enter operational test.

Concurrent DT/OT, intended to save time and money, allows the equipment to enter operational test without the redesign and solutions to problems that result from the developmental test; therefore, a rating of *effective* results from the developmental test, and a premature rating of *unsuitable* results from the operational test.

With the veil of secrecy on the operational test, no changes such as those often found and made during the developmental test, are allowed to be made during the test; and with no early results provided from the operational test, the contractor loses valuable time in the application of solutions for the required follow-on operational test. The Program Manager should be able to serve as an intermediary between the operational testers and the contractor. The operational testers should try to find a way to accommodate reasonable changes during the test (changes made under their control), and to understand how they

can best accommodate other sources of data. These actions would further the spirit of acquisition streamlining.

Observation is Not Involvement

As stated in law (Title 10 U.S.C. 2399), **contractors may not be involved in the conduct of the operational test and evaluation** of their equipment. Nor should they be involved in the **establishment of criteria** for data collection, **performance assessment**, or **evaluation activities** for the operational test and evaluation.

Contractors, however, *should* have access to test planning documents, access to the test site to observe, be provided early test data and findings, and be included as observers on Integrated Process Teams.

In a random survey of ACAT I and II programs conducted by DOT&E, 40 percent of the Service programs did not furnish acquisition documents (Mission

Need Statement, Operational Requirements Document, Operational Test Authority, Test and Evaluation Master Plan) to the contractor. In fact, the Navy has a regulation prohibiting transmittal of the TEMP to the contractor without Chief of Naval Operations' approval.

The veil of secrecy needs to be lifted. In the case of concurrent DT/OT testing, OT data should be provided early to allow for timely fixes prior to the required follow-on operational test and prior to production.

Although the operational testers are not members of the acquisition workforce, they are critical members of a team whose mission is to get the best equipment to the field, in the fastest time, at the best cost.

Editor's Note: The author welcomes questions or comments on this article. Contact him at jstoddart@oshruck.com.

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1. DoDD 5141.2, "Director of Operational Test and Evaluation," April 2, 1984, para 2.5.
2. DoD 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," Jan. 4, 2001, para 3.4.
3. Title 10 U.S.C. 2399(d), *Armed Forces*, Chapter 141, "Miscellaneous Procurement Provisions," Operational Test and Evaluation of Defense Acquisition Programs.
4. Title 10 U.S.C. 2399(e)(3)(A), *Armed Forces*, Chapter 141, "Miscellaneous Procurement Provisions," Operational Test and Evaluation of Defense Acquisition Programs.
5. DoD 5000.2-R, "Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs," Jan. 4, 2001, Section 3.4.1.

ICOTE Chairman John Stoddart Speaks Out on Improving T&E In Response to Tough Questions From DOT&E's Former Director, Philip Coyle



Why do we have an increasing number of systems performing so poorly in OT [Operational Test] or rushing to OT while clearly not ready?



Notwithstanding immature technology, we believe some systems are hurried through design and development. Because of this, technological risk increases and places the successful outcome of various tests in jeopardy. Also, technological risk is not exclusive unto itself. Increased technological risk affects both cost and schedule. If the technology fails, there is a high likelihood the original schedule will be at increased risk. Cost risk will also increase with redesign and retest.

Poorly specified requirements, incomplete requirements, changing require-

Poorly specified requirements, incomplete requirements, changing requirements, or a combination thereof exacerbate the acquisition process.

ments, or a combination thereof exacerbate the acquisition process. Poorly specified requirements make design and development more difficult. Incomplete requirements guarantee the system not passing the test. And changing requirements bring about the need for redesign, which is especially unpleasant as the earlier design nears finalization.

There is growing evidence that here is a linkage between the streamlining of the acquisition system and a decrease in systems readiness for OT. Test realism is viewed as too expensive, which places reliance on solutions such as Modeling and Simulation [M&S] to replace relevant development testing (DT with correlation to operational requirements). The new modernization documents appear to cause a rush to judgment, pushing systems into testing to support acquisition before they are ready. This rush, coupled with the insertion of technology anywhere prior to a production decision, also plays a role.

The decline in DoD program funding has resulted in a major impact to the required robustness of Service and OSD [Office of the Secretary of Defense] test agencies; in effect, the oversight capa-

bility in many agencies is at best marginal.

Finally, most program managers fear loss of funding. If a program exposes its problems, funding will immediately become an issue and could subject the program to significant fielding delay or cancellation. Therefore, there is no desire to ensure the areas of greatest uncertainty or those least understood are examined early in DT [Developmental Test], thus postponing problems too late in EMD [Engineering and Manufacturing Development] or into IOT&E [Initial Operational Test and Evaluation].



Is DT being perceived as a PM's prerogative that is optional?



PMs perceive DT as required; however, developmental testing competes with design and development for funding. These competing demands in a resource-constrained environment require the PM to make a trade-off between design and test funding. These decisions are being made at a time that test agency oversight is limited, thus preventing a greater collaborative approach to appropriate testing.



Why does the program focus on specification compliance in DT at the expense of performance-based DT?



In the design and development process, it is easier to focus on specification compliance instead of performance compliance. Some may think the specifications are more critical than performance in the early stages of acquisition. A common philosophy is, "There is always time to fix performance issues at a later date." The problem with the "fix it later" concept is that historical data may not exist, modeling may not be sufficient, and the PM may still decide to accept these performance risks.

Many of today's programs lack adequate early DT performance testing. Because of this, measures of effectiveness and performance are not normally available

until the later phases of DT. The key to a well-developed DT program is determining the relevance of the DT being conducted and how well it correlates with the eventual operational issues.



Is simulation a help or hindrance? Many simulation projects are so complex they should be a development in themselves. Are we underestimating the risks and costs? How has simulation contributed?



When simulation is viewed as just another tool in the T&E process and not a replacement for dedicated testing, it has great value. Some of the areas simulation has made a significant contribution are in developing users' needs, human factors data, designing meaningful tests, and in complementing tests in a high-cost test environment.

Some program managers have exhibited a desire to incorporate simulation into today's testing at the expense of common sense. The greater danger lies in trying to substitute simulation for testing in areas that lack historic data or have high risk associated with uncertainty in the technology.

To be properly employed, simulation plans must be able to answer these simple questions: Is the simulation mature? Is it validated and verified? If so, what information will it provide? How do I incorporate the results into my program? What risks are associated with the simulation approach?

Some simulation projects should be treated as a weapon system for purposes of OSD oversight. JMASS [Joint Modeling and Simulation System] is a good example. The models and simulations take on a life of their own, and every output becomes gospel unless they are independently looked at to see if they do represent reality.



Commercial-Off-The-Shelf (COTS) – How do we resolve the challenge of the operational requirements without modifying the COTS product?



First we need to recall the words of a wise, former USD(A) [Under Secretary of Defense for Acquisition]. "It's like buying a car; if the option you want is provided by the manufacturer, it's still COTS. However, if you have to go to the speed shop to get your required performance, it's not a COTS product." Given the USD(A)'s description of COTS, the following is offered.

Operational requirements can be satisfied in a number of ways: change in doctrine; change in training, techniques, and procedures [TTP]; and a change in equipment. The plan for use of a COTS product should carefully consider all three of these elements when addressing the capability to meet the operational requirements. Adjustments to TTP may allow a COTS product to meet requirements as a part of an integrated system of systems. However, whenever COTS products are being considered as an equipment replacement, or to meet an existing requirement, then COTS should receive the same scrutiny and oversight as a product undergoing development. The operational requirement does not change and should not be lessened just to accept a COTS product.



Computers. How many of the new system reliability issues are due to the dimension of difficulty introduced by computers and our reliance upon them?



Systems are becoming more and more dependent on embedded processors and integrated computers. The sensor fusion requirements of many modern systems create a very difficult fault isolation problem. Embedded instrumentation and proper diagnostic capabilities are required. The largest challenge is in the systems integrating software. Hardware issues are more readily defined and resolved due to a lower set of variables. Software-intensive systems have been a major cost driver in most DoD programs experiencing cost overruns.

A potential solution is to ensure through Hardware In the Loop [HWIL] and sim-

ulation that the system software is stable and mature enough to proceed to the next milestone. Simulating the most demanding item of throughput, e.g., the Terrain Following/Terrain Avoidance radar in an HWIL simulation only postpones later surprises. Simulating equipment not available for the HWIL is a high-risk approach as too many programs have demonstrated previously.



What is setting T&E back? What are the issues? Where can the greatest gains be made, and how?



The lack of adequate resources (funding and staffing) and commitment from senior leadership in the Federal Government. Inadequate resources limit the program's ability to do full-up, realistic, and robust system tests to determine the operational worth of a system. The government's test and evaluation expertise has declined to a point that some test agencies have only a caretaker level of capability. The cessation of the Cold War has created a false sense of security among Congress and our federal leadership to the point that there are few champions for ensuring the user has modern, well-tested, and effective equipment.

While the "we care" rhetoric is strong, the resource allocation and established priorities tell a very different story. The fall back on M&S has also provided a false sense of effective testing and a quick and less expensive way to say a system is effective and suitable.

The first sign of support for fielding more effective systems will be test agency staff increases, followed by more funding to reestablish OTA [Operational Test Agency] independence. How independent is an OTA when all their test support funding comes from the PM being evaluated?



What impact has acquisition streamlining had on T&E readiness?



There is strong agreement amongst those supporting DoD test agencies that ac-

quisition streamlining has had a very negative impact on T&E. With emphasis on speeding up the acquisition process, there has been a significant decline in well-documented testing and government oversight and analysis. The concept of speeding up the acquisition process is laudable, but not at the expense of test readiness and conduct. Delayed or late discovery of technical issues always impacts schedule and cost, often resulting in significant cost growth, schedule slippage, and delayed fielding



Does combined DT/OT cause a rush to failure? DT was previously accepted as a learning phase of development, whereas OT shortcomings were always viewed as failures. Can the two T&E events be combined without minimizing the DT scope?



DT should be a separate set of tests to look at technical compliance and technical issues to determine engineering readiness. Having OT involved in the DT testing is OK, but only as long as the results are not misinterpreted and used to wrongfully characterize a system before it is ready for OT testing. OT should be allowed to participate and pull data from the DT phase of testing, but clearly, only as long as the results are interpreted correctly. In those instances where the test is listed as a DT/OT event, often the focus shifts from test learning to test success, with parameters of the test adjusted as much as possible.

The two events could be combined if the tests are allowed to naturally merge into "smart" testing – smart meaning we are scheduling the events on the basis of program maturity, our required confirmation of capabilities, and not the DAB [Defense Acquisition Board] schedule.



Does OT ignore DT findings? Is RAM [Reliability Assessment and Monitoring] stressed enough in DT and OT?



Staff officers responsible for OT oversight of a program in DT have relied heavily on the test findings. The key is

in the use of available data. Results and supporting data from a DT test must be studied to ensure they are accurate and can support the correct interpretations for operational effectiveness.

RAM is not stressed enough in any testing, and due to the limited exposure the equipment has in OT under realistic operational conditions, will continue to present a higher program risk. Most reliability growth curves reflect desired readiness levels well after fielding. In a number of instances, the lack of system reliability has adversely impacted the fields' O&M [Operations and Maintenance] account, e.g., Apache and Apache Longbow.

Our current contracting process needs to be modernized to reward product developers who meet the reliability growth requirements and force those who don't to share the expense of developing higher component reliability.



How can the gap be closed in the variance between system specifications, the TEMP [Test and Evaluation Master Plan] and ORD [Operational Requirements Document]?



The requirements must be developed from an operational perspective and then interpreted into believable, realistic specifications; in effect, reverse engineer the MAORs [Minimum Acceptable Operational Requirements]. The ORD should drive the whole process from the beginning; the TEMP lays out the test planning to meet the requirements derived from the ORD; and the system specifications are a true reflection of users' operational needs interpreted to systems' technical needs or specifications. The critical technical characteristics must therefore be relevant to, and have a high degree of correlation with, the operational requirements, while providing early insight for required performance.

Editor's Note: Stoddart welcomes questions or comments on this article. Contact him at jstoddart@oshtruck.com.

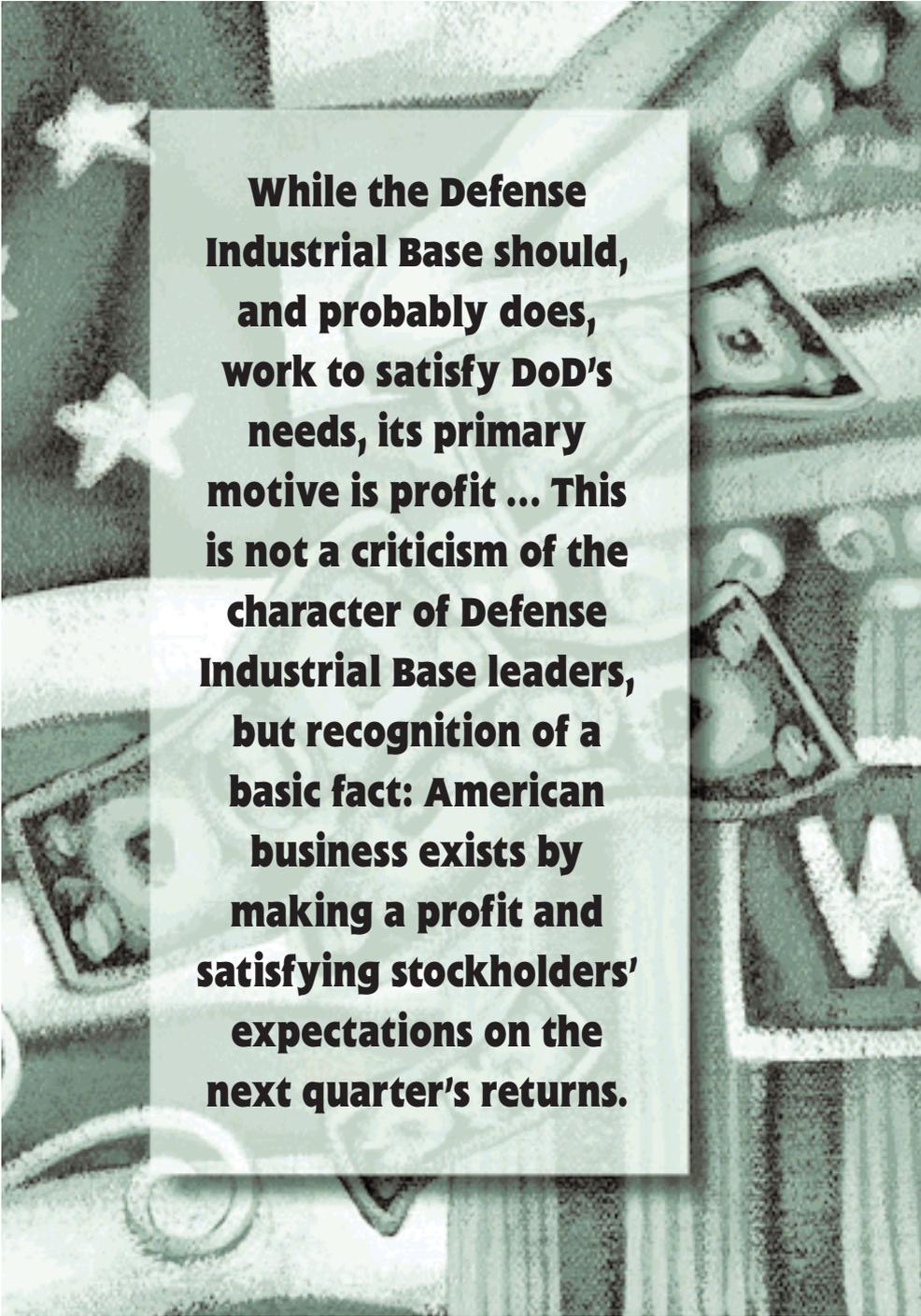
Defense Acquisition Needs to Change Course

Why? Because The Landscape Has Changed — Dramatically!

PHIL W. BOLIN • JAMES S. O'BRASKY

The defense acquisition landscape has changed more than most people think. The Department of Defense (DoD) needs to take additional steps to improve the process of acquiring U.S. defense products. The landscape we refer to includes five interacting components that support U.S. defense forces: funding and leadership; the Defense Industrial Base; the Revolution in Military Affairs; the Revolution in Business Affairs; and people. For this article, we focus on the following five issues:

- Funding decisions over the past decade have put DoD in a “Catch-22” situation. DoD has foregone modernization to fund operational readiness; aging equipment together with other requirements now place an ever-increasing burden on available funding.
- The diffusion of military and economic power creates a difficult environment for U.S. leaders to define a clear strategy and gain sufficient funding to support the military.
- The Defense Industrial Base has changed; consolidation, high company debt, and unstable military purchase plans require that the Defense Industrial Base shift its focus to other business areas and seek stronger influence with Congress. DoD needs to reconsider its approach to this “new” entity.
- DoD’s approach to the new environment — a combination of the Revolution in Business Affairs and the Rev-



While the Defense Industrial Base should, and probably does, work to satisfy DoD’s needs, its primary motive is profit ... This is not a criticism of the character of Defense Industrial Base leaders, but recognition of a basic fact: American business exists by making a profit and satisfying stockholders’ expectations on the next quarter’s returns.

Bolin is a retired Navy captain and senior engineer for Basic Commerce and Industries, Inc. O’Brasky is a Senior Operations Research Analyst at the Naval Surface Warfare Center, Dahlgren, Va.

olution in Military Affairs – is only the start of what needs to be done.

- A near-term shortage of senior science and engineering technical personnel should be cause for alarm as the Department continues its efforts to reform the acquisition process.

The Current Situation

After four thousand studies, a dozen major commissions, and hundreds of laws and regulations, efforts are still on-



going to improve the DoD acquisition process. In view of recent changes in the Defense Industrial Base and the current environment, we sought to determine if the current Department of Defense/Department of Navy (DoD/DoN) acquisition policies were really effective in supporting the warfighter. We concluded that, while some success is evident, more could be done.

To reiterate a tired but true refrain heard repeatedly in recent years, funding has decreased dramatically throughout DoD. A review of two major military funding categories highlights the real implications for defense: Operations and Support (O&S) and Modernization. O&S includes funding to support the operating forces and pay for military personnel; modernization funds include procurement and research and development.

In DoN, O&S funding fell 27 percent from \$75.7 billion in 1990 to \$55.3 billion in 1999 (constant 2001 dollars). Investment funding fell 42 percent in the same period, from \$52.7 billion to \$30.5 billion. Not surprisingly, force structure also fell during this period, with the number of battle force ships reduced by 44 percent.

A reduction in forces and funding could be expected after the United States won the Cold War. However, two factors argue that the reduction in O&S funding is even more severe than shown by the raw numbers.

Less O&S Dollars to Operating Forces

First, in a study on O&S funding, the Institute for Defense Analyses (IDA) found that O&S funds spent on items “less-related” to combat forces increased from twenty cents on the dollar to thirty cents on the dollar.¹ For purposes of the study, IDA grouped O&S funding into three categories: those funds applied directly to forces; those funds less related to forces such as environmental compliance, health, and administration; and funds to support other nations. It comes as no surprise that environmental compliance and health costs have increased, as those items are of national interest.

Worthy of note, however, is the fact that less of each O&S dollar is actually allocated to *operating* forces.

Aging Military Force

Second, complicating the funding reductions is an aging military force. One of many examples of this fact is that the average age of U.S. Air Force planes is 20 years, even though they were designed for 15 years of service life. Even with planned procurements, former Under Secretary of Defense (Acquisition, Technology and Logistics) Jacques S. Gansler predicted that the average age would grow to 30 years before modernization could be achieved.

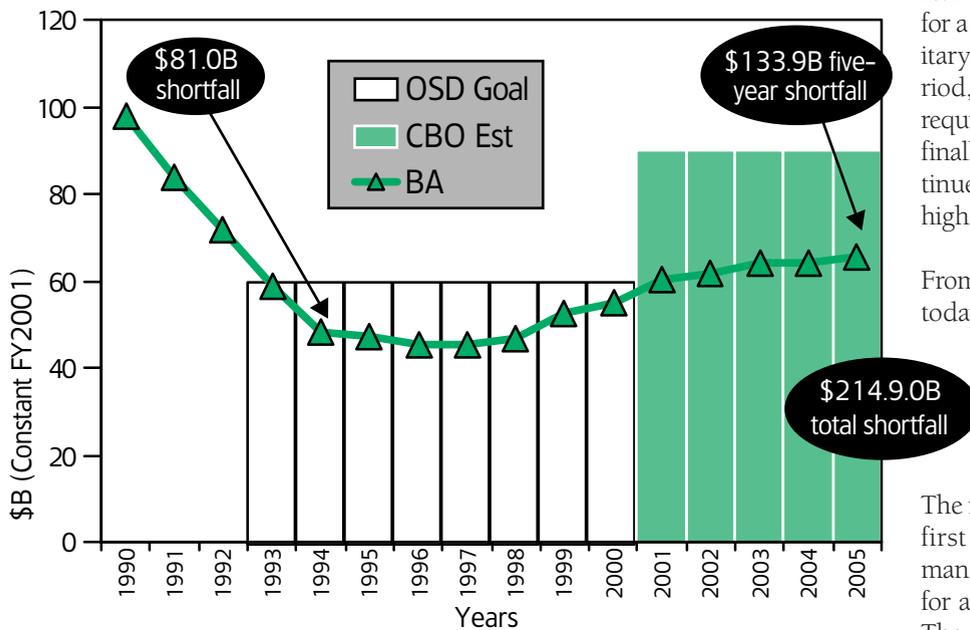
Noting that a lower percentage of O&S funding is reaching an aging operating force, Army Gen. Henry Shelton, Chairman of the Joint Chiefs of Staff, told the Senate Armed Services Committee Sept. 27, 2000, that, “We are collectively robbing Peter to pay Paul, or robbing modernization ... to pay for current readiness.”

How “robbing Peter to pay Paul” affects modernization is highlighted by several facts. In 1997, the *Quadrennial Defense Review* stated that 1996 procurement was \$18 billion less than called for in the *Bottom-Up Review* plan. To compensate, the Office of the Secretary of Defense (OSD) developed a goal to provide \$60 billion per year for military procurement. As time passed and procurement continued to be pushed into the out years, this procurement goal became a target to achieve in the fiscal 2001 budget.

In September 2000, the Chairman of the Joint Chiefs of Staff stated in testimony to Congress that \$60 billion was no longer sufficient. He did not say how much was sufficient; however, the Congressional Budget Office (CBO), a non-political source, did. This group reviewed current forces and concluded that \$90 billion in procurement funds would be required to maintain current force levels.

Figure 1 shows the relationship of these procurement issues. The executed and planned budget authority since 1990 is

FIGURE 1. Budgets — A Historical Perspective



Source: ABC News (www.abcnews.go.com/sections/us/DailyNews/militaryspending), "Mounting Defense Dollars," by David Ruppe, Sept. 27, 2000, and CBO, "Budgeting for Defense: Maintaining Today's Forces," Sept. 2000.

shown in relation to the \$60 billion OSD procurement goal and the CBO's study on maintaining current forces. The CBO figure of \$90 billion supersedes the OSD figure in fiscal 2001, the year the Chairman of the Joint Chiefs of Staff stated \$60 billion per year was not sufficient. The shortfall between actual and planned procurement from 1993 to 2005 totals \$214.9 billion, nearly 75 percent of a full year's budget.

O&S funds are not paying for maintenance without robbing from modernization, thus leaving insufficient funds for modernization. This is a true Catch-22 situation that will require sound analysis and strong leadership.

How does DoD obtain the necessary funding? As will be explained later in this article, DoD claims that the Revolution in Business Affairs will pay for a Revolution in Military Affairs—in effect solving the problem. Before accepting or rejecting this claim, however, a review from a historical perspective is instructive.

Funding and Leadership

Funding for the military is available when its leaders present a clear strategy. Fig-

ure 2 provides a summary of the DoD budgets since 1945, annotated with historical events.

In the aftermath of World War II, U.S. leaders debated our national interests. Shaken by the communist takeover of China and the Soviet's test of the atomic bomb, President Truman requested a comprehensive analysis of Soviet and American capabilities. The result was National Security Council (NSC) 68 that precipitated a massive military buildup and an increase in funding for the armed forces in an effort to contain the communist threat. NSC 68 was a clear strategy for the U.S. military, articulated by our leaders to Congress and the American people. It shaped actions for the next 20 years.

Vietnam was the watershed of this strategy. Budgets dropped, and the military entered a period best described at the time as a "hollow" force. It took another clear strategy to bring the military back. The tragedy of the failed Iranian Hostage crisis visualized to the American people the military's state. Whether or not the event was, in fact, a reflection of a hollow force, it became a symbol of such. Starting with President Carter and fol-

lowed forcefully by President Reagan, a real effort began to rebuild the military for a purpose: to win the Cold War. Military budgets increased during this period, even though deficit spending was required for that funding. Budget deficits finally dampened the appetite for continued increases, but budgets remained high until the end of the Cold War.

From the end of the Cold War through today, the United States has not been able to articulate a clear vision for the military. Evidence of this inability comes from the *Quadrennial Defense Review* in 1997.

The review addressed two options. The first was to prepare for near-term demands, and the second was to prepare for a regional competitor in the future. The end result was a compromise that directed the military down the middle road of the two options. This compromise position was likely a reflection of the diffusion of economic, political, and military power in the world. There were no longer two strong and ideologically opposed countries in the world. It was difficult to prepare a clear vision for U.S. forces. Nevertheless, the fact that a clear vision was hard to articulate does not mean that it was unnecessary.

Using the historical view, one could argue that U.S. military budgets would continue to meander on the road of compromise until a clear strategy for the U.S. military force is presented to the Congress and the American people. While it may be difficult work to articulate a strategy, it clearly is needed, and is the first action necessary to stop "robbing Peter to pay Paul." History says this is so.

Defense Burden

Yet another historical issue bears discussion. What is the defense burden on our Gross Domestic Product (GDP)?

The Commandant of the Marine Corps, in several statements and testimonies to Congress, reported that over the last 60 years, DoD military budgets have averaged 8.8 percent of GDP; during the Cold War, they averaged approximately 5 percent of GDP. Today, the burden is

nearly 2.9 percent. A host of countries with fewer global responsibilities than the United States spend the same or more of their national treasure on defense. The United Kingdom and France spend 2.9 percent, Turkey and Greece spend 4 percent, and several Persian Gulf countries spend 12 percent of their economic output on defense. It may be time to discuss the military's role in national security and not simply defense.

Further, the funding implications of small changes in the percentage of the U.S. economy spent on defense demonstrate the very minor burden a properly funded military would be on the American people.

Figure 3 shows the relationship between level funding for defense (fiscal 2001 constant dollars) and funding defense at 3 percent and 2.8 percent of a GDP that is growing at a 3 percent annual rate. This 3 percent annual growth rate for the GDP is less than the economy has grown for the last decade.

Setting defense funding at 3 percent of GDP would provide an average of \$53 billion a year over level funding, and \$22.7 billion a year over a funding level of 2.8 percent of GDP. Just two-tenths of 1 percent – the difference between 3 and 2.8 percent – provides \$227 billion in 10 years (the approximate procurement backlog). Predictions and estimates are never exact, but the implication is clear. *For a very small portion of our national treasure, the military can be properly funded.*

History tells us that a clear strategy is needed to ensure funds for the military, and that the strength of the U.S. economy makes proper funding a very small burden on the American people. Yet, funding problems persist. Before drawing conclusions, however, a review of the Defense Industrial Base and DoD's approach to the problem is necessary.

The Defense Industrial Base

Whether the United States moves forward with a clear strategy or meanders on the path of compromise, the Defense Industrial Base will continue to play a critical role in providing the warfighters' needs.

Four major changes have occurred with the Defense Industrial Base that redefine the acquisition landscape. These

War II were not on the contractor list for the Korean War.

The United States needed guns and butter after the war, not just guns. The commercial sector needed to supply goods for the U.S. population. The military needed supplies to support plans to deal with the communist threat. The United States shaped the defense industry, a subset of the U.S. commercial industry,

to provide armaments for the military. Rules and regulations from government were legislated so the Defense Industrial Base could be effectively controlled. This controlled environment developed from various reform efforts undertaken due to real and imagined problems with the Defense Industrial Base. (Remember the \$600 toilet seats?)

As the Cold War ended, the shape of the Defense Industrial Base changed. The number of companies in the Defense Industrial Base decreased as major players exited. The U.S. economy was growing, and companies such as GTE, Hughes Electronics, Magnavox, and Phillips decided their best potential was in the commercial world, which had the effect of setting them apart from being a gov-

ernment client "whipped" by DoD's changing requirements and unstable funding.

In the 1990s, DoD policy fostered consolidation to reduce excess capacity for those remaining in the Defense Industrial Base. The consolidation was also used by some companies to retain as large a share as possible of what was left of military procurement orders. The companies were, in essence, buying the orders already on the books of the companies that they were acquiring.

The consolidation was drastic and reported on by John Tirpak in his "Distillation of the Defense Industry." He re-

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changes argue for reconsideration of DoD's approach to the Defense Industrial Base. These changes include: a massive consolidation of the Defense Industrial Base, financial problems for most of the Defense Industrial Base companies, a requirement for new processes to be developed along with product development, and a shift in research and development patterns.

Consolidation — From 1947 to Today

During World War II, the entire U.S. industry was mobilized to provide defense needs. After World War II, a large portion of U.S. industry returned to commercial enterprises. Thirty-seven of the leading 100 defense contractors of World

ported that 51 companies working in the aerospace industry during the mid-1980s were now consolidated into five large defense contractors: Lockheed Martin, Boeing, Raytheon, Litton, and Northrop Grumman. This concern over the consolidation caused the Justice and Defense Departments to thwart the Lockheed Martin and Northrop Grumman merger; they were concerned that the combination would create a virtual monopoly in some areas.

Financial Concerns

The consolidation of the Defense Industrial Base could be argued a reasonable business decision, aside from the near monopolies. The companies could improve efficiency and eliminate excess capacity. However, the financial performance of the Defense Industrial Base during the late 1990s indicates the anticipated efficiencies were not achieved. A Defense Science Board report on the Defense Industrial Base in April 2000, reported that the debt-to-equity ratio rose substantially, surpassing the Standard & Poor's (S&P) industrial average as the heavy merger activity continued. Return on equity averaged 12 percent below the S&P industrial average from 1996 to 1998.

During the latter half of 2000, some would argue that the financials of the Defense Industrial Base companies reflect improvement, even while the stock market indicates a general downturn. However, even though Lockheed Martin had a better-than-expected fourth quarter for 2000, it failed to stop the company from sliding into a full-year deficit of \$519 million.

That the companies perceived a problem is fairly clear from their actions. First, they worked to increase their access to Congress, the source of funding for their military programs. The Center for Responsive Politics reports that from 1991-

97, the Defense Industrial Base spent \$32.3 million in lobbying efforts – more even than the \$26.9 million spent by the troubled Tobacco Industry.

Second, the Defense Industrial Base started looking hard at commercial avenues for their products. In September 2000, Boeing received approval to buy

DoD needs to reconsider the character of the Defense Industrial Base; understand its need for reasonable profit; know that it will react to decisions based on its need to stay in business and satisfy shareholders; and finally, DoD needs to develop incentives and a healthy, realistic attitude toward what the Defense Industrial Base can and cannot do.

Hughes Satellite Division, a \$3.75 billion acquisition. This acquisition, reported by the *Wall Street Journal* on Sept. 27, 2000, relates to commercial applications as much as to defense work. Another example is TRW, which licensed an integrated circuit technology used in military applications to RF Micro Devices Inc., of Greensboro, N.C. RF Micro Devices is using the technology in commercial applications with customers such as Nokia, NEC, and Motorola.²

Seeking outlets for its capabilities is a normal course of action for a business seeking to maintain its value and profitability. These efforts, although steps required for a company's viability, add complications to its work for the government. In gaining approval for the Hughes Satellite Division purchase, Boeing had to create firewalls in the company to protect competition, and Boeing was prohibited from supplying systems engineering to a specific classified Pentagon program.

We would argue that firewalls and procedural rules on how to supply goods to the government are not conducive to a competitive environment. Coupled with a near monopoly in some areas and increased access to Congress, it suggests the ability of the defense industrial base to influence what the government buys has increased considerably.

New Manufacturing Processes

Another dimension of the changing playing field with the Defense Industrial Base is that technology advances now provide the ability, indeed mandate, that new manufacturing processes be designed for development of products. New technology provides the capability to easily study manufacturing processes. In the F/A-18 E/F program, Boeing designed new processes for product development in certain sections of the plane.

The result, reported by the F/A-18 Program Office, was 33 percent fewer parts, 69 percent man-hour savings, and a 42 percent weight savings in those areas where a new process was designed. Additional coordination is now required to ensure the best process is followed for new products. Done correctly, it can save money and time, but it complicates the coordination required between industry and government at a time when Defense

Industrial Base influence is increasing considerably.

Research and Development

As the Defense Industrial Base works for profitability and stability, its Research and Development (R&D) expenditures have fallen. From 1994 to 1999, R&D spending as a percentage of sales has dropped from over 4 percent to just over 3 percent.³

The reduction in R&D is not large, but since R&D spending provides the innovation mandatory to our military, we find it troublesome that the Defense Industrial Base, the main military supplier, is spending less on R&D. And this is occurring at a time when total commercial-base R&D spending is increasing.

DoD is a significant player in R&D, devoting 14 percent of its budget to these activities, but the funds expended are becoming an ever-smaller share of total R&D expenditures. In 1981, the commercial industrial base, not just the subset called Defense Industrial Base, surpassed the Federal Government in R&D spending, and in 1998 fully 82 percent of the \$201 billion expended on R&D in the United States was being accom-

plished by commercial industry. This increase in total commercial R&D spending is a new aspect to R&D, and the results of this effort can be useful to the military if DoD can determine how to gain access to the appropriate results. (Source: National Science Foundation.)

These four changes (consolidation, financial concerns, new manufacturing processes, and R&D) affect the balance among the players in the defense acquisition community and suggest a different approach by DoD is required. While the Defense Industrial Base should, and probably does, work to satisfy DoD's needs, its primary motive is profit. In the current period of financial strain, this bottom-line profit motive can result in actions and appeals to Congress that may not be in line with the best interests of the warfighter. This is not a criticism of the character of Defense Industrial Base leaders, but simply recognition of a basic fact: American business exists by making a profit and satisfying stockholders' expectations on the next quarter's returns.

The changes to the Defense Industrial Base have not been in total isolation. DoD has modified its approach to acquisition and supplying the warfighter.

During his tenure as Under Secretary of Defense (Acquisition, Technology and Logistics), Gansler reported that DoD is using a two-pillar approach to supply the warfighter. The first pillar is a Revolution in Military Affairs (RMA). The second pillar, a Revolution in Business affairs (RBA), is expected to pay for the RMA.

Revolution in Military Affairs (RMA)

An RMA is defined as what occurs when the application of new technologies into a significant number of military systems combines with innovative operations concepts and organizational adaptation in a way that fundamentally alters the character and conduct of conflict.⁴

History records at least nine RMAs, starting with the Infantry Revolution in 1337 and continuing with the Artillery, Sail and Shot, Land Warfare, Naval and Nuclear Power Revolutions, just to name a few. Andrew F. Krepinevich studied these revolutions and found four essential elements of a true revolution, namely:

- Technological change was present.
- The technology was applied to systems.
- Operational innovation occurred to take advantage of the technology.

FIGURE 2. Industry vs. DoD

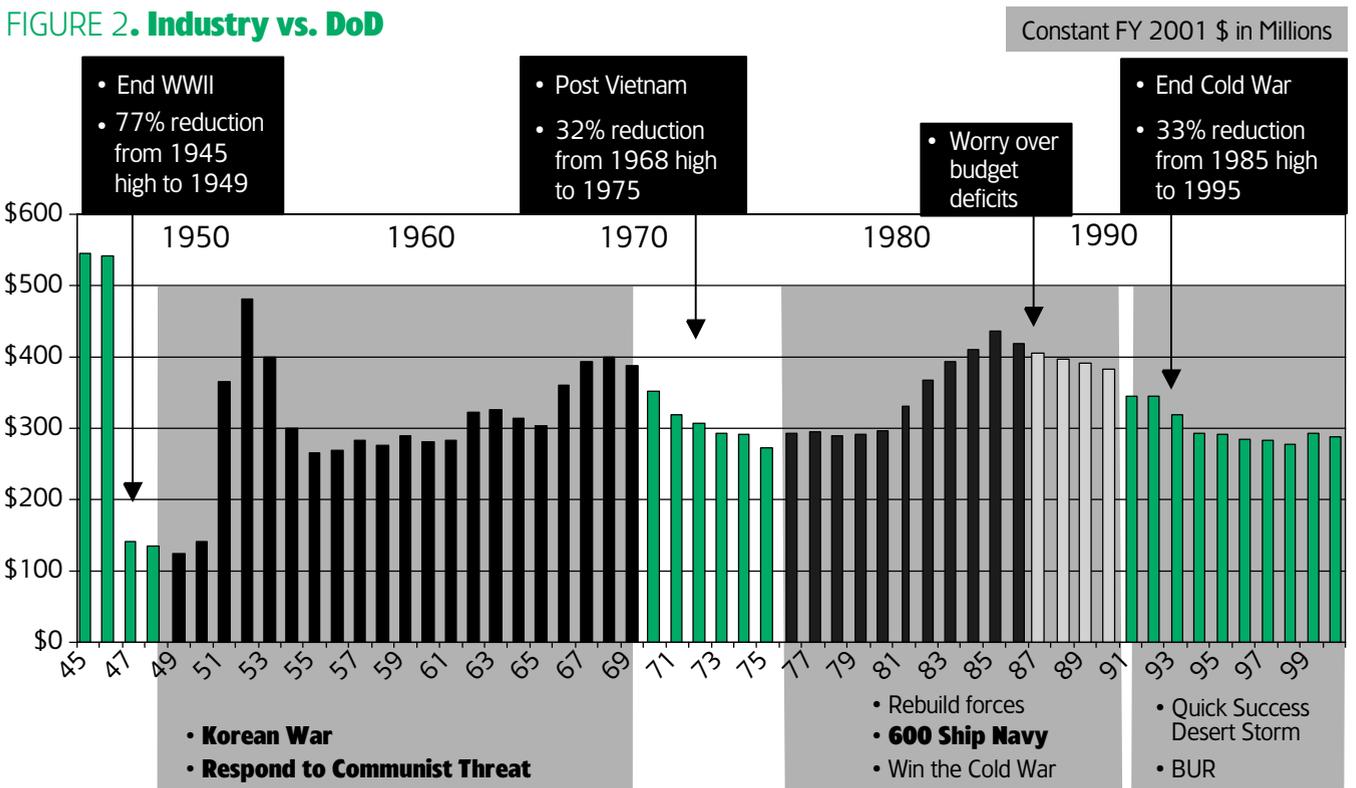


FIGURE 3. Level Defense Funding in Comparison to Funding as a Percentage of GDP

Fiscal Years*											
Item	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Totals
GDP	\$9,925.7	\$10,223.5	\$10,530.2	\$10,846.1	\$11,171.5	\$11,506.6	\$11,851.8	\$12,207.4	\$12,573.6	\$12,950.8	
Level (constant \$) Funding of Defense	\$287.8	\$287.8	\$287.8	\$287.8	\$287.8	\$287.8	\$287.8	\$287.8	\$287.8	\$287.8	\$2,878.0
2.8% of GDP	\$277.9	\$286.3	\$294.8	\$303.7	\$312.8	\$322.2	\$331.9	\$341.8	\$352.1	\$362.6	\$3,186.0
3% of GDP	\$297.8	\$306.7	\$315.9	\$325.4	\$335.1	\$345.2	\$355.6	\$366.2	\$377.2	\$388.5	\$3,413.6
Difference in 10 years between funding at level constant dollars and 3% of GDP = \$535.6B					Difference in 10 years between funding at 3% of GDP and 2.8% of GDP = \$227.6B						

Source: National Defense Budget FY 2001, March 2000. FY 2000 GDP escalated at 3% per year.
 * FY 2001 Constant Dollars. Level funding amount is the FY 2000 DoD BA in constant FY 2001 dollars.

- The organization adapted to the change.

The lesson here is that technology only makes the RMA possible; the other elements are required to effect a true revolution.

The clearest example of the requirement for operational and organizational adaptation comes from the Artillery Revolution. Krepinevich explains that “although Roger Bacon’s recipe for gunpowder dates to 1267, cannons only began to appear on the European battlefield in significant numbers some 60 years later.” Even after the development of cannons, it was not until the early 1400s that they were used to defeat cities’ defenses and allow victory before the cities’ supplies were depleted, which had been the normal operational plan.

The evidence is clear that DoD is addressing the first two ingredients of an RMA. The new technology and its application to systems gave the United States precision weapons in Desert Storm. However, we could find no clear evidence in DoD of major efforts to consider the last two important aspects of an RMA: operational innovation and organizational adaptation. History has shown that innovations in operational tactics and doctrine – making use of the technology – can improve effectiveness of the technology. Germany’s use of the blitzkrieg tactics in World War II is a clear example of the significance of operational use of new weapons.

Focusing on the last two requirements, to effect an RMA with respect to precision strike technology could be very beneficial. Operational innovation in this area may include more dispersed operations to reduce vulnerability or making the decision to employ precision weapons from fewer types of units. Does every plane and ship in the U.S. inventory that has an older-type weapon need a precision weapon? Organizational adaptation discussions may uncover new or fewer force packages to deliver the weapons, and a restructure and reduction in current staff organizations to control the weapons’ packages. These possibilities are probably not the “answer,” but focusing on all four RMA components will allow warfighters to work toward the correct solution.

With U.S. technological know-how, reliance on an RMA to help supply warfighters’ needs is appropriate. To actually make it happen, however, may require a stronger focus, again, on two necessary aspects of an RMA, namely: operational innovation and organizational adaptation. Beyond that, and vitally important is the funding required to execute an RMA. That brings us to the second pillar of DoD’s approach.

Revolution in Business Affairs (RBA)

As previously mentioned, DoD states that its RBA will pay for the RMA. The RBA is basically the current term for an acquisition reform process. Acquisition reform has been going on in the defense arena ever since George Washington’s day. Today’s reform goals are not differ-

ent than those in Washington’s day: field high-quality defense products quickly; support them responsively; and lower the total ownership cost and reduce the overhead cost of the acquisition and logistics infrastructure. In these last 200 years, 900 General Accounting Office (GAO) reports, 12 major commissions, and 4,000 studies have focused on how to improve military acquisition. All of them recommended improved business practices. None of them have been very effective.

A 1993 reform study that reviewed cost growth in major programs from 1960 to 1990 revealed an average 20 percent cost growth on programs, with no major change over time. In 1998, a study was performed on the results of the Packard Commission initiatives. The studies looked at cost growth before and after the initiatives were in place and found a change – overruns *increased* to 9.5 percent from under 6 percent *after* the initiatives were in place.⁵

Today’s Reform

Today’s reform started in 1993, and as reported in a Defense Systems Management College (DSMC) study by Raymond W. Reig, should have started showing results in mid-1996. Reig reported that today’s reform changed more than 200 sections of law, initiated Process Action Teams, and developed pilot programs to demonstrate results. In 1993, the Government Performance Results Act (GPRA) was passed. This Act holds federal agencies accountable for results and requires them to develop a strategic

plan, a performance plan, and report yearly on their performance. It helped put some teeth in current reform efforts.

Reviewing results of today's reform in reports required by the GPR, we found the greatest success in areas where information technology could be applied to the problem. DoD set a goal of reducing logistics response times from 36 days in fiscal 97 to 18 days by fiscal 00. The Department achieved its goal by fiscal 99. Likewise, DoD increased total asset visibility from 62 percent in fiscal 97 to 94 percent in fiscal 99, after setting a goal to reach 90 percent in fiscal 00. These are but two examples where better information flow and control helped reform aspects of defense acquisition.

However, in DoD's efforts to minimize cost growth in major defense programs, the Department has not been as successful. The goal to achieve a cost growth of less than 1 percent per year produced uneven results from fiscal 95, and in fiscal 99 the cost growth was over 3 percent. The DSMC study mentioned earlier puts these results into perspective. Reviewing over 500 federal programs, 52 of which were DoD programs, Reig found that DoD's cost growth was in the middle of the sample. Fully 294 other federal programs had higher cost growth. This suggests that development of major programs is risky. Engineers do not have perfect future vision. Problems may arise. And this sample supports an argument that DoD is as good as the rest of the Federal Government in producing new equipment and systems.

A final word on today's acquisition reform results can be taken from a July 2000 GAO report, which concluded that acquisition costs are still high, but opportunities abound to adopt techniques used by private industry to continue improving the system.⁶

It appears the DoD approach to acquisition reform – the RBA – is achieving good results in areas where information technology allows better information flow and control of data; but, the RBA is still facing major hurdles in the “big

dollar” areas such as bringing major programs to operational capability.

Many numbers are passed around in the press to show cost savings and cost avoidance. However, the true test of whether the RBA is paying for the RMA is the DoD budget. GAO's study of the fiscal 2001 budget concluded that the expected savings from RBA efforts did not materialize to fund the \$60 billion needed for modernization. GAO states that DoD has underestimated costs of day-to-day operations and did not fully achieve savings projected for efficiency-enhancing initiatives. Therefore, funding for modernization, which did reach \$60 billion in fiscal 2001, came from increased budget authority. In effect, the RBA did not pay for the RMA.

Continuing the Effort

DoD has two options to improve the system with regard to major programs.

Best Business Practices

First, the Department can continue its effort to identify best business practices and start using them. This has been effective in DoD in several areas. DoD applied information technology to asset visibility and logistics response time. This allowed savings yet maintained DoD control. In the Joint Standoff Weapon (JSOW) program, DoD effectively implemented the Cost As an Independent

Variable principle. While maintaining key performance parameters, cost was reduced by 55 percent, while weapon coverage was only reduced by 5 percent. These examples, from various Navy and DoD sources, demonstrate benefits from use of the proper business practices within DoD and DoN.

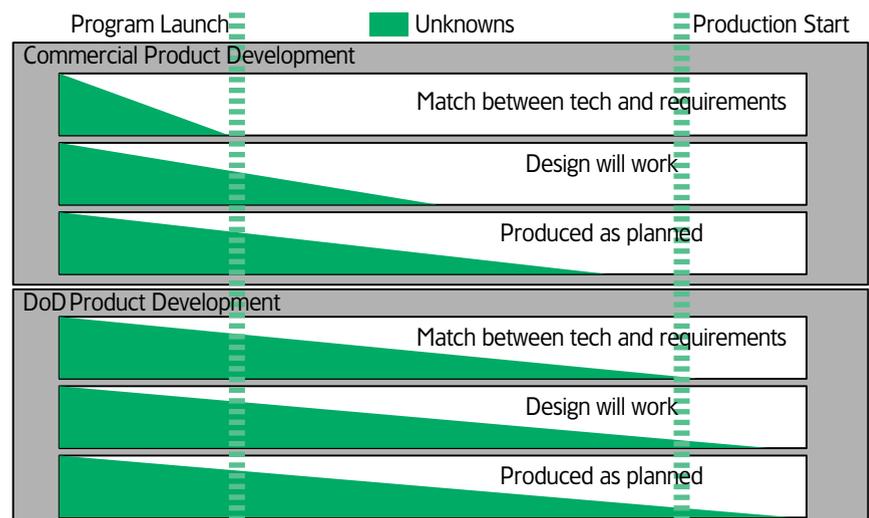
Full Service Contracting

A second approach, currently being enacted by the DoN, is to let industry take over the entire responsibility for a program. In the new DD 21 program, DoN is pursuing a Full Service Contracting approach that allows industry to handle the weapon system from cradle to grave.

Reviewing this approach is reminiscent of the McNamara days when the Total Package Procurement (TPP) program was implemented. Robert E. Gray and Kenneth G. McCollum studied the TPP approach that was used on the C-5A, F-111, LHA, and DD-963. The process was a disaster. They reported that the C-5A doubled in cost, and only 81 of the 167 planes were built; the cost growth for the F-111 was 385 percent; and Initial Operating Capability slipped two years for the LHA, and the cost growth was 172 percent.

The problems stemmed from the inability to completely define requirements and identify the unknowns in new tech-

FIGURE 4. Procurement vs. Requirement



GAO Testimony, “Defense Acquisition: Improved Program Outcomes are Possible,” NSIAD-98-123

nology. When these problems arose, the businesses involved dealt with them from their primary objective of maintaining a viable company; they fought to be paid for effort expended. The opposing view from the government was to obtain the final product at the prearranged price. The end results were the delays and overruns just reported.

Should DoD continue with the DD-21 Full Service Contracting, it remains unclear whether real savings will occur. Basic business goals have not changed, and requirements are still hard to determine. Further, DoD will have to deal with parallel infrastructures: one for the Service to support older ships, and a second where industry supports the DD-21. And today, with a near monopoly in defense suppliers, how will DoD handle multi-year procurements in out years to ensure competition? But the more troublesome problem will be how to deal with problems that crop up in development. Industry will fight to receive funds to cover costs and a reasonable profit, while DoD will fight to provide the weapon systems needed by the warfighter. We do not have 20-20 foresight. Problems in new technology will occur. What is the process to deal with the issues?

Some would argue that Full Service Contracting is worth the gamble to attempt to make DoD more cost-effective. However, we have seen in this article evidence that DoD is doing no worse than other federal agencies, and that when DoD uses and properly controls best business practices, it *can* achieve good results.

A Viable Alternative

Are there other best business practices that may make more sense than the Full Service Contracting for DD-21? GAO suggests a practice that may relate to this question: *separate technology development from product manufacturing*

In a review of major businesses developing new products, GAO found that some businesses (such as Boeing, Ford, and Hewlett Packard) have set standards for technology development that proved successful — standards DoD does *not* use.⁷

As shown in Figure 4, GAO reports that successful businesses do not move forward with a program launch or production start until they have reduced the unknowns in certain areas. They will not start a program until they eliminate all unknowns as to whether the technology will match the requirements. Contrast this to GAO's findings that DoD, at times, *will* do this.

Businesses will not start production until they are sure the design will work, while DoD oftentimes starts production not knowing this. And in the worst possible case, GAO found that DoD, at times, starts production not knowing if the product can even be produced as planned.

This evidence from GAO argues for DoD to consider separating technology development from production, or at a minimum, develop firm guidelines about the unknowns of a technology before using it in a new program. To do this will require different incentives for program managers because today their success depends on getting the program going. To be successful in moving the program ahead, each program manager must argue for funding, and therefore has an incentive to move forward, even with some unknowns.

A clear example of the results of the two different approaches, in the use of aluminum lithium, was available for GAO's review. DoD accepted its use in the C-17, while Boeing rejected it in the 777-200. Boeing determined too many unknowns surrounded the technology. DoD subsequently had problems with the use of aluminum lithium and had to discontinue its use in the C-17. The real bottom line is that the 777-200 program was delivered in 60 months, while DoD averages over 130 months to deliver a major program and is striving to meet its goal of 97 months.

Pushing major defense programs through their development is complicated, and DoD is at least as good as the rest of the Federal Government in working through the process. As the final arbitrator for the products needed by the warfighter, this article has presented the

argument that DoD needs to continue its control of the process and continue its effort to implement best business practices. If the Department is to do so, however, it requires qualified personnel to guide the work. That brings us to the issue of people in the acquisition workforce; specifically, the senior science and engineering talent.

People — Worker Shortage Nearing

While the Defense Industrial Base consolidated, a great many people were laid off, as the government downsized, hiring freezes were the order of the day. It was not unexpected, then that the Defense Science Board reported in early 2000 that 54 percent of the aerospace industry science and technology workforce is over 45 years of age, with fully 33 percent retirement-eligible in five years. Giving more cause for concern is a study by the National Science Foundation that shows employment in science and engineering occupations is expected to increase at almost four times the rate for all occupations. Employment opportunities for science and engineering jobs are expected to increase by about 51 percent, or about 1.9 million jobs.

Employee perceptions provide insight into the potential workforce that will be needed to fill the shortage. Technical bachelor degree holders rank Aerospace and Defense as the seventh most favored industries in which to work today — down from a 1990 ranking of third place. Further, the percentage of technical undergraduates that are not U.S. citizens and are, therefore, unlikely to be eligible for defense contracting work, has increased from 21 percent in 1990 to 37 percent today.

Lower regard for the defense industry, coupled with increasing demand for technology undergraduates, comes at a time when the need for senior science and technology expertise to guide the Department in the new environment has never been greater.

What Will It Take?

This article looked at the current situation in DoD and DoN and considered

the major components of the acquisition landscape. Evidence suggests the landscape has changed substantially, and that more effort is required to achieve increased success. Based on our research of the facts presented in this article and considering the interplay of the various issues raised, the following observations are provided for consideration.

Current Situation

During the past decade, DoD/DoN has foregone modernization to fund operational readiness, leaving the Services with aging equipment. This aging equipment, plus other requirements, places an ever-increasing burden on operating funds. Evidence suggests this is becoming a classic Catch-22 situation that will continue to diminish the funds available for required modernization.

Funding and Leadership

In U.S. history, funding has been made available to support the military when a clear vision and strategy provided a clear rationale and consensus for its use. This was so even when deficit spending was necessary to provide the funding. Today, DoD has no clear view of what the military should be doing, and specifically, how it should be armed. Until a clear vision and strategy are articulated to Congress and the American people, it remains unlikely that sufficient funding will become available for the military.

Defense Industrial Base

The Defense Industrial Base, created to arm the U.S. military for the Cold War, has and is continuing to consolidate, is having trouble gaining efficiencies needed to stay healthy, and has increased its political access to Congress. It exists now as a near monopoly with increased influence.

DoD needs to reconsider the character of the Defense Industrial Base; understand its need for reasonable profit; know that it will react to decisions based on its need to stay in business and satisfy shareholders; and finally, DoD needs to develop incentives and a healthy, realistic attitude toward what

the Defense Industrial Base can and cannot do.

While the Defense Industrial Base should, and probably does, work to satisfy DoD's needs, its primary motive is profit. In the current period of financial constraints, this bottom-line profit motive can result in actions and appeals to Congress that may not be in line with the best interests of the warfighter. This is not a criticism of the character of Defense Industrial Base leaders, but recognition of a basic fact: American business exists by making a profit and satisfying stockholders' expectations on the next quarter's returns.

Understanding that the Defense Industrial Base is a near monopoly, DoD should push harder to develop incentives for more of the U.S. industry to consider becoming suppliers. That means developing strong, firm requirements that are supported on a long-term basis and eliminating the restrictive burdens on those who may want to participate.

Revolution in Military Affairs (RMA)

DoD is focusing on the technology of the RMA. However, to effect a true revolution, the Department needs to increase its focus on innovations in operations and organizational adaptation. This can only be done with a true connection and work effort on the part of warfighters, science and technology engineers, and program managers. At the very minimum, a working integrated process team, consisting of these key players, is required to usher in a true RMA.

As the team looks at the process, in all likelihood they will find that the rules by which Program Managers and Program Executive Officers operate are not sufficient to handle the new environment. Functional and financial tradeoffs between and among systems may be required by Program Executive Officers to improve their effectiveness.

Revolution in Business Affairs (RBA)

While successes have been obtained, the RBA is not paying for the RMA effort.

Continued effort is suggested where successes have been found. From the research conducted by GAO, DoD needs to review its approach to technology development. With its responsibility to supply the warfighter, DoD needs to retain control of acquisition and support processes, and continue its search for the best processes available.

People

DoD needs to review its own workforce and consider what is happening with the Defense Industrial Base workforce. DoD must develop plans to overcome the near-term shortage of senior science and technology personnel – a shortage that can reduce the effectiveness of work that needs to be accomplished to acquire equipment and systems needed by the warfighter.

Editor's Note: Bolin welcomes questions or comments on this article. Contact him at phil_bolin@teambci.com.

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TRANSATLANTIC ARMAMENTS COOPERATION

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Technology Refreshment Within DoD

Proactive Technology Refreshment Plan Offers DoD Programs Significant Performance, Cost, Schedule Benefits

LINDA HAINES

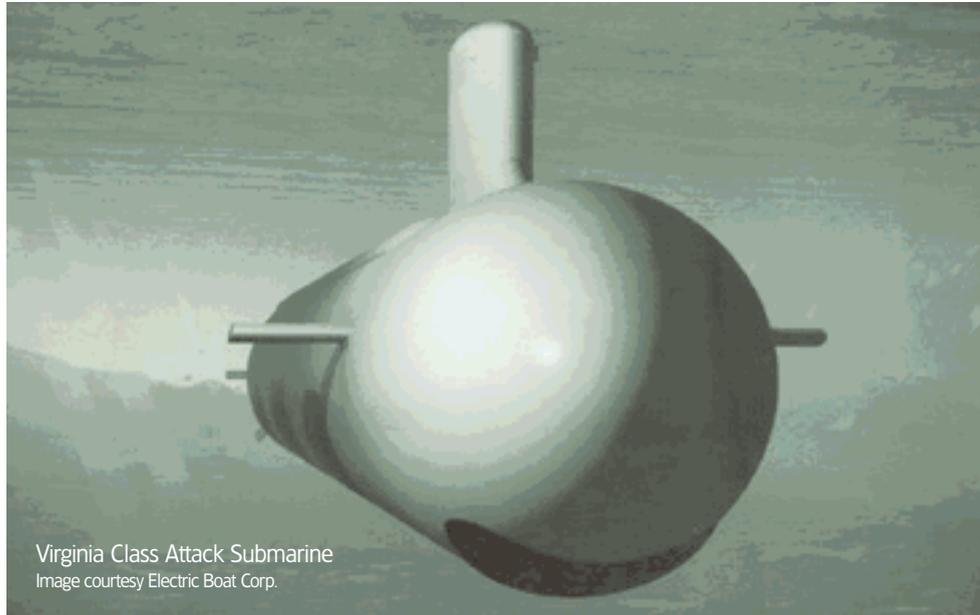
Technology Refreshment

The periodic replacement of Commercial Off-The-Shelf (COTS) components; e.g. processors, displays, computer operating systems, commercially available software (CAS) within larger DoD systems to assure continued supportability of that system through an indefinite service life.

Currently, no firm consensus exists on what “Technology Refreshment” really entails within DoD, the Federal Government, or industry. World Wide Web and library research on this topic invariably turns up a wide multitude of definitions, but a scarcity of policy, regulations, or published academic work that would help bring consensus in terms of common understanding and implementation practices. Until this consensus exists, the purpose and scope of Technology Refreshment will continue to require careful definition in the acquisition/program support strategy for each DoD program.

This article more finitely defines Technology Refreshment, its scope, typical acquisition phases and funding, and its impact on DoD acquisition program management. It also discusses the divergent Technology Refreshment definitions, recommends a common definition and its impact on the 10 elements

Haines is Chief, Cost Estimating and Analysis, Global Air Traffic Operations/Mobility Command and Control System Program Office, Electronic Systems Center, Hanscom AFB, Mass. She is a graduate of APMC 00-3, DSMC, Fort Belvoir, Va., and serves as a colonel (select) in the U.S. Air Force Reserve.



of logistics support, and concludes with the successful implementation of Technology Refreshment in two highly visible DoD programs.

A Concept, A Strategy, A Practice, A Process?

Just what is Technology Refreshment?

- Is it a concept centered on affordability initiatives such as Cost as an Independent Variable (CAIV), Single Process Initiative (SPI), Lean Manufacturing Thinking, Value Engineering, and Parts Obsolescence that includes technology upgrades, refreshers, and insertions?
- Is it “Modernization through Spares,” the Army’s new Continuous Technology Refreshment (CTR) initiative based on technology insertion and the use of commercial products, processes, and practices to extend a system’s useful life?
- Is it a non-National Security System Information Technology (IT) technical obsolescence risk strategy?
- Is it replacement of “functionally obsolete” Navy desktop computers?
- Is it a procurement strategy?
- Is it a Federal Aviation Administration investment analysis-based periodic replacement of COTS/CAS components for the National Airspace System?
- Is it a corporate enterprise software financial management strategy?
- Is it outsourcing information technology (IT) infrastructure, seat management, and help desk functions at the National Aeronautics and Space Administration?
- Is it a Sun Microsystems, Litton/PRC, and TRW competitive strategy to provide DoD network systems security, systems administration, and training services?
- Is it replacement of DoD Software development tools with the latest tools?



Joint Strike Fighter
Photo courtesy The Boeing Company

- Is it Air Force provision of the latest desktops and peripherals through the General Services Administration schedule?
- Or is it the Joint Strike Fighter's avionics computer chips obsolescence strategy through "evolutionary technology refreshment"?

While Technology Refreshment is apparently all of these things,¹ we know from the definition provided at the beginning of this article that, at a minimum, Technology Refreshment concerns the supportability of Commercial Off-the-Shelf hardware and software. As such, it remains rooted in DoD's strategic shift to a COTS/NDI (Commercial Off-The-

Shelf/Nondevelopmental Item) procurement strategy in the 1990s. This shift is rooted in Acquisition Reform initiatives to reduce weapon system acquisition and support costs and to take advantage of the fast pace of commercial technological change.

COTS/NDI Linkage

The shift to COTS was first recommended (but not fully implemented) by the Commission on Government Procurement in 1972, to address the high cost of developing items to meet detailed government specifications and standards.² Former Secretary of Defense William Perry's 1994 special memorandum, "Specifications and Standards – A New

Way of Doing Business," set the first clear policy for COTS/NDI use to meet future DoD needs. Today, COTS/NDI is a key strategy of DoD's "Revolution in Business Affairs" to fund needed force modernization with reduced acquisition, infrastructure, and support costs.³

Recent congressional authorizations and appropriations acts and rewrites of the DoD 5000 series stress COTS/NDI, reinforcing the belief that COTS/NDI is a way to do things faster, better, and cheaper.

Benefits vs. Risks

Use of COTS/NDI poses well-known benefits and perhaps less well-known risks to DoD. Benefits are fourfold:

- Quick response to operational needs or "reduced cycle time."
- Elimination or reduction of research and development and reduction in operations and support (O&S) costs.
- State-of-the-art technology.
- Reduction of technology, cost, and schedule risks.

Use of COTS to decrease O&S costs is particularly appealing, since these costs represent 72 percent of the life cycle costs of a typical DoD system.⁴

The risks associated with COTS, however, are primarily O&S concerns. Besides the mission trade-off that a system developed for commercial needs may fail to meet military requirements, risks include logistics support, product modifications, and continued product availability.

Technology Refreshment More Finitely Defined

Technology Refreshment is essentially a COTS/NDI information technology component and/or system support strategy to extend system service life by addressing COTS/NDI logistics concerns.⁵ To reiterate, Technology Refreshment is then "the periodic replacement of Commercial Off-The-Shelf (COTS) components; e.g. processors, displays, computer operating systems, and commercially available software (CAS) within larger DoD systems to assure continued sup-

portability of that system through an indefinite service life.”⁶

It provides “indefinite” service life by staying ahead of the obsolescence curve⁵ with cost-effective planned technology upgrades, refreshers, and insertions, based on market research and system performance requirements. Robert Kennedy categorizes Technology Refreshment into three areas: technology upgrades, technology refreshers, and technology insertion.⁷

Technology Upgrades

A change that incorporates the next generation product or product upgrade to an existing technology or component that improves overall system functionality. This refreshment may not require redesign of the next higher assembly and is usually form, fit, and function (F³). This type of change can occur at any time during product life.

Technology Refreshers

A change that incorporates a new product to avoid product end of life or product obsolescence, or to correct a problem based on customer feedback. This refreshment may or may not have F³, can occur at any time in the life cycle, and re-certification or certification will be required.

Technology Insertion

A change that incorporates a new product or function capability, which is the result of industry growth or DoD advanced development. This type of refreshment will not have the same F³, may require redesign of the next higher assembly, and re-certification.⁸

This type of Technology Refreshment strategy ensures military systems stay current with the latest commercial technology and, when appropriately planned, eliminates or at least reduces total system upgrades. Since some military systems are now expected to have 30- to 90-year service lives, this represents a significant potential life cycle cost reduction. However, Technology Refreshment should be designed into the system early in its life cycle because it will require an Open Systems Architecture



Department of the Navy New Attack Submarine Command, Control, Communications and Intelligence System Integrated Product Team receives the David Packard Award for Acquisition Excellence in May 1996. The award recognized their many “management and technological innovations, including use of a single design agent, COTS electronics, and a Technology Refreshment process to provide upgrades for the future.”

design, or commercial standards-based architecture, to maximize COTS/NDI “plug and play” refreshments.

Technology Refreshments *within* the system’s initial performance window that do not require developmental testing and occur after initial system fielding, would be funded with Service operations and maintenance (O&M) funds. Refreshments that occur *prior* to initial deployment, which exceed the “performance envelope” defined by the Operational Requirements Document, require developmental testing, or are done as part of a block upgrade, service life extension, or major modification would not use O&M funds. Depending on Service Financial Management regulations, these refreshments would use procurement and/or Research, Development, Test and Evaluation funds.⁹

Issues

Technology Refreshment equates to the life cycle support plan for the COTS/NDI system. The most effective Technology Refreshment strategy would address all 10 logistics support elements, with particular focus on technical data, maintenance planning, and supply support – areas that have been problematic for COTS/NDI systems.¹⁰ This strategy

should result from early systems engineering trade studies and market research that determine the most cost-effective support strategies for the accelerated COTS/NDI acquisition.

In addition, the Technology Refreshment strategy should be developed by a cross-functional Integrated Product Team (IPT) that includes at least the system developer, user, contractors, hardware and software support facilities, trainers, and test and evaluation communities. Finally, given the lack of common military acquisition understanding of Technology Refreshment, the strategy should clearly identify its scope, processes, roles, and responsibilities.

The chart on p. 26 outlines the Technology Refreshment strategy impacts on the 10 logistics support elements. The overall support strategies could range from pure COTS, COTS/organic, to pure organic based on the system-use factors of: 1) how the item will be used (“as is” to full militarized modification); 2) operational environment (fixed/industrial/non-hostile to mobile/austere/hostile); 3) projected service life; 4) deployment schedule (immediate deployment to future use); and 5) reason for COTS/NDI selection (from ad-

vanced technology with upgrades to readily available, proven design).

Any of these strategies will have to address **data rights**, which are normally limited in proprietary COTS/NDI systems, and limit the **technical data** the government will have for system development, production, spares provisioning, operator and maintainer training, and life cycle logistics support. Given the data limitation and the desire to reduce costs and access commercial technology/upgrades in the first place, DoD is moving toward a preference for contractor **maintenance** support of COTS/NDI.

The technical data and maintenance decisions, in turn, will have a direct impact on the **spares/repair parts** requirements and sources of **supply support**. In all likelihood, the government will not have the technical data to compete spares and replacement purchases, but open systems **design interfaces** with “plug and play,” “pull and replace” standard IT equipment, and timely Technology Refreshment limit this problem. For systems without these features, the government must proactively plan to mitigate the risk of discontinued COTS/NDI production and/or contractor support.

At least three options are available to mitigate such risk: 1) purchase commercial model upgrades as they evolve (this is the essence of Technology Refreshment); 2) a one-time or “life of type” spares purchase; or 3) “data rights escrow,” purchasing sufficient technical data to solicit follow-on supply support concurrent with the manufacturer’s end of production. The second two options must be planned and funded as early as possible because they are often quite expensive. For example, in Air Traffic Control systems, Air Force cost analysts have seen data rights packages for small, mobile systems that cost from \$1-3 million, and “life of type” buys of flat panel displays at \$25 million in a single year.

These decisions obviously impact **manpower and personnel**, reducing or eliminating maintenance personnel and po-

tentially creating new operator skill and **training** requirements. This is especially important for CAS, as the prerequisite software development skills required for any organic software maintenance and other **computer resources support** may not be available. Involvement of the Post Deployment Software Support facility in Technology Refreshment planning will ensure that the COTS/NDI impact on computer resources is addressed. A training advantage of COTS/NDI is that the vendor may have pre-existing training materials, computer-based and/or Web-based, that will easily support government training requirements. However, expected military system usage different from commercial usage would generate new training requirements. Finally, the COTS/NDI impact on **packaging, handling, storage, and transportation** (PHS&T) should be minimal, since commercial vendors must execute PHS&T in the conduct of normal business.

Program Application

The widespread use of COTS/NDI computer hardware and software in military IT and security systems, combined with diminishing sources of supply/support, rapid technological change, and the push for Open Systems Architecture, suggests that many DoD programs are applying some form of Technology Refreshment strategy. Two successful examples include the Joint Strike Fighter (JSF) and the new Virginia Class Attack Submarine.

Joint Strike Fighter

According to a May 2000 press release, the Lockheed Martin JSF team has achieved a “major breakthrough in technology management of aircraft avionics” by using Open Systems Architecture and Technology Refreshment to solve the constant problem of computer chip obsolescence, while positioning JSF to affordably exploit advances in technology.¹⁰ This life cycle approach is being applied to the whole air vehicle to offset the two-year computer chip obsolescence cycle that used to drive life-of-type buys or major programmed retrofits with expensive re-design/re-certification of the computer hardware and recoded software.

JSF’s life cycle technology management uses “true Open Systems Architecture” and “evolutionary Technology Refreshment” to achieve “software portability,” or independence from hardware, both within the avionics box and throughout the entire aircraft. Significantly, this approach “allows the boards or modules, incorporating new technology, to be changed out as preferred spares on an attrition basis, with no impact to form, fit, or function.” These boards can be procured from different vendors, eliminating large spares inventories with potential for performance growth, lower costs, and higher reliability.

The concept was successfully demonstrated in the laboratory with the flight control system. Due to safety of life, electronic flight control systems normally have triple or quadruple redundant channels of both hardware and software, with strict time synchronization requirements and identical chips in all channels. In the demonstration, Lockheed Martin used computer boards with different commercial technology produced by four different vendors, and showed no performance degradation with “mixing and matching” capability on the three channels. According to Lockheed Martin, the main accomplishment was “proving that a system can be designed using commercial standard interfaces – both internally and externally – to achieve computer board interchangeability and software portability.”

Virginia Class Attack Submarine

The Navy’s new Virginia Class Attack Submarine was awarded the Federation of Government Information Processing Council’s “Best of Open Systems Solutions Award” in early fiscal 1995 for the submarine’s command, control, communications and intelligence (C³I) Open Systems Architecture. This was followed by the submarine’s program team award of the David Packard Award for Acquisition Excellence in May 1996. This award recognized the team’s many “management and technological innovations, including use of a single design agent, COTS electronics, and a Technology Refreshment process to provide upgrades for the future.”¹¹

The Open Systems Architecture design allows easy interchange of commercial components with existing components, and the Technology Refreshment strategy will insert technology updates to keep the system hardware and software baseline current with the rapidly changing commercial processing capabilities.

Lessons Learned

Four primary “Lessons Learned” emerged from my research on the true definition of Technology Refreshment:

Technology Refreshment Strategy Essential

First, COTS/NDI software and computer hardware and rapid technological advancement in processing capability, require a prudent Technology Refreshment strategy to provide cost-effective support and upgrade system components ahead of the COTS obsolescence curve.

Open Systems Architecture

Second, the most cost-effective strategy requires “true” Open Systems Architecture design with standard commercial interfaces to take advantage of “plug and play” commercial components and “true” software portability.

Technology Refreshment Strategy Offers Significant Program Benefits

Third, a well-planned and -funded Technology Refreshment strategy offers significant program benefits: indefinite service life through regular upgrades vs. major end-of-life modifications or follow-on systems; performance, reliability, availability, and readiness growth through newer-generation technology; reduced spares inventory and maintenance costs through “pull and replace” and Contractor Logistics Support; reduced operational manpower and personnel costs; and diminishing manufacturing support (DMS) and production line shut-down risk mitigation.

Expect Challenges

Fourth, these benefits come with some challenges that need to be managed throughout the system life cycle with cross-functional IPT planning. These include: limited technical data, increasing DMS exposure; lack of control of scope

Technology Refreshment Impact on Logistics Support Elements

Support Element	Technology Refreshment	Comment
Design Interface		Open systems architecture (OSA) required for most cost-effective “plug and play” component spares/upgrades; non-form, fit, function upgrades require redesign and subsystem/system test/certification.
Maintenance Planning		Limited control over vendor modification scope or schedules; technology upgrades, refreshers, and insertions more expensive than traditional production with end-of-life modifications; more frequent retro fit/fieldings; increased Configuration Management for multiple versions; vendor maintenance or “pull and replace” vs. repair levels likely.
Technical Data		Limited or no data rights impact development and production baseline documentation, training, maintenance sources/levels, and supply support.
Supply Support		Limited technical data and technology refreshment drive vendor supply support; DoD unlikely to source COTS through the supply system; OSA allows commercial supply with minimum “on board” system spares.
Support Equipment		Limited data, vendor maintenance, “plug and play,” “pull and replace” minimize/eliminate support equipment.
Training and Support		Limited data, vendor maintenance, “plug and play,” “pull and replace” minimize/eliminate organic maintenance training; COTS manuals, computer-based and Web training minimize/eliminate operator training; military operations and organic software support may drive increased training.
Computer Resources Support		CAS may drive new software personnel support, skills mix, and training — especially with non-OSA legacy systems; new software development tools and training; Computer Resources IPT/Plan updates.
Manpower & Personnel		Reductions in operator/maintenance personnel likely to be greater than increased Program Management Office Technology Refreshment oversight; other support decisions may impact skill levels and mix.
Facilities		Potential change in storage space at operating locations, but reduction in maintenance and supply support should result in overall decrease in facilities requirements.
Packaging, Handling, Storage, and Transportation		COTS/NDI components not likely to require special packaging, handling, or storage by nature of existing commercial operations; frequent upgrades potentially increase transportation and storage costs.

and timing of commercial upgrades, some of which could drive costly hardware and/or software redesign, re-certification and test; increased configuration control management; and most importantly, funding. Until Technology Refreshment is widely accepted as a prudent system life cycle support strategy with positive return on investment, it

will be hard to justify out-year funds for potential cost-saving changes.

To Recap

In writing this article, I sought a more finite definition of Technology Refreshment, its scope, typical acquisition phases and funding, and its impact on DoD acquisition program management.

What I found, however, was a lack of Office of the Secretary of Defense, Federal Government, and industry consensus on Technology Refreshment and a scarcity of policy, regulations, or published academic work that would help bring consensus in terms of common understanding and implementation practices. Until this consensus exists, the purpose and scope of Technology Refreshment will continue to require careful definition in the acquisition/program support strategy for each DoD program.

The proposed definition of Technology Refreshment outlined in this article includes technology upgrades, refreshers, and insertion and represents the post-production support plan for COTS/NDI hardware and software components or systems. Open Systems Architecture design, coupled with COTS/NDI components and a proactive Technology Refreshment plan, offers DoD programs significant performance, cost, and schedule benefits with manageable risks. The key is up-front and early planning to fully leverage acquisition reform tools and commercial technology.

Editor's Note: The author welcomes questions or comments on this article. Contact her at Linda.Haines@hanscom.af.mil.

ENDNOTES

1. An Internet search of "Technology Refreshment" on www.google.com produced over 20 pages of references, including the examples cited in this article.
2. Kennedy, Robert, "Technology Refreshment: A Management/Acquisition Perspective," available on the World Wide Web at http://www.erols.com/scea/Conference00-pdfs/Technology_Refreshment-Kennedy.pdf.
3. *Acquisition Logistics Guide*, Defense Systems Management College, December 1997, pp. 1-19.
4. Alford, L.D., "The Problem with Aviation COTS," *Acquisition Review Quarterly*, Summer 1999, pp. 297-303.
5. The Clinger-Cohen Information Technology Management Act and acquisition policy/regulations differentiate between Information Technology (IT), which is normally for non-national security systems and hardware and software components for National Security Systems (NSS). For example, FAR part 39, Information Technology, which implements

the Clinger-Cohen procurement regulation, specifically applies to non-NSS purchases. However, IT is a commonly understood term that conveys the computers, software, and peripherals that are subject to Technology Refreshment.

6. Alford, L.D., "The Problem with Aviation COTS," *Acquisition Review Quarterly*, Summer 1999, p. 297.
7. Kennedy, Robert, "Technology Refreshment: A Management/Acquisition Perspective," available on the World Wide Web at http://www.erols.com/scea/Conference00-pdfs/Technology_Refreshment-Kennedy.pdf.
8. For a definition of Continuous Technology Refreshment (CTR), go to <http://www.monmouth.army.mil/cecom/lrc/specstd/ve/def.html#> on the World Wide Web.
9. *Acquisition Logistics Guide*, Defense Systems Management College, December 1997, Chapter 21.
10. Information on the Joint Strike Fighter Technology Refreshment strategy is available at <http://www.lmaeronautics.com>
11. Kaminski, Paul G., "Affordability in the Submarine Force," available at <http://www.defenselink.mil/speeches>.

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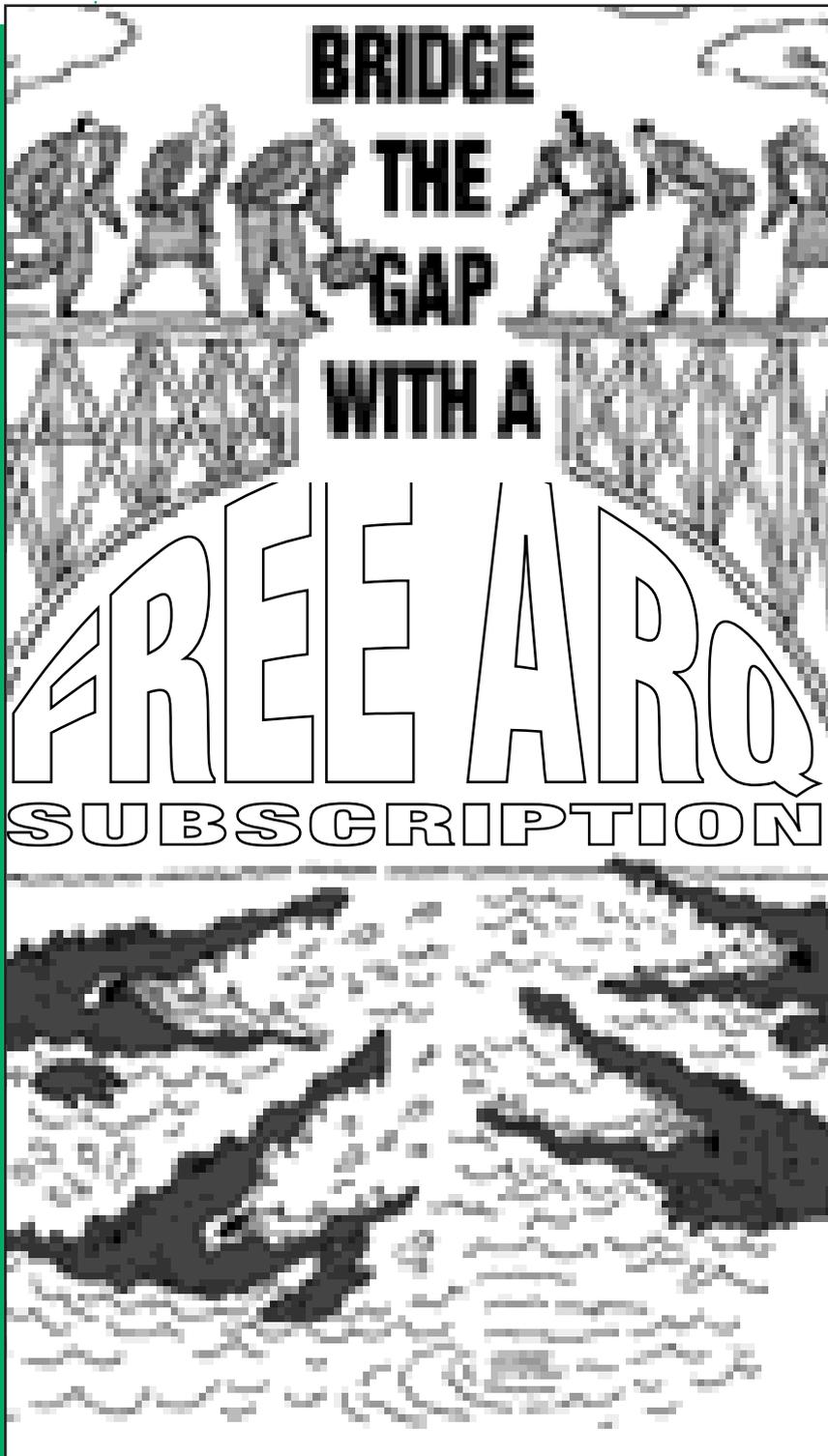
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Army Test and Evaluation Command Sponsors Workshop to Exchange Ideas on Testing in Natural Environments

MIKE CAST

How do the grit and dust, extreme heat and intense sunlight of a desert climate affect each part of a weapon system that contains new plastics, metals, or other materials? Will missiles or artillery shells still unfailingly fire and hit their targets if they have been stored for a long time in an extremely cold, hot, or humid place?

About 130 Army testers, evaluators, acquisition program managers, and others concerned with how the Army tests and acquires new weapons and equipment met near Baltimore/Washington International Airport in November to grapple with these and similar questions. The Army Test and Evaluation Command (ATEC) and its subordinate Developmental Test Command (DTC) jointly sponsored the Natural Environment Testing Workshop Nov. 29-30, 2000.

Finding the Right Mix

In keynote remarks, Army Lt. Gen. Paul Kern, Military Deputy to the Assistant Secretary of the Army for Acquisition, Logistics, and Technology, emphasized the importance of "finding the right mix" of modeling, simulation, and natural environment testing to provide soldiers with weapon systems and equipment they can use in all climates and conditions.

Cast is a public affairs specialist with the U.S. Army Developmental Test Command Public Affairs Office, Aberdeen Proving Ground, Md.



Consistently sub-zero temperatures at the Cold Regions Test Center in Fort Greely, Alaska, allow for extreme-weather testing of Army weapon systems.

"We rely very much on the test community to ensure we have the right test tools and measure the right things," Kern said. "No matter how good we get in simulation, we're going to have to come back to testing to verify those simulations."

Noting that acquisition of the interim armored vehicle (IAV) is the Army's first major equipment procurement since the 1980s, he said extremely tight timelines for acquiring the IAV and future systems

will pose real challenges for testers and evaluators as well as program managers.

"As we really take a look at what we're doing for the Army in the next 10 years for the Objective Force, is it adequate to do the job?" he asked the audience. "Sensors are going to be at almost every point of the spectrum you can dream of. We will have systems of systems involving networks of sensors, logistics systems, and command and control systems ... and as we move into the world of digits,



The Javelin shoulder-fired missile is one of numerous Army weapon systems tested under extremely cold conditions at the Cold Regions Test Center.

Test programs must help the Army procure weapons and equipment that will not fail soldiers under any conditions.

Chambers Aren't the Real Thing

Although modeling and simulation and tests in special chambers can to some degree provide data that help evaluators assess equipment reliability and performance, the “synergistic” complexities of the natural environment under extreme conditions reveal problems not seen in labs and chambers, Kern said.

Other speakers who briefed conference attendees also stressed the point that testing military systems in natural environments is both critical and complex.

Dr. James Streilein, director of the U.S. Army Evaluation Center (AEC), an ATEC subordinate command head-

quartered at Aberdeen Proving Ground, Md., said tight budgets and acquisition schedules cause program managers to opt out of some tests they might otherwise schedule. But manufacturers’ performance specifications often fail to meet the rigorous requirements designed to ensure equipment is suitable for military use in all possible weather conditions, he added.

“We don’t evaluate equipment so that it works at Aberdeen Proving Ground, but to ensure it works across the full spectrum of missions and environments,” Streilein said. “We frequently find that specs and standards from industry don’t have some essential considerations. Almost everything seems to leak when we put it in severe, blowing rain. We seem to keep learning the lesson that some of these extreme environments will damage the electronics.”

Streilein said the Army needs modeling and simulation, testing in special chambers, and testing in the natural envi-



A Javelin missile is fired at an armored target in the dead of winter at the Army's Cold Regions Test Center.

ronment, and that finding the right mix of all three is a challenge. He noted that not as much testing now takes place at the Army's Cold Regions Test Center (CRTC) in Alaska as in the past, largely due to time and budget constraints. But testing in a naturally harsh environment such as Alaska has often revealed otherwise undiscovered problems with equipment and operator procedures, he added.

From Bitter Cold

The CRTC's Robert Torp said the Army must understand "human factors" as well as material performance when operators and equipment are subjected to extremely cold weather. Climate extremes can very seriously affect how well soldiers perform or operate equipment, he said, adding that many operating manuals provided with Army systems do not adequately address operational problems in extreme sub-zero temperatures.

Established because thousands of U.S. servicemembers suffered cold-weather injuries during World War II, the CRTC has a group of experts trained to test and analyze equipment and procedures under frigid conditions, and prepared to recommend fixes to problems, Torp said. Though CRTC is a developmental testing facility, it emphasizes support for operational tests, he said.

The test center is located at Fort Greely in what Torp described as a "cold triangle" of dense arctic air that settles over that region of Alaska in the winter, lowering temperatures to as much as -70 degrees Fahrenheit and providing longer periods of consistently frigid temperatures than locations in the lower 48 states. The CRTC not only has a 670,000-acre range available for tests, he added, but also can conduct tests in other locations such as Valdez or Prudhoe Bay.

Visibility at Fort Greely is "excellent" and ideal for firing long-range weapons, he said, noting that clearances from the Federal Aviation Administration and use of nearby Army and Air Force lands enable CRTC users to fire shots as long as 100 miles.

... to Burning Heat

Lt. Col. Michelle Stoleson, commander of the Materiel Test Center at Yuma Proving Ground in southwestern Arizona, described testing at the high end of the natural temperature spectrum. The proving ground's 800,000 acres of test ranges, diverse test facilities, and rugged desert terrain are in a region as rugged and harsh as Southwest Asia. Yuma had a crucial role in testing weapons and equipment used in Desert Storm, Stoleson said.

Yuma Proving Ground not only has ranges for testing artillery, munitions, and aviation systems, Stoleson said, but also has a variety of mobility, durability, and cross-country vehicle test courses. These courses provide driving conditions that include extreme heat, rough road surfaces, and blowing dust. Stoleson said vibration and dust tests at Yuma revealed a few vehicle performance problems that required "quick fixes" before the onset of Operation Desert Storm.

The proving ground also offers good training opportunities for Army units, she added. The 1st Battalion, 17th Field Artillery Brigade from Fort Sill, Okla., trained at Yuma this past spring, gaining proficiency on the Paladin artillery system by firing the Sense-and-Destroy Armor projectile while conducting an operational test of this weapon, according to the battalion commander, Army Maj. John Gillette.

... to Sweltering Humidity

About three-fourths of all regional conflicts have taken place in tropical regions, so the military has a critical need to test systems in tropical environments, said Yuma Proving Ground's Lance Vander Zyl. The Army began conducting tropic testing at Schofield Barracks in Hawaii after the United States transferred control of its military installations in Panama to the host nation, Vander Zyl said, adding that the Army is striving to improve its test capabilities in Hawaii, negotiate with Puerto Rican officials to conduct testing there, and find other suitable test locations. Though Hawaii is humid enough to make it suitable for some types of tropic testing, it does not have

Panama's combination of high temperatures and humidity, and the proximity of populated areas makes it unsuitable for some types of weapons testing, Vander Zyl explained.

He emphasized that it is extremely important to test in a tropical environment because the combined effects of heat, humidity, and microscopic biological organisms degrade many types of materials and create an environment that is hostile to soldiers and equipment. Tropical insects, rodents, and birds can also cause damage to equipment, he added, and the thick, damp canopy of trees and plants in the tropics can interfere with communications signals. Vapors from tropical vegetation have affected chemical sensors on some military systems, he said.

Life Cycle Environmental Profiles

The second day of the workshop centered on the efforts of diverse work groups to develop "life cycle environmental profiles" for weapon systems. Group leaders highlighted their groups' efforts to identify potential environmental impacts to these systems, the types of testing needed to discover and fix problems, and the challenges that commonly confront decision-makers involved in military acquisition.

A few common themes emerged from workshop leaders' presentations: Army test and evaluation organizations generally lack the staff or resources to fully participate in the work groups and integrated process teams that plan and oversee acquisition programs. Their participation in these groups early in the acquisition process would help the Army improve that process. Testers and evaluators need to define test programs as soon as possible. Optimally, they should get involved early in the development of user requirements and identify the testing needed to meet those requirements.

Responding to workshop issues in his closing remarks, DTC commander Army Brig. Gen. Dean Ertwine said ATEC and its subordinate commands are committed to forming closer working relationships with program managers and ac-

quisition decision makers, and to finding various means to meet military test and evaluation challenges in the face of resource and time constraints.

ATEC is placing increasing emphasis on its Virtual Proving Ground and other technical innovations to streamline testing and make it cost effective, Ertwine said, adding that about half the command's current technology investments are now going into modeling and simulation initiatives. His bottom line, however, is that test programs must help the Army procure weapons and equipment that will not fail soldiers under any conditions.

"When the balloon goes up and soldiers are sent to some Godforsaken place, we've got to be able to look their parents in the eyes and say we've done all we could to make sure their equipment works," he said.

Editor's Note: The author welcomes questions or comments on this article. Contact him at castm@dtc.army.mil.

IMPORTANT NOTICE!

The 2001 Acquisition Research Symposium (ARS), originally scheduled for June 18-20, 2001, in Rockville, Md., has been postponed so that major policy changes in the new administration can be addressed. We will be updating the DAU Home Page (www.dau.mil) as information becomes available.

KEEP UP WITH CURRENT AT&L POLICY

Numerous policy guidance memoranda have been signed since the beginning of the new year! Read the latest at http://www.acq.osd.mil/ar/*whatsnew.htm.

Acquisition of Services

Acting Under Secretary of Defense (Acquisition, Technology and Logistics) Dave Oliver establishes an Integrated Product Team to focus on the area of Performance-Based Services Acquisition (PBSA), Jan. 5, 2001.

Commercial Acquisitions

Former Under Secretary of Defense (Acquisition, Technology and Logistics) Jacques Gansler provides guidance on overcoming barriers in accessing commercial items, Jan. 5, 2001.

Reform of Intellectual Property Rights of Contractors

Acting Under Secretary of Defense (Acquisition, Technology and Logistics) Dave Oliver highlights immediate policy areas for the treatment of intellectual property, Jan. 5, 2001.

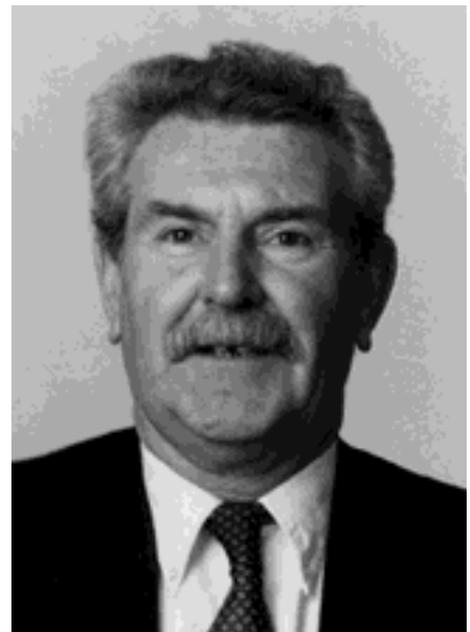
Incentive Strategies for Defense Acquisitions

Former Under Secretary of Defense (Acquisition, Technology and Logistics) Jacques Gansler provides guidance regarding the use of incentives in defense acquisitions, Jan. 5, 2001.

JOHN P. "JACK" MCGOVERN

The Defense Acquisition University has received word of the death of John P. "Jack" McGovern of an apparent heart attack, on Thursday, March 8, 2001. Jack was a Professor of Manufacturing Management in the Faculty Division at the Defense Systems Management College (DSMC), and had recently retired from federal service on Dec. 31, 2000.

A resident of Fairfax Station, Va., Jack joined the DSMC faculty in April 1988. He came to the College from the Federal Systems Division, IBM Corporation, Manassas, Va., where he was an Advanced Signal Processor Program Manager. He is survived by his wife, Geneva, and four children: Kathleen McGovern, Gina McGovern, Michael McGovern, and Joseph McGovern. In addition, Jack is survived by two grandsons.



Broadening Continuous Learning Opportunities for the Defense Acquisition Workforce

DAU Reaches Out to Strategic Partnerships, Alliances

PAUL T. MCMAHON

Globalization is rapidly changing the social, political, economic, and cultural paradigms in the Defense acquisition system. This swift change brings with it an acute need for quick and effective strategies to competently meet the challenges facing the knowledge-based business of corporate universities such as the Defense Acquisition University (DAU).

Here at DAU, and indeed throughout the entire Defense acquisition education and training community, *adaptability*, *speed*, and *customer focus* are qualities shared and greatly valued by those of us who are responsible for the education and training of the Defense acquisition workforce. However, no one agency or institution alone can achieve all three without cultivating strategic alliances and partnerships with other government agencies, allied nations, educational institutions, the private sector, and professional associations. Toward that end, DAU is actively fostering and entering into mutually beneficial arrangements to facilitate interaction among *all* DoD and industry providers of acquisition education.

This article explains why strategic alliances and partnerships are beneficial, gives examples of those institutes and agencies with which DAU has partnerships, and emphasizes the future direction of DAU alliances and partnerships.



Signing of DAU, FTI Letter of Intent, Feb. 16, 2001. Seated from left: Spiros G. Pallas, Principal Deputy to the Director, Strategic and Tactical Systems, OUSD(AT&L); Frank Anderson Jr., DAU President; and Lavon Jordan, CEO Frontier Technology, Inc. Standing from left: Scoop Cooper, Retired Air Force Col.; Paul McMahon, Director of Strategic Partnerships, DAU; and Ron Schroder, Vice President, Frontier Technology, Inc.

Fostering and Sustaining Long-Term Professional Growth

The Defense Acquisition University was chartered in 1991, assigning the Under Secretary of Defense (Acquisition) statutory authority for DAU. In 1993, the Under Secretary transferred oversight of DAU to the Deputy Under Secretary of Defense (Acquisition Reform), or DUSD(AR). As Stan Soloway, former in-

cumbent of that office, stated: "Strategic alliances to support the mission of DAU are essential to provide the acquisition community with the right learning products and services to make smart business decisions."

Responding to strong motivation and support from Dave Oliver, Acting Under Secretary of Defense (Acquisition, Technology and Logistics), and Donna Richbourg, Acting DUSD(AR), DAU President Frank Anderson accepted and acted

McMahon is the Director of Strategic Partnerships, Defense Acquisition University, Fort Belvoir, Va.



Paul McMahon is the Director of Strategic Partnerships at the Defense Acquisition University.

GWU, ESI, and DAU offer DAU course graduates credit toward a Joint Master's Certificate in four functional areas: Project Management, Information Technology, Government Contracting, and Commercial Contracting.

develop better business practices, and provide a full range of developmental skills, knowledge, and abilities to sustain long-term professional growth.

More Than Mere Certification Training

The Revolution in Business Affairs has driven DAU's approximately 140,000 customers to demand more than mere quality certification training. In fiscal 2000, DAU trained 40,723 civilians and military from DoD's acquisition workforce — more than any previous year. Still, demand continues to grow due to rapid policy and legislative changes in acquisition practices, processes, and procedures. Such rapid changes, coupled with customer demand, highlight the need for DAU to respond quickly by generating robust continuous learning opportunities to support core training, and providing job performance tools and resources between courses. A key enabler to this expansion of the learning envelope is the pursuit, creation, and leveraging of strategic partnerships with other colleges, universities, and commercial learning institutions.



Signing of GWU, ESI, DAU Letter of Intent, Sept. 5, 2000. Seated from left: J. LeRoy Ward, Senior Vice President of Client Programs, ESI, Intl.; Chris Stelloh Garner, Functional Advisor, Program Management Career Field; Anderson; former DUSD(AR) Stan Soloway; and Deidre "Dee" Lee, Director of Defense Procurement. Standing from left: McMahon; Charles W. Clark, Vice President Contracts Programs, ESI, Intl.; Kimberly A. Elibuyuk, Business Development Manager — Government Markets, ESI, Intl.; and Karen Barley, Vice President, Corporate University Enterprise, Inc.

on Soloway's challenge by committing DAU to provide robust continuous learning opportunities for the acquisition workforce while they adapt to DoD's new

ways of doing business. Such opportunities, Anderson envisions, will motivate acquisition professionals to stay current in a rapidly evolving work environment,

GWU, ESI, DAU Partnership Expanding Continuous Learning

ESI Intl., an international training and consulting firm, was founded in 1981 and has enjoyed a longstanding affiliation with The George Washington University School of Business and Public Management (GWU). Over 6,000 professionals have earned their Master's Certificate in Project Management since 1991 when ESI Intl., initiated the *Project Management Professional Development Program* as a corporate training program.

ESI now offers Defense acquisition workforce personnel with the opportunity to credit their DAU training certificates toward a Joint Master's Certificate in one of four areas: Project Management, Information Technology, Government Contracting, and Commercial Contracting.

Project Management

The DAU/ESI Joint Master's Certificate in *Project Management*, designed for members from all acquisition career fields, presents streamlined, systematic

approaches to complex tasks associated with project management. The curricula address the Project Management Institute's entire Project Management "Body of Knowledge" – considered by many experts as a foundation for modern project management.

Information Technology

The DAU/ESI Joint Master's Certificate in *Information Technology* is a cohesive program of study that focuses on the unique aspects of managing information technology projects from a practitioner's perspective. The program explores the concepts that underlie information technology and provides practical guidance to achieve project success in a risk-driven arena.

Government Contracting

The Joint Master's Certificate in *Government Contracting* was designed to meet the growing need for professional development training in the government's contracting community.

Commercial Contracting

The Joint Master's Certificate in *Commercial Contracting* covers a wide range of issues and skills needed for effective contract management, including such topic areas as proposal preparation, financial management, accounting, performance measurement, and electronic commerce.

Level III Courses for DAU Certification in the Program Management Career Field

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- Any Three Courses from ESI's PM Catalog

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- Commercial Contract Management
- Financial Management of Commercial Contracts
- Negotiation of Commercial Contracts
- Administration of Commercial Contracts
- Winning New Business

Each of these Master's Certificates is jointly issued by GWU, ESI, and DAU. Graduates from DAU courses will be offered credits for their completion and prescribed a schedule of ESI courses to be taken for the Certificate. The number and specific courses to be taken will vary depending upon the Career Field Training Certification levels cited in the DAU Catalog and the Joint Master's Certificate being pursued. The Value Added for a DAU graduate and the increased Return on Investment by DoD in previous DAU courses can be significant, depending upon the numbers of students that participate in the program and at which certification levels they apply.

For example, the chart below depicts the courses to be taken for each of the Joint Master's Certificates given a Level III Certification in the Program Management Career Field. An applicant with Level III Certification in the Program Management Career Field, can earn a Joint Master's Certificate in Project Management by taking only three courses (*any three*) from ESI's Program Management catalog.

Given that each five-day course costs about \$1,497.50, and four of the seven courses normally required for the Certificate have been credited under the partnership program, the market value of-

Master's Certificate in IT Project Management (Choose five)

- Either Software PM/Managing IT Projects
- Software Risk Management
- Managing Software Quality
- Software Testing
- Telecommunications Principles
- Systems Integration
- Scheduling and Cost Control
- Leadership

Master's Certificate in Government Contracting (Take all four)

- Contract Pricing
- Negotiation Strategies and Techniques
- Operating Practices in Contract Administration
- Any Course from ESI's CM Catalog

*Value Added \$3,580 per student

ferred the DAU course graduates is \$5,990 per Level III-certified student under this scenario. The same student would be offered the market value of two courses, or \$2,995 if pursuing a Joint Master's Certificate in Commercial Contracting (More of the benefits to partnership charters with corporate universities will be addressed at the end of this article.)

For more information on The Joint Master's Certificate Program, call ESI at (888) 374-4682 or visit the company's Web site at www.esi-intl.com. For more information on DAU's courses and this program, visit the DAU Web site at www.dau.mil.

A Partnership That Benefits Certification Training

Frontier Technology, Inc. (FTI) is another company with which DAU has negotiated a strategic partnership. FTI is engaged in delivering applied information technology software products and services focused on systems acquisition, decision support planning, analysis, simulation, training, and engineering services for the Federal Government as well as commercial customers. Under this relationship, FTI will teach an elective on cost estimating for DAU's premier course offering, the *Advanced Program Management Course* (APMC) at the DAU Fort Belvoir campus. The course is based on a flexible system of cost analysis software tools from FTI called ICE™ (Integrated Cost Estimation), enabling users to estimate Return on Investment or ROI.

This new elective course introduces automated tools to replace the more time-consuming process of estimating costs by hand as explained by Lavon Jordan, CEO for FTI. Jordan expressed that most of the credit for this training program belongs to DAU President Frank Anderson, for his vision in recognizing the need to reduce operating costs and reliably assess system life cycle costs and affordability before committing funds.

The Santa Barbara-based Company has regional offices in Boston, Mass.; Dayton, Ohio; and Washington, D.C. For

more information on FTI, visit www.fti-net.com.

Future Benefits from Strategic Partnerships

Strategic alliances and partnerships will leverage the DAU tradition of innovative and pioneering work such as e-learning. Since DAU continues to pursue the expansion of continuous learning opportunities that target Acquisition Reform training topics such as those listed in Dave Oliver's recent memorandum, expect to see the number of course offerings grow at a rapid pace.

Offerings such as the Performance Based Services Contracting Incentives Course and the DoD 5000 Series Update can be found on the DUSD(AR) and DAU Web sites. The DoD Knowledge Management System will provide even more opportunities through various portals such as the Project Management Community of Practice currently under development. Learning modules will also be made available from certification courses such as the PMT 250 "Tools Course," wherein Risk Management modules are currently under development.

Also expect to see a growing abundance of benefits from strategic alliances such as the ones described with ESI-GWU

and FTI. Because DAU is a government agency, it offers these opportunities at large and must adhere to provisions in the charters that expressly prohibit offering these opportunities exclusively to any of DAU's partners.

Calling All Potential Partners

The primary reason that DAU creates partnerships and alliances with other academic institutions, corporate universities, and industry is the synergy and leverage of capabilities that, with little or no capital investment, greatly increase the value of past and existing DAU courses (greater ROI). However, other reasons for such partnerships and alliances are worth noting:

- Motivate the acquisition workforce toward pursuit of more continuous learning activities.
- Increase the skills, knowledge, and abilities of the acquisition workforce.
- Stimulate recognition of achievements by acquisition workforce members via commercial and academic certifications and degrees.
- Leverage creation of continuous learning opportunities by other institutions.
- Enable more opportunities for members of the acquisition workforce to earn Continuous Education Units (CEU) – now required by acquisition policy.

For all of these reasons, DAU has established dialogue with other institutions such as the Northern Virginia Community College, the Florida Institute of Technology, George Mason University, Johns Hopkins University, the University of Maryland University College, Cardean University, and others. DAU remains open to discussions and inquiries from other corporate universities and anticipates that not only will continuous learning opportunities for the acquisition workforce expand greatly, but Certification Training will also be enhanced significantly through strategic partnerships.

This is the first of a series of articles that will address the progress of the DAU Strategic Partnerships Program. If your organization fits the profile to participate in a strategic partnership with DAU, contact:

PAUL MCMAHON
DIRECTOR OF STRATEGIC PARTNERSHIPS
DEFENSE ACQUISITION UNIVERSITY
9820 BELVOIR ROAD STE 3
FORT BELVOIR VA 22060-5565

Editor's Note: McMahon welcomes questions or comments on this article. Contact him at paul.mcmahon@dau.mil.

OLIVER RELEASES NEW GUIDE TO PERFORMANCE BASED PAYMENTS

Acting Under Secretary of Defense (Acquisition, Technology and Logistics) Dave Oliver signed and released for online publication *The Guide to Performance Based Payments*, effective Jan. 22. Performance Based Payments (PBP) is a new financing tool that strengthens the government-industry relationship and furthers DoD's commitment to revolutionize its business affairs.

For the first time on fixed priced contracts, a program manager can make financing payments to the industry partner based on actual work accomplished instead of using traditional progress payments for that purpose. The joint government-industry team develops the events that will be validated through

out the period of performance so each will have a thorough knowledge of both program and financing requirements. This works to the benefit of the entire team.

"I strongly encourage program managers, contracting officers, and industry to use this guide," said Oliver, "to help change the existing paradigm and to use PBP as their preferred fixed price contract financing method."

The new guide is available at <http://www.acq.osd.mil/ar/whatsnew.htm> on the Office of the Deputy Under Secretary of Defense (Acquisition Reform) Web site.



Largest Small Business Award Goes To Three Vendors

In a ceremony at the Defense Information Systems Agency (DISA) today, representatives of the Department of Defense (DoD) and a consortium of three businesses officially signed the largest combined small business set-aside acquisition in the history of the Federal Government.

The maximum cumulative face value for all three contracts for satellite transmission services, awarded last evening, is anticipated to be \$2.196 billion over the life of the contracts, if all options are exercised.

Artel Inc., of Reston, Va., a small disadvantaged business; Spacelink International LLC of Dulles, Va., a small business; and Arrowhead Space and Telecommunications Inc., of Falls Church, Va., a woman-owned small disadvantaged business, are being awarded indefinite delivery/indefinite quantity contracts for the Defense Information System Network (DISN) Satellite Transmission Services-Global.

Each contract is for a base period of three years with seven one-year options. No funds are being immediately obligated. "This piece of satellite communi-

cations will help complete a very critical segment of the Global Information Grid by completing and enhancing existing DISN satellite, wireless, teleport, and terrestrial network capabilities," said Air Force Lt. Gen. Harry D. Raduege Jr, director of the DISA. "Most importantly, this will help us get much needed, wider, and faster information pipelines to the warfighters deployed in support of contingency and humanitarian operations."

The services being acquired include the full range of currently available transponder and emerging processed commercial satellite communications services, earth terminals, and system management. This acquisition provides a contractual vehicle for the DoD, federal agencies, and other users authorized by DoD, to obtain global fixed satellite service bandwidth, related business, and enterprise-based services and applications.

Editor's Note: This information is in the public domain at <http://www.defenselink.mil/news>. For additional details contact the DISA at (703) 607-6900.

Thirteenth Annual International Acquisition/Procurement Seminar — Atlantic (IAPS-A)



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The Thirteenth Annual Acquisition/Procurement Seminar — Atlantic (IAPS-A) will focus on international acquisition practices, cooperative programs, and information technology. The seminar is sponsored by the International Defense Educational Arrangement (IDEA), which consists of the defense acquisition educational institutions in Germany, France, the United States, and the United Kingdom.

Those eligible to attend are Ministries, Departments of Defense, and supporting Defense Industries from the four IDEA nations who are actively engaged in international defense acquisition programs.

This year's seminar will be held June 25, 2001, at the BAKWVT facility in Mannheim, Germany. The theme for this year's seminar will be Information Technology. The last day of the seminar, June 29, will be dedicated to the educational aspects of international acquisition.

The IAPS-A is by invitation only. Those desiring an invitation who have not attended past international seminars should submit a letter of request, on government or business letterhead, to DSMC by fax.

Invitations, confirmations, and joining instructions will be issued after May 1, 2001.

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Contact an IAPS-A Team member for additional seminar information:

- Prof. Don Hood, Director, International Acquisition Courses
- Sharon Boyd, Projects Specialist

E-mail: don.hood@dau.mil
sharon.boyd@dau.mil

DSN: 655-5196/4593

Fax: (703) 805-3175

DSN: 655-3175

The October issue of *PM* was excellent, and I enjoyed the various articles. One in particular I believe deserves a critique. I have been a strategic planner for a number of years. As a distinguished graduate of the Harvard Business School (HBS), I was exposed to this management philosophy (theory) and then practiced it as the Vice President of Strategic Planning at the McDonnell Douglas Corporation in St Louis, Mo. Some of my critics alleged this is the reason that the corporation was merged with Boeing Corporation. Not so. The real reason was the failure to properly implement the strategy that was developed.

The HBS authors (Kaplan and Norton) have created the management tool described by Professor Mary-jo Hall as the Balanced Scorecard (BSC). While the BSC may be a worthy endeavor, the requirement for implementation planning after development of the corporate, business unit, or program strategy was a critical component in the heyday of strategic planning in the 1980s. It was, however, a tougher problem in many cases than strategy development, and thus resulted in many companies putting their strategy on the shelf and, as noted by Professor Hall, returning to near-term financial results. The basic reasons for strategic plan failure were inadequate front-end profiling of the business, failure to implement the plan, and failure to revisit the plan annually and make appropriate revisions and business commitment.

Let me hasten to say that certainly the BSC system is one way of approaching strategic plan implementation and measurement, although as presented by the article it appears to require an extensive amount of training after strategy development just to understand the vocabulary used; its six-step effort is overly complex and more of a crutch than a "bridge."

Thus, here is an alternative approach to the BSC. Let me start with a couple of definitions.

- First, *Strategy*, which is the art of applying resources so they make the most effective contribution toward achieving the ends set by the corporate goals and objectives.
- Second, *Strategic Planning*, which aims to fulfill the objectives laid down by corporate policy, making use of the best resources available. The art of strategic planning consists of choosing the best use of

resources available, and so orchestrating the results that they combine to maximize the return on assets, while frustrating competition.

- Lastly, the definition of *Strategic Thinking* is thinking strategically.

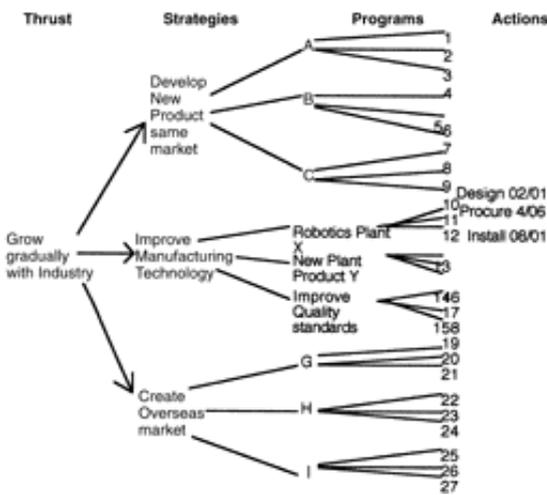
The first two definitions are paraphrases of definitions used by Andre Beaufre in his book, *Andre Beaufre, An Introduction to Strategy* (New York: Praeger 1965). These words can fit both industry and DoD and still fit the test of time, particularly since strategic management had its origins in 60 B.C. In *Caesar's Gaelic Wars*, with the opening statement, "Galia est omnis divisa in partes tres." the ancient book went on to describe strategic management in the military environment.

The issue I take with the BSC article is the idea that there needs to be a "bridge" between the strategy and employee actions. If the strategic planning process is done properly, it is seamless; and this link is built into the process, not separate from the process and requiring some kind of transition or connection. By this, I mean that a large amount of work must be done in developing the business profile of the business itself and its business units before even considering the development of strategy or strategies. This type of profile considers definitions of health, i.e., the health of the corporation, the health of the industry, competitive position, or financial arrays. This leads to a profile of the business in which the entity you are analyzing is engaged. In addition, you need a business culture profile, a business/business personal profile, and business/business unit executive assumptions profile; and lastly, a strength and weaknesses assessment of the business and its business units.

Depending on the size of the business, such a data gathering can take several months. Without this, it would not be possible to develop a strategic plan, but with it you have all the elements needed to develop the plan – and implement it – without the need for a "bridge." Strategy development and implementation is an interactive initiative involving all elements of the organization in its development and implementation, even though it may start at the top of the organization. Experience also indicates that the development of the type of business profiles just discussed could result in determining that the organi-

zation is not ready for a strategic plan because of too many “unknown/unknowns” (Dr. John Foster, former Director, Defense Research and Engineering). Yes, you can get from strategy to employee actions without a “bridge.”

Turning now to the necessary strategy implementation, the first step being communication throughout the organization. This is a multimedia project and must reach the lowest levels of the organization. The second step is the actual implementation plans. A very successful model that has stood the test of time is taken from The Conference Board Report No. 830, 1983. From the business vision, select a thrust; for example, “gain position gradually in the industry.” The appropriate strategies have been determined to be: develop a new product in the same market, improve manufacturing technology, and create an overseas market for the business’s product. Diagrammed, the implementation plan would look like this, and the actions can be carried to the lowest level of the desired action/measurement.



A second thrust might be Innovative Human Resource Management, with strategies such as communications, new hiring policies, or improved union interface. The necessary action plans are many and varied, but could be carried to the individual employee.

Couple this plan with a strategic model or simulation, plus automated reporting of both inputs and

outputs to the plan, and you have an integrated and interactive strategic plan, carried to the lowest desired level of the program project or business. In many cases, the implementation plan may require more assets (fiscal or otherwise) than the business can afford, and thus a revision of the implementation plan or the strategy is required.

The measurement system should draw upon, but be separate from, the financial reporting system. It should be sophisticated enough to measure business performance, but simple enough so that performance can be easily tracked, communicated, and compiled. Such systems are many, i.e., strategic business unit performance, management by results, management by objectives, quality performance, or customer satisfaction surveys. Any of these are reasonably automated, although personal interaction may be the best way to measure customer satisfaction or employee morale. Lastly, implementation plans, while they look out several years, also relate to operational year-to-year plans.

With the methods discussed in this letter, you have an interactive and integrated strategic plan, rather than one requiring a “bridge.” The failure of strategic planning in the past was primarily because it was not done right. Initial analysis was cursory, commitment was lacking, and implementation planning was either not done at all or was limited. Like systems engineering (recently resurrected), it got a bad name – not because it was a bad approach to management; it got a bad name because it was not done well. Now, rather than going back to correct the problems in strategic planning, we invent a new system with a new name and a new language to solve an old problem. To do the strategic plan well can take at least a year with a large corporation, and four to six months for a small business, nonprofit, or an integrated military program. Too often businesses try and separate the planning function from other elements of the organization. While no plan is sacred, strategic planning, done in an integrated manner, provides an excellent road map for a business’s future without the need for a “bridge” to the essential employee actions.

—Ret. Navy Rear Adm. Rowland G. Freeman
 Williamsburg, Va.
 E-mail: rowlandf@aol.com

The Acquisition Management Framework Chart

A Pictorial Road Map for Use by Integrated Product Teams Throughout the System Life Cycle

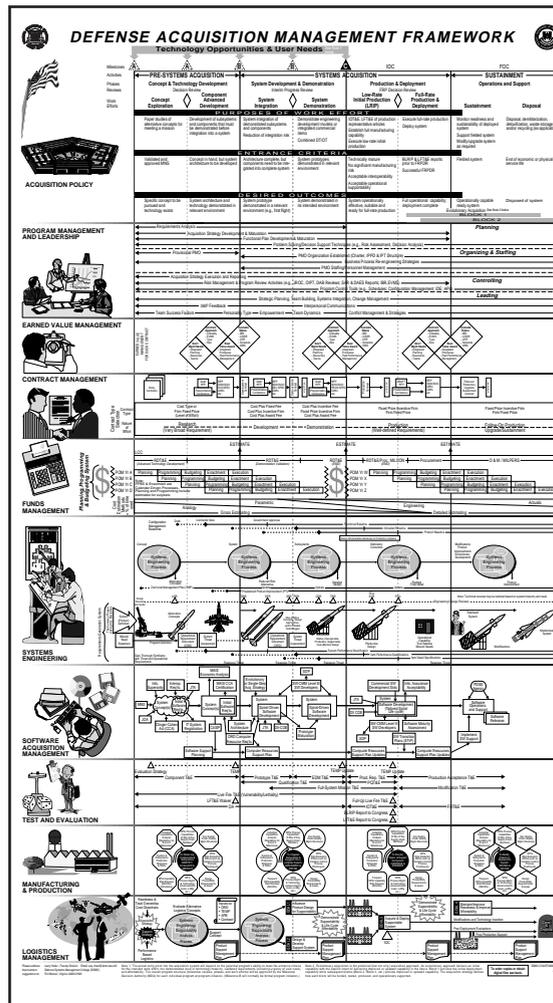
LARRY HELLER

The newly updated Defense Acquisition Management Framework Chart serves as a training aid and is designed to serve as a pictorial road map of functional activities throughout the Defense Systems Acquisition Life Cycle. The chart is based on the policies in the new Department of Defense (DoD) 5000-series documents coupled with “best practices.” Providing the basic information needed to help understand the Defense Acquisition Life Cycle Process, the chart is a pictorial representation of the entire life cycle – “cradle to grave” – of a nominal defense acquisition program.

The rows represent the process followed by each functional discipline. The columns represent the total effort underway at each point in a program.

A small black and white image of the “Defense Acquisition Management Framework Chart” appears here, followed by a larger version starting on the next page. A color version of the chart can also be downloaded and printed from the Defense Acquisition University (DAU) Press Web site in a PDF file. To download the file, go to: http://www.dau.mil/pubs/chart3000/ch_3000.htm.

Hard copies of the chart will be available in the April 2001 timeframe. Status of availability will be posted on the DAU



stationery to: (703) 805-3726; or by sending a written request to the following address:

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DSMC Process Action Team
Team Leader
 Larry Heller

Team Members

Dr. Paul Alfieri • Bill Bahnmaier • Gary Hagan • Air Force Maj. Mark McNabb • Robert Pratt • George Prosnik • Chip Summers • Air Force Lt. Col. Ed Verchot • Air Force Lt. Col. Melinda Walsh

Design & Layout
 Paula Croisetiere

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Military Personnel (MILPERS) funds the costs of salaries and compensation for active military and National Guard personnel as well as personnel-related expenses such as costs associated with permanent change of duty station (PCS), training in conjunction with PCS moves, subsistence, temporary lodging, houses, and retired pay accrual.

Operation and Maintenance (O&M) traditionally finances those things that derive benefits for a limited period of time, i.e., expenses, rather than investments. Examples of costs financed are Headquarters operations, civilian salaries and awards, travel, fuel, minor construction projects of \$500K or less, expenses of operational military forces, training and education, recruiting, depot maintenance, purchases from Defense Working

Capital Funds (e.g., spare parts), base operations support, and assets with a system unit-cost less than the current procurement threshold (\$100K).

Cost Estimating is a realistic appraisal of the level of cost most likely to be realized. The main estimation methods are analogy, parametric, engineering, and extrapolation from actual costs.

Life Cycle Cost (LCC) is the total cost to the government of acquisition and ownership of the system over its full life. It includes the cost of development, acquisition, support, and (where applicable) disposal. The USD (AT&L) has defined Defense System Total Ownership Cost (TOC) as Life Cycle Cost.

erly identified and that there is a mutual understanding between the government and contractor exists.

- 3. SRP - System Functional Review** - A formal review of the conceptual design of the system to establish its capability to satisfy requirements. It establishes the functional baseline.
 - 4. SSR - Software Specification Review** - A formal review of requirements and interface specifications for computer software configuration items.
 - 5. PDR - Preliminary Design Review** - A formal review which confirms that the preliminary design basically follows the SFR findings and meets the requirements. It normally results in approval to begin detailed design.
 - 6. CDR - Critical Design Review** - A formal review conducted to evaluate the completeness of the design and its interfaces.
 - 7. TRR - Test Readiness Review** - A formal review of the contractors' readiness to begin testing computer software configuration items.
 - 8. FCA - Functional Configuration Audit** - A formal review conducted to verify that all subsystems can perform all of their required design functions in accordance with their functional and allocated configuration baselines.
 - 9. SVR - System Verification Review** - A formal review conducted to verify that the actual item (which represents the production configuration) complies with the performance specification.
 - 10. PCA - Physical Configuration Audit** - A formal review that establishes the product baseline as reflected in an early production configuration item.
- E. System/Product Definition** - This is the natural result of the threat-orientation-driven Requirements Generation System and the common thread (or area of common interest) among all acquisition disciplines.

- 1. Mission Need Statement (MNS)** - A formal document, expressed in broad operational terms and prepared in accordance with Chairman of the Joint Chiefs of Staff Instruction (CJCS) 13170.01A, that documents deficiencies in current capabilities and opportunities to provide new capabilities.
- 2. Program Definition** - The process of translating broadly stated mission needs into a set of operational requirements from which specific performance specifications are derived.
- 3. Operational Requirements Document (ORD)** - A formatted statement, which is prepared by the user or user's representative, containing operational performance parameters for the proposed concept/system that defines the system capabilities needed to satisfy the mission need. It is prepared at each milestone, usually beginning with Milestone B.
- 4. System Threat Assessment & Projections** - Prepared by a collaboration among the intelligence, requirements generation, and acquisition management communities to support program initiation (usually Milestone B). It is maintained in a current and approved or validated status throughout the acquisition process.

- Selection of an Evolutionary or Single-Step overall System Acquisition Strategy.
- Spiral-driven software development activities including prototype maturation.
- Selection of competent software developers that have mature development processes, domain experience and relevant tool experience.
- Selection and mutual tailoring of appropriate software development standard(s).
- Risk-driven software metrics selection, based on service policies and the Practical Software Measurement (PSM) methodology.
- Generation of a Software Development Plan (SDP) and other plans by a developer.
- Continuation of planning for Post Deployment Software Support (PDSS) and development of initial computer resources plans by the acquisition office.

Production & Deployment: Key activities include continued refinement of software work products from the previous phase and also could include:

- Continuing assessments of the developer's maturity using techniques such as the Software Capability Evaluation (SCE) based on the SW-CMM or other methods.
- Employment of JTA-compliant software components from DoD repositories such as the Defense Information Infrastructure Common Operating Environment (DIH-COE).
- Risk-driven software metrics and refined from previous lifecycle phases, to be used to gain visibility into software development activities.
- Determination of an acceptable level of software product maturity prior to deployment.
- Developer generation of key management plans such as a Software Transition Plan (STP), that document technical requirements and resources needed for PDSS.
- Acquisition office updates of various internal computer resources plans.
- Development of Software Installation Plans (SIPs) if appropriate.
- Control and timing of block releases if required as part of evolutionary acquisition.
- Determination that the system has an acceptable level of information assurance

Operations and Support: Post Deployment Software Support (PDSS) activities, by far the largest cost component of the software lifecycle, are initiated for the Sustainment portion of this phase following the chosen software support concept documented in computer resource plans and developer plans such as the STP.

bined approach shall not compromise either DT or OT objectives. A final independent phase of IOT&E shall still be required for Acquisition Category (ACAT) I and II programs for Beyond Low Rate Initial Production (BLRIP) decisions.

Developmental Test and Evaluation (DT&E): A technical test conducted to provide data on the achievability of critical system performance parameters. This testing is performed on components, subsystems, and system-level configurations of hardware and software.

Evaluation Strategy: a description of how the capabilities in the Mission Need Statement (MNS) will be evaluated once the system is developed. The Evaluation Strategy shall be approved by the DOT&E and the cognizant Overarching Integrated Product Team (OIPT) team leader 180 days after Milestone A approval. The Evaluation Strategy will evolve into the Test and Evaluation Master Plan (TEMP) which is first due at Milestone B.

Follow-On OT&E (FO&E): OT&E needed during and after the production phase to refine estimates from the IOT&E, to evaluate system changes, and to reevaluate the system as it continues to mature in the field. FO&E may evaluate system performance against new threats or in new environments.

Full-Up Live Fire T&E (LFT&E): A system-level live fire test of an ACAT I or II covered system, that is required before going BLRIP.

Initial Operational T&E (IOT&E): All OT&E that is conducted on production or production representative articles to support the decision to proceed BLRIP. It is conducted to provide a valid estimate of expected system operational effectiveness and suitability for ACAT I and II systems.

Lethality T&E: Testing the ability of a munitions to cause damage that will cause the loss or a degradation in the ability of a target system to complete its designated missions.

Live Fire Test and Evaluation (LFT&E) Report: Completed by the DOT&E for ACAT I and II systems that have been subjected to a full-up live fire test prior to Full Rate Production (FRP) Decision Review. Usually included in the DOT&E report of the IOT&E (BLRIP report) when sent to the Congress.

Modification T&E: Testing done after FRP Decision Review to evaluate modifications/upgrades/improvements to the system.

Operational Assessment (OA): An evaluation of operational effectiveness and suitability made by an independent operational test agency, with user support as required, on other than production systems. An OA conducted prior to Milestone B is called an Early Operational Assessment (EOA).

X. MANUFACTURING AND PRODUCTION

DSMC POC: Manufacturing Management Department, (703) 805-3763

Manufacturing (also referred to as Production) is the conversion of raw materials into products and/or components through a series of manufacturing procedures and processes.

Manufacturing Management is the technique of planning, organizing, directing, controlling, and integrating the use of people, money, materials, equipment, and facilities to accomplish the manufacturing task economically.

An Acquisition Strategy outlines the approach to obtaining a certain amount of a product or system, within a planned timeframe and funding. The desired product or system has to be manufactured/produced, to a quality level that provides confidence the system will perform as advertised. The Production Strategy is the approach to obtaining the total quantity of the system, at some rate, for some cost. The Production Strategy must match up with the Acquisition Strategy.

The role of Manufacturing during the "pre-production" period is to influence the design of the subsystems and system, and to prepare for production. Once production has been authorized, the role of manufacturing is to execute the manufacturing plan. The overall objective of Manufacturing is to provide a uniform, defect-free product with consistent performance, and a lower cost in terms of both time and money.

The focus of manufacturing "pre-production" efforts are to assure the system/subsystem designs are producible, and that the "factory floors" in the Supply

X. MANUFACTURING AND PRODUCTION (cont.)

Design Productivity: A measure of the relative ease of manufacturing a product design. Emphasis is on simplicity of design and reduction in opportunities for variation during fabrication, assembly, integration and testing of components, processes, and procedures.

Lean: A fundamental way of thinking, intended to enable flexibility and waste reduction— in order to reduce costs, cycle time, and delivery

XI. LOGISTICS MANAGEMENT

DSMC POC: Logistics Management Department, (703) 805-2497

Logistics Management is the process of "getting the right things, to the right places, at the right time, for the right cost." Department of Defense logistics management encompasses the entire system's life cycle to include acquisition (design, develop, test, produce and deploy), sustainment (operations and support), and disposal.

The principal goals/objectives of logistics management are to:

1. Influence product design for supportability
2. Design and develop the support system
3. Acquire and concurrently deploy the supportable system (including support infrastructure)
4. Maintain/improve readiness and improve affordability

Support Elements, such as the following, have traditionally been considered a framework for supportability analyses:

- | | |
|---------------------------|--|
| 1. Maintenance Planning | 6. Training and Training Support |
| 2. Manpower and Personnel | 7. Computer Resources Support |
| 3. Supply Support | 8. Facilities |
| 4. Support Equipment | 9. Packaging, Handling, Storage and Transportation |
| 5. Technical Data | 10. System/Design Interface |

Logistics Transformation is fundamental to acquisition reform. DoD decision makers shall integrate acquisition and logistics to ensure a superior product support process by focusing on total ownership cost, supportability as a key design and performance factor, and logistics emphasis in the systems engineering process.

Operational T&E (OT&E): The field test, under realistic combat conditions, of any item (or key component of), weapons, equipment, or munitions for the purpose of determining the effectiveness and suitability for use in combat by typical military users, and the evaluation of the results of such test. Required for ACAT I and II programs.

Production Acceptance T&E (PAT&E): T&E of production items to demonstrate that items procured fulfill the requirements and specifications of the procuring contract or agreements.

Production Qualification T&E (PQT&E): A technical test conducted to ensure the effectiveness of the manufacturing process, equipment, and procedures. These tests are conducted on a number of samples taken at random from the first production lot and are repeated if the design or process is changed significantly.

Qualification Testing: Testing that verifies the contractor's design and manufacturing process and provides a performance parameter baseline for subsequent tests. (Best Practice)

Test and Evaluation Master Plan (TEMP): The testing strategy in the TEMP for ACAT I and II programs shall focus on the overall structure, major elements, and objectives of the test and evaluation program that is consistent with the acquisition strategy.

Vulnerability T&E: Testing a system or component to determine if it suffers definite degradation as a result of having been subjected to a certain level of effects in an unnatural, hostile environment. A subset of survivability.

Chain that will produce the items are properly characterized. These efforts are to: identify the needed manufacturing resources and capabilities, the "5Ms"; the risks associated with providing them; and insure that those risks are addressed as part of the overall Program Risk Management Plan.

The Manufacturing Plan is a formal description of a method for employing the facilities, tooling, and personnel resources to produce the design. The manufacturing plan must insure that the items produced reflect the design intent that the processes are repeatable, and that process improvements are constantly pursued.

Industrial Capability Assessment (ICA): A legal requirement (10 USC 2440) at each milestone to analyze the industrial capability to design, develop, produce, support, and (if appropriate) restart the program.

The "5Ms" are: Manpower, Materials, Machinery, Methods, and Measurement. These are five major elements of all manufacturing and production efforts, and are referred to during resource requirements risk identification & management.

Supply Chain: All organizations directly associated with the flow and transformation of materials and related information, from source to end user.

Variation Control: Identification of key process and product characteristics, and reduction/elimination of significant differences from the nominal values of those characteristics—so that those differences would not cause unacceptable degradation in product cost, quality, delivery schedule, or performance.

Process Proofing: Demonstration of all 5Ms of the required manufacturing capability, in a realistic, production-representative facility.

products— by focusing on those actions which will provide value to the end-item customer

e-Mfg: The use of the Internet and all other electronic means to manage the entire manufacturing enterprise.

Support Strategy is part of the acquisition strategy and an integral part of the systems engineering process. The support strategy shall address life cycle sustainment and continuous improvement of product affordability, reliability, and supportability, while sustaining readiness.

Supportability Analyses are a set of analytical tools used as an integral part of the systems engineering process. These tools help determine how to most cost effectively support the system throughout the life cycle and form the basis for design requirements stated in the system performance specification and Product Support Management Plan.

Key Acquisition Documents that reflect support inputs include the Operational Requirements Document (ORD), Test and Evaluation Master Plan (TEMP), Acquisition Program Baseline (APB) and the contract.

Product Support Management Plan is a life cycle plan that includes actions to assure sustainment and continually improve product affordability. This plan is used throughout initial procurement, reprocurement, and post production support. The plan documents an integrated acquisition and logistics strategy for the life of the system.

Post Deployment Evaluations of the system, beginning at Initial Operational Capability (IOC), shall be used to verify whether the fielded system meets thresholds and objectives for cost, performance, and support parameters. Demonstration of supportability and life cycle affordability shall be entrance criteria for the Production and Deployment Phase.

Performance Based Logistics consists of: 1) output performance parameters to ensure system ready capability, 2) assignment of responsibilities with incentives for attainment of the goals associated with these performance parameters, and 3) overall life cycle management of system reliability, sustainment and Total Ownership Cost.

VII. SYSTEMS ENGINEERING

DSMC POC: Systems Engineering Department, (703) 805-3465

The Systems Engineering (SE) Process controls the total system development effort for the purpose of achieving an optimum balance of all system elements. It is designed to translate operational need and/or requirements into a system solution that includes the design, manufacture, Test and Evaluation (T&E) and support processes and products. SE is used to establish a proper balance among performance, risk, cost, and schedule. It does this by recursively applying the subprocesses of requirements analysis, functional analysis and allocation and design synthesis and verification along with the systems analysis and control tools for balance.

A. Configuration Management (CM) Baselines -

- **Functional Baseline** - The technical portion of the program requirements (system performance specification) that provides the basis for contracting and controlling the system design. It is normally established by the government at System Functional Review (SFR).
- **Allocated Baseline** - Defines the performance requirements for each configuration item of the system (item performance specifications). The contractor normally establishes this early in the process [not later than the Preliminary Design Review (PDR)]. Government control is typically deferred until System Verification Review (SVR).
- **Product Baseline** - Established by the detailed design documentation for each configuration item (item detail specifications). It includes the process and materials baseline (process and materials specifications). Government control depends on program requirements but, if established, is typically done at PCA.

B. Preplanned Product Improvement (PPI) - A deliberate decision delaying incorporation of a system capability but providing growth allocations for the capability.

C. Technical Management Plan (TMP) - The TMP defines the contractor's plan for the conduct and management of the fully integrated effort necessary to satisfy the general and detailed requirements as implemented by the Request for Proposal (RFP) or contract schedule, statement of work/objectives, and specifications.

D. Design Reviews and Audits

1. **ASR - Alternative Systems Review** - A formal review conducted to demonstrate the preferred system concept(s).
2. **SRR - System Requirements Review** - A formal, system-level review conducted to ensure that system requirements have been completely and prop-

VIII. SOFTWARE ACQUISITION MANAGEMENT

DSMC POC: Software Management Department, (703) 805 3788

Modern DoD systems are almost always *software-intensive*, in which software is the largest segment of: cost; system development risk; system functionality, or development time.

The DoD 5000 Series integrates policy requirements and management guidance for all categories of software-intensive systems, including Automated Information Systems (AIS).

An AIS is an acquisition program that acquires Information Technology (IT), except those IT systems that: (1) involve equipment integral to a weapon or weapons system, or (2) is a tactical communication system. A Major AIS (MAIS) is one which exceeds certain cost thresholds specified by DoD policy or otherwise designated as such by the ASD (CS)

Evolutionary acquisition and spiral software development models are strongly emphasized by current DoD policies. For many software-intensive systems, outside formal assessments of program fitness by independent expert review teams are also mandated.

Because of the broad scope of DoD software-intensive systems, a wide variety of tailorable approaches to their life cycle management and development is possible following DoD acquisition policies. One such phased approach is:

Concept and Technology Development: Key pertinent capability enablers that can directly impact system software requirements include Cinger-Conger Act (CA) compliance, information superiority (DoDD 8000.1 and DoDI 8320.1), interoperability requirements (DoDD 4630.5 and DoDI 4630.8) and use of DoD standard architectures such as the joint Operational Architecture (OA) and the Joint Technical Architecture (JTA). Exit criteria from this phase typically include system architecture definition and an acceptable level of software product maturity. For C4I systems, a support plan (CAISP) is required. Additionally, a software developer's level of process maturity is cited for particular emphasis by DoD acquisition policy. Models such as the Software Capability Maturity Model (SW-CMM) or its equivalent are used to assess developer process maturity. For a MAIS, an economic analysis and formal CA certification are required. Initiation of early planning for Post Deployment Software Support (PDSS) starts.

Systems Development and Demonstration: Depending on the type of software-intensive system, key activities could include:

IX. TEST AND EVALUATION

DSMC POC: Test and Evaluation Department, (703) 805-2887

Test and Evaluation (T&E) is a process by which a system or components are compared against requirements and specifications through testing. The results are evaluated to assess progress of design, performance, supportability, etc.

Beyond Low Rate Initial Production (BLRIP) Report: Completed by the Director, Operational Test and Evaluation (DOT&E) to assess the Initial Operational Test and Evaluation (IOT&E) for major defense acquisition programs for the FRP Decision Review. A copy is provided to the Congress.

Combined Developmental and Operational Testing (DI/OT): Combining DI and OT is encouraged to achieve time and cost savings. The com-



Defense Acquisition Management Framework

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I. INTRODUCTION

DSMC POC: Larry Heller; (703) 805-4657

The Defense Acquisition Management Framework Chart is a training aid for Defense Systems Management College (DSMC) courses and is designed to serve as a pictorial roadmap of functional activities throughout the Defense Systems Acquisition Life Cycle. This chart is based on the policies in Department of Defense (DoD) 5000 Series documents. These consist of:

- DoD Directive (DoDD) 5000.1, *The Defense Acquisition System*;
- DoD Instruction (DoDI) 5000.2, *Operation of the Defense Acquisition System*; and
- Interim Regulation DoD 5000.2-R, *Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs*.

The final DoD 5000.2-R is expected to be released in the Spring of 2001. The *Defense Acquisition Deskbook* describes discretionary information and best practices for implementing defense acquisition. This chart is **not** a substitute for these references.

This chart provides the basic information needed to help understand the Defense Acquisition Life Cycle Process. For additional information, please use the reference materials indicated above or contact the department point of contact (POC) associated with each section of the chart. Department POCs can further explain their respective sections on the chart.

There is no single, approved taxonomy of the functional disciplines and sub-disciplines that, taken together, constitute defense systems acquisition. Acquisition career fields have been established under the auspices of DoD 5000.52-M, *Career Development Program for Acquisition Personnel*, for both military and civilian members of the Defense Acquisition Workforce.

II. ACQUISITION POLICY

DSMC POC: Acquisition Policy Department; (703) 805-5144

The Defense Acquisition Management Framework is structured by DoDD 5000.2 into discrete, logical phases separated by major decision points (called milestones) to provide the basis for comprehensive management and progressive decision making. The number of phases and decision points are tailored to meet the specific needs of individual programs.

The systems acquisition process begins with the identification of a need. It encompasses the activities of design, test, manufacture, operations and support. It may involve modifications and it ends with the disposal/recycling/demilitarization of that system. Upgrade (or modification) programs also follow the acquisition life cycle that includes the activities of design, test, manufacture, installation and checkout, plus operations and support.

The following policies and principles govern the operation of the defense acquisition system and are divided into five major categories as stated in DoDD 5000.1. These categories are: 1) Achieving Interoperability, 2) Rapid and Effective Transition from Science and Technology to Products, 3) Rapid and Effective Transition from Acquisition to Deployment and Fielding, 4) Integrated and Effective Operational Support, and 5) Effective Management.

To implement these varied policies and principles, many unique requirements, laws, and regulations are imposed on defense acquisition that still burden pro-

gram managers in pursuing the efficiencies inherent in pure commercial acquisition practice.

DoD components first try to satisfy mission needs through nonmaterial solutions, such as changes in doctrine or tactics. If existing U.S. military systems or other on-hand material cannot be economically used or modified to meet the operational requirement, a material solution may be pursued according to the following hierarchy of alternatives:

- Procurement (including modification) of commercially available domestic or international technologies, systems or equipment, or Allied systems or equipment
- Cooperative development program with one or more Allied nations
- New Joint Component or Government Agency development program
- New Component-unique development program

A complete listing of statutory and regulatory program information requirements (documentation) applicable to all programs can be found in Enclosure 3, DoDI 5000.2. The Milestone Decision Authority (MDA) may tailor document content based on program needs, but it may not omit documents required by statute or mandatory policy (e.g., Acquisition Program Baseline or Operational Requirements Document). (Figure 1)

Acquisition Strategy: A plan that serves as a roadmap for program execution from program initiation through post-production support. Acquisition Strategy (ACST) I and IA Programs must contain information as noted in Figure 2.

FIGURE 1. INFORMATION FOR MILESTONE REVIEWS (DODI 5000.2)

	Milestone/Review					
	A	DR	B	IPR	C	FRPR
Acquisition Decision Memorandum	X	X	X	X	X	X
Acquisition Program Baseline		Note 1	X	X	X	X
Acquisition Strategy		Note 1	X	X	X	X
Affordability Assessment			X	X	X	X
Analysis of Multiple Concepts	X					
Analysis of Alternatives			X		Note 3	
Application for Frequency Allocation			X	X	X	
Beyond Low Rate Initial Production (LRIP) Report (Note 2)						X
Command, Control, Communications, and Computers (C4) Integrated Support Plan		Note 1	X	X	X	
Clinger-Cohen Act Compliance [all Information Technology (IT)]		Note 1	X	X	X	
Compliance with Strategic Plan			X	X	X	
Component Cost Analysis [Major Automated Information System (MAIS); optional MDAP]			X	X	X	
Consideration of Technology Issues	X		X	X	X	
Cooperative Opportunities			X	X	X	
Cost Analysis Requirements Description [Major Defense Acquisition Programs (MDAPs)]			X	X	X	
Economic Analysis (MAIS)			X			
Exit Criteria	X	X	X	X	X	X
Independent Cost Estimate (MDAPs; n/a AIS)			X	X	X	X
Independent Technology Assessment			X	X	X	
Interoperability Certification			X	X	X	X
IT Certification (MAIS)			X	X	X	X
Live Fire Testing & Evaluation (T&E) Waiver (covered systems) (Note 2)			X	X	X	
Live Fire T&E Report (covered systems) (Note 2)						X
LRIP Quantities			X			
Manpower Estimate			X	X	X	
Market Research	X		X			
Mission Need Statement	X					
National Environmental Policy Act Schedule		Note 5	X	X	X	X
Operational Requirements Document			X	X	X	
Operational Test & Evaluation (OT&E) Results			X	X	X	X
Postdeployment Performance Review						X
Program Protection Plan			X	X	X	
Registration of Mission Critical & Mission Essential Information System		Note 5	Note 5		Note 5	
System Threat Assessment (n/a AIS)			X	X	X	
Selected Acquisition Report (MDAPs)		Note 5	X	X	X	X
Test & Evaluation Master Plan		Note 4	X	X	X	X

Notes: 1. At entry to Component Advanced Development (CAD) if CAD is program initiation, 2. OSD T&E oversight programs, 3. If no Milestone B, 4. Evaluation strategy for Mission Need Statement (MNS) due 180 days after Milestone A, 5. If program initiation.

FIGURE 2. ACQUISITION STRATEGY ELEMENTS (INTERIM DOD 5000.2-R)

- Requirements
 - Approved Source Docs
 - Status of In-process Source Docs
- Program Structure
 - IT Interoperability
 - Other than IT Integration
- Acquisition Approach
 - IT Supportability
 - Protection of Critical Program Info & Anti-Tamper Provisions
- Program Management
 - Resources
 - Advance Procurement
 - PMO Staffing & Support
 - Info Sharing & DoD Oversight
 - IDE
 - Tech Reps at Contractor Facilities
 - Government Property In Possession of Contractors
 - Tailoring & Streamlining
 - Requests for Relief or Exemption
 - Applying Best Practices
 - Planning for Modeling & Simulation
 - Independent Expert Review of Software Intensive Programs
- Design Considerations
 - Open Systems
 - Interoperability
 - Product Support
 - Management Plan
 - Integration
 - Source of Support
 - Depot Maintenance
 - Supply
 - Contractor Log Support
 - Requests for Relief or Exemption
 - Environmental Safety & Occupational Health
 - Demilitarization & Disposal
 - Life Cycle Support Oversight
 - Post Deployment Evaluation
- Business Strategy
 - Competition
 - Fostering a Competitive Environment
 - Competition Advocates
 - Ensuring Future Competition
 - Building Competition Into Strategies
 - Acquisition Phases
 - Evolutionary Acquisition
 - Industry Involvement
 - Potential Obstacles
 - Exclusive Teaming
 - Sub-Tier Competition
 - Potential Sources
 - Market Research
 - Human Sys Integration
 - Commercial & NDJ
 - Dual-Use Tech & Comm Plans
 - Industrial Capability
 - SBIR Technologies
- International Cooperation
 - Cooperative Strategy
 - Interoperability
 - Compliance
 - Testing Required for Foreign Military Sales
 - Contract Approach
 - Major Contracts Planned
 - Contract Type
 - Contract Incentives
 - Performance Mgmt
 - Integrated Baseline Reviews
 - Special Terms & Conditions
 - Warranties
 - Component Breakout
 - Leasing
- From DoDI 5000.2, Encl 3, Table 1
 - Partnership Analysis
 - Make or Buy Analysis
 - Core Logistics Analysis/ Source of Supply Analysis

III. PROGRAM MANAGEMENT AND LEADERSHIP

DSMC POC: Program Management and Leadership Department; (703) 805-4985

Fundamental change in the DoD acquisition culture is underway and requires individuals and organizations to change from a hierarchical decision-making process to one where decisions are made across organizational structures by multidisciplinary teams known as Integrated Product Teams (IPTs). Successful Program Managers (PMs) must be leaders who can create a vision for their program, translate this into a concrete mission, break the mission down into critical success factors (goals), and nurture and develop the IPTs (via empowerment and teamwork) to successfully execute acquisition programs. Under DoDD 5000.1, DoDI 5000.2, and DoD 5000.2-R, the preferred program management technique for use by a PM is known as Integrated Product and Process Development (IPPD). The goal of IPPD is to optimize the technology, design, manufacturing, plus business and supportability processes by integrating all acquisition activities from requirements definition through development, production, deployment and operations support. IPPD is an expansion of concurrent engineering where design, manufacturing and support of a system are integrated through the use of IPTs.

The primary program management activities are as follows:

Planning: One of the first program management planning activities is the development of the acquisition strategy, which lays out how the program will accomplish its objectives in terms of (among others) cost, schedule, performance, risk, and contracting activities. For decision, interim progress, and milestone reviews, it is included as part of a single document (to the maximum extent practicable). The PM may choose to develop the acquisition strategy as a stand-alone document or as part of a multipurpose document (e.g., an Army Modified Integrated Program Summary (MIPS), a Navy Master Acquisition Program Plan (MAPP), or an Air Force Single Acquisition Management Plan (SAMP)). Each program's acquisition strategy is tailored to meet the specific requirements and circumstances of the program. There

are two basic strategy approaches — Evolutionary and Single Step to Full Capability. Evolutionary is the preferred approach and delivers an initial capability with the explicit intent of delivering improved or updated capability in the future. See Part II of this chart for acquisition strategy elements.

Organizing and Staffing: The establishment, organization, and staffing of the program office should be a direct outgrowth of a task analysis that supports the program's acquisition strategy. As the program evolves, the program office organization and staffing should also evolve to support the changing task requirements and acquisition environment.

Controlling: The control system consists of standards against which progress can be measured, a feedback mechanism that provides information to a decision maker, and a means to make corrections either to the actions underway or to the standards. Examples of standards used in the systems acquisition process include the Acquisition Program Baseline (APB), exit criteria, program schedules, program budgets, specifications, plans, and test criteria. Examples of feedback mechanisms for program control, oversight, and risk management include the Joint Requirements Oversight Council (JROC), Overarching Integrated Product Team (OIPT), Defense Acquisition Board (DAB), Integrated Baseline Review (IBR), technical reviews, and Developmental and Operational Test and Evaluation (D/OT&E). Other reports available through a Program's Integrated Digital Environment (IDE) include the Selected Acquisition Report (SAR), Defense Acquisition Executive Summary (DAES), Earned Value Management (EVM) Report, and Contract Funds Status Report (CFSR).

Leading: Effective leadership is the key to program success. It involves developing an organization's mission, vision, and goals, and clearly articulating a set of core values. Dominant leadership roles in program management include strategy setting, consensus/team building, systems integration, and change management. For successful teams, factors such as empowerment, clear purpose, open communication, adequate resources, and a team-behavioral environment are critical.

IV. EARNED VALUE MANAGEMENT

DSMC POC: Earned Value Management Department; (703) 805-3769

Earned Value Management: The use of an integrated management system to coordinate work scope, schedule, and cost goals and objectively measure progress toward those goals.

Earned Value Management Systems (EVMS): Management standards (for significant dollar threshold contracts) used to evaluate an organization's integrated management systems.

Cost Performance Report (CPR): An objective summary of contract status that includes the following:

Budgeted Cost of Work Scheduled (BCWS) - Value of work scheduled in budget terms.
Budgeted Cost of Work Performed (BCWP) - Value of work completed in budget terms.
Actual Cost of Work Performed (ACWP) - Cost of work completed.

Cost/Schedule Status Report (CSSR): A reasonably objective summary of contract status in terms of BCWS, BCWP, and ACWP.

Work Breakdown Structure (WBS): A product-oriented family tree composed of hardware, software, services, and data, which comprise the entire work effort under a program.

Integrated Baseline Review (IBR): A joint Government/Contractor assessment of the performance measurement Baseline (PMB).

V. CONTRACT MANAGEMENT

DSMC POC: Contract Management Department; (703) 805-3442

Contract Management is the process of systematically planning, organizing, executing, and controlling the mutually binding legal relationship obligating the seller to furnish supplies and/or services and the buyer to pay for them.

Contract: The document that defines the government/industry agreement.

A Draft Request for Proposal (RFP) and Presolicitation Conference: are used to ensure that the requirements are understood by industry and that feedback is provided to the government.

Cost Type Contracts: A family of cost-reimbursement type contracts, where the government pays the cost (subject to specified limitations) and the contractor provides "best efforts." This type may provide for payment of a fee that may consist of an award fee, incentive fee, or fixed fee.

Engineering Change Proposal (ECP): A formal document used to make engineering changes to configuration management baselines in an existing contract.

Fixed Price Type Contract: Firm Fixed Price (FFP) or Fixed Price Incentive (FPI): A family of fixed-price type contracts where the government pays a price that is subject to specified provisions, and the contractor delivers a product or service. This type may provide for payment of incentives or other sharing arrangements.

Statement of Work (SOW): Statement of Objective(SO) Specification, Contract Data Requirement List(CDRL): The documents used in soliciting contracts for each phase of work the RFP sets forth the needs, the SOW/SO is the formal statement of these needs as requirements for contractual effort (what the contractor will do). The specification sets forth the technical requirements (what the system will do), and the CDRL defines the data deliverables.

VI. FUNDS MANAGEMENT

DSMC POC: Funds Management Department; (703) 805-2451

Government Budget Plan: The generic title for an internal government document that plans the long-range budgeting strategy for the life of a given program.

Planning, Programming and Budgeting System (PPBS): The PPBS is a time-driven resource allocation process within DoD to request funds for all operations, including weapon system development and acquisition. It is essential to convert each program's event-driven acquisition strategy and phasing into the PPBS's calendar-driven funding profiles to assure the appropriate amount and type of funds are available to execute the desired program.

Planning Phase - The Defense Planning Guidance (DPG) is a document which sets forth broad policy objectives and military strategy. The DPG guides the development of the Program Objectives Memorandum (POM). **Programming Phase -** The POM and the Program Decision Memorandum (PDM) are the keystone documents completed in this phase. The POM provides strategies for the Services to meet DoD objectives outlined in the DPG. The POM is reviewed by staff officers of the Secretary of Defense, the Commanders in Chief of unified and specified commands, and the Joint Chiefs of Staff. The reviews highlight major program issues and alternatives. The Deputy Secretary of Defense reviews the POM and the issues and decides on the appropriate course of action. The decisions are documented in the PDM.

Budgeting Phase - The completion of the Budget Estimate Submission (BES). The BES is the POM documentation updated for the decisions outlined in the PDM. The BES is reviewed by the Under Secretary of Defense Controller, and the Office of Management and Budget (OMB) for execution feasibility. Funding changes that are due to execution issues are identified in Program Budget Decisions (PBDs). The updated BES is forwarded to OMB and incorporated into the President's Budget. The President's Budget is due to the Congress no later than the first Monday in February.

Enactment - The process that the Congress uses to develop and pass the Authorization and Appropriations Bills. In the enactment process, the DoD

has an opportunity to work with the Congress and defend the President's Budget.

Funding Appropriation Types:

RDT&E:
Budget Activity 1, Basic Research, includes all efforts and experimentation directed toward increasing fundamental knowledge and understanding in those fields of the physical, engineering, environmental, and life sciences related to long-term national security needs.

Budget Activity 2, Applied Research, translates promising basic research into solutions for broadly defined military needs, short of development projects. This type of effort may vary from systematic mission-directed research, which is beyond that in Budget Activity 1, to sophisticated breadboard hardware, study, programming, and planning efforts that establish the initial feasibility and practicality of proposed solutions to technological challenges.

Budget Activity 3, Advanced Technology Development, includes all efforts that have moved into the development and integration of hardware for field experiments and tests. The results of this type of effort are proof of technological feasibility and assessment of operability and producibility rather than the development of hardware for service use.

Budget Activity 4, Demonstration and Validation, includes all efforts necessary to evaluate integrated technologies in as realistic an operating environment as possible to assess the performance or cost reduction potential of advanced technology.

Budget Activity 5, Engineering and Manufacturing Development, includes those projects in engineering and manufacturing development that are for Service use but have not received approval for full-rate production.

Procurement is used to finance investment items, and it should cover all costs integral and necessary to deliver a useful end item intended for operational use or inventory.

Military Construction (MILCON) funds the cost of major construction projects such as bases, facilities, military schools, etc. Project costs include architecture and engineering services, construction design, real property acquisition costs, and land acquisition costs necessary to complete the construction program.



University Research Awards Announced

The Department of Defense (DoD) announced today plans to award 48 grants totaling \$26.8 million in fiscal 2001, and up to \$46 million per year starting in fiscal 2002 to 32 academic institutions to conduct multidisciplinary research in 38 topic areas of basic science and engineering.

These grants will be made under the fiscal 2001 DoD Multidisciplinary University Research Initiative program (MURI), a program designed to address large multidisciplinary topic areas representing exceptional opportunities for future DoD applications and technology options.

Subject to the successful completion of negotiation between DoD and the academic institutions, the 48 awards will provide long-term support for research, graduate students, and the purchase of equipment supporting specific science and engineering research themes vital to national defense.

The average award will be \$1 million per year over a three-year period. Two additional years of funding will be possible as options to bring the total award to five years. Out-

year funding is subject to the availability of appropriations.

Today's announcement is the result of rigorous competition over many months under the DoD MURI program. The competition drew 416 white papers, from which 158 full proposals were received. After a thorough evaluation by technical expert teams, 48 of these proposals were found to be suitable for funding.

The list of projects selected for fiscal 2001 funding may be found on the Web at <http://www.defenselink.mil/news/Feb2001/d20010202muri.xls> or <http://www.defenselink.mil/news/Feb2001/d20010202muri.pdf>.

Editor's Note: This information is in the public domain at <http://www.defenselink.mil/news>. More information on the DoD science and technology partnership with universities may be found on the World Wide Web at <http://www.dtic.mil/dusdst/news.html>.

Leadership and the Myers-Briggs Type Indicator

Using MBTI in a Team Setting

PEARL YOUNG

Leadership – the ability to influence others – has become increasingly more important with the advent of teaming. Although leading a colocated team may be difficult, a virtual team compounds those problems. A virtual team is one in which the team members are located apart from each other, may or may not physically meet on occasion, and one in which team members conduct business through electronic means such as telephone or email. In my current job, I face the practical issues of leading a virtual team that must work together on a diversity of tasks, while located in different areas such as Boston, Mass., Philadelphia, Pa., Suffolk, Va., and Seattle, Wash.

Trying to lead a virtual team can indeed be challenging, primarily because personal interaction is minimized, resulting in the inability to “see” the team’s reaction to direction and follow-through. At one time, I considered myself a competent leader who treated everyone the same; however, my experience in a virtual team setting has shown me that my leadership style might not have been suitable for all team members. I also learned that leading effectively involves understanding what motivates each person, identifying characteristics that help/hinder the team, and determining what I can do, as the team leader, to promote a positive and productive work group.

Myers-Briggs Type Indicator

Realizing that I must understand myself first, I decided to learn more about the Myers-Briggs Type Indicator (MBTI). Toward that end, I took the elective, *Using*

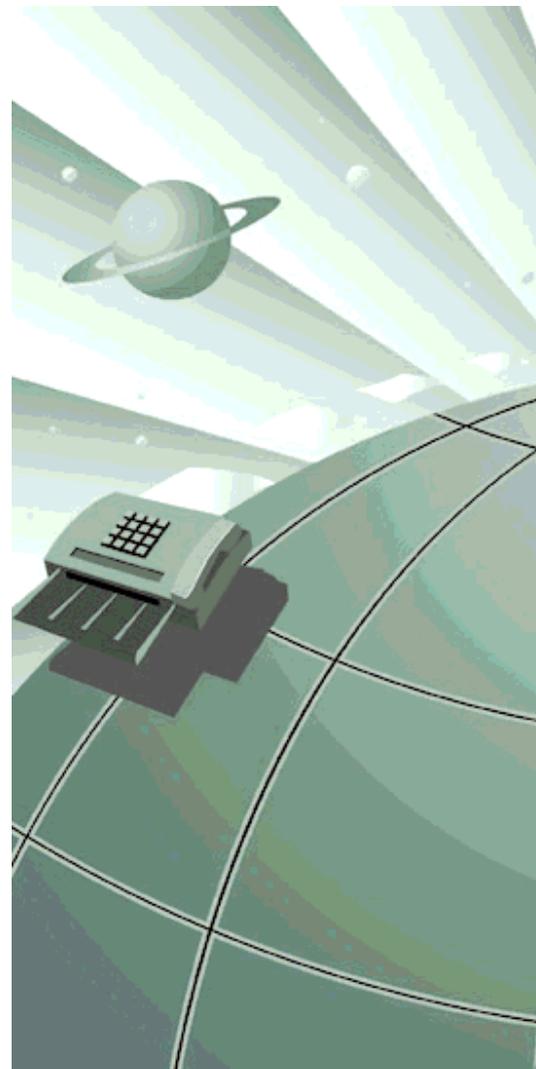
MBTI at Work and at Home, at the Defense Systems Management College (DSMC).¹ This course made me realize the importance of not only knowing your own MBTI, but the MBTIs of others as well. Since I have minimal contact with my team members, I used three other resources from the DSMC Learning Resource Center (LRC) to learn about being an effective leader:

- *Art of Speedreading People*²
- *How to be an Effective Supervisor*³
- *Situational Leadership II Program*⁴

While learning about basic skills, I also searched the World Wide Web for information or lessons learned on virtual teams.

MBTI is a tool that can be used to achieve effective communication with other people. People receive, process, and act upon information differently. If you understand their preferences and then communicate in a way that they understand, chances are you will not only get what you expected, but those with whom you communicate will feel good about how they received and acted on your communication.

I also learned that people might appear, on the surface, to be one type even though their preference is different. Certain “signs” emerge that will actually indicate their true preference. For example, a person who is an introvert may freely talk and appear to be an extrovert. If you listen closely, however, you may hear slight pauses and a more quiet tone, which is an indication of an introvert preference. Using the signs, you can generally determine the personality type of the people you meet.⁵ MBTI knowledge



gives you the tools to make the communication process more effective.

Better understanding of different leadership styles also makes the communicating process easier. The styles may vary depending on the person and the situation.⁶ (Figure 1 describes different phases of situational leadership.) By trying to understand individual members of the team, possibly through MBTI, the

Young is a graduate of APMC 00-3, DSMC, Fort Belvoir, Va.

FIGURE 1: **Situational Leadership Phases**

Leader's Role

- Directing - provides guidance
- Coaching - instructs and acts as a role model
- Supporting - reassures, compliments, and encourages productivity
- Delegating - moves responsibility for group tasks, creativity, solutions, and decisions to group members



best leadership style can be chosen. For example, in a case where a particular member of the team needs encouragement and recognition, then applying the supporting leadership phase would be the best choice.

Becoming a Good Virtual Team Leader

Virtual teams can be described as teams with communication links and group-

ware products.⁷ I learned that a person's MBTI preference could be the key to becoming a good leader. As I defined at the very beginning of this article, leadership is the ability to influence others. In order to influence others, I have to understand how people receive, perceive, and understand what I ask them to do. If I understand what motivates them, I can communicate the necessity of the task in a manner that they perceive and re-

ceive as important, and the task will be as important to them as it is to me.

Due to the nature of a virtual team, I will have little physical contact with the team members. Learning to "read" certain expressed traits can initially give me an insight into their personality type. The reading can take place in a brief encounter, face-to-face meeting, tele-conference, phone or email.⁸ How people act and speak indicates their personality types. (Figure 2 provides the Myers-Briggs definition of different types of personalities.) The selection of an appropriate leadership style depends on the situation as well as the personalities of those with whom you are communicating. Matching the style with the person and the current situation is a very important part of the communication process. Knowing and understanding the different types of personality can form the basis of your own personal leadership style right from the start.

Naturally, leadership style may change as the situation changes, even though the personality preferences of those being led may not change. Initially, I thought that a more delegating leadership style would be best for everyone; however, I now understand that although that style may work for some team members, it may not be the correct choice for others. I discovered that the virtual team is essentially no different than a collocated team. The biggest challenge is communication between the team members. As leader, I must help set the guidelines and create an environment for open communication between team members. I found out that regardless of collocated or virtual teams, leadership styles must be adaptive to the person or situation. (Figure 3 lists several issues that affect team leadership.)

The PROFILOR

My "PROFILOR" results indicate that my peers and supervisor view me as a better leader than how I perceive myself. However, my results also reflect room for improvement. I believe that implementing the findings I discuss in this article will hopefully improve my leadership ability, thus supporting my PROFILOR results.

FIGURE 2: MBTI Personality Types

Introvert/Extrovert
Sensing/Intuitive
Thinking/Feeling
Judgmental/Perceiving

As I attempted to categorize issues regarding virtual team leadership, I ended up with three groups. Interestingly, although I identified these issues for myself as leader of a virtual team, most of my findings would apply to any team. The only virtual team-specific issue was the different locations and time zones. The first group – technology – lists things that can be used to bridge the gap, but obviously even the best technology still does not compensate for ineffective communication skills. Conducting more meetings at the different locations would increase physical contact and increase the likelihood of practicing the right leadership style; however, it would be extremely costly.

The team members are the real issue. They have many demands and requirements from different sources. It is imperative that I get their commitment to complete my task. Understanding their personality types and motives allows me to use a leadership style that matches their motivations.

Applying Lessons Learned

Leading a virtual team is no different than any other team except for the fact that communication is more difficult and challenging. I plan to use the character-

Leading a virtual team is no different than any other team except for the fact that communication is more difficult and challenging.

istics of personality types to determine the appropriate communication techniques and the best leadership style – based on the person and the situation. To make initial assessments of my team members’ MBTIs, I will take the following planned actions:

- Ask team members if they know their MBTI and explain my reason for requesting the information.
- Explain my desire to improve my leadership skill and their role in achieving that goal.
- Attempt to identify the best communication methods and leadership style for that time given their MBTI or my assessment of their type.
- Put this information on a card to use as a reference while communicating with team members.

- Develop a habit of thinking about the best communication and leadership style for each person.
- Conduct quarterly meetings with my virtual team to discuss program status, and use my newly found knowledge to gain insight into the best way to lead each person.
- Provide time for feedback.
- Continue to identify and apply the appropriate leadership style and request continual feedback, preferably by situation rather than by schedule.

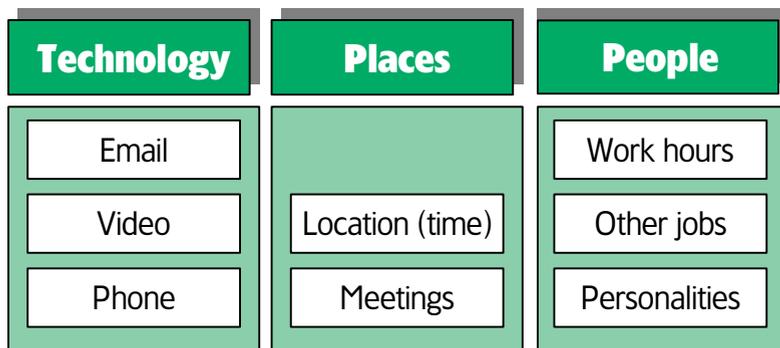
I believe that I can become a more effective team leader by implementing the plan described in this article. Not only will I become a better leader and develop the skill to communicate with others in a manner that is compatible with their MBTI preference, but I will also be opening the lines of communication between team members.

Final Thoughts

Prior to this project, I believed that I communicated clearly. I would write correspondence, re-read, and re-write until I was sure it was understandable. Now I understand that I was merely removing ambiguity. I wasn’t writing as if I were the *reader*. In the future, I will be more sensitive in my writing to accommodate each person’s communication method. I also believed that the best leadership style was to give people freedom to do their work. I have since found that not all people want the same level of freedom. I discovered that different leadership styles, from directing to delegating, are appropriate depending on the different situations and personalities. My goal is to be able to identify the best leadership style for each person in a given situation and apply it.

Surprisingly, I discovered that virtual teams are essentially the same as other teams. Although routine “physical” contact is infrequent, increasing communication can develop the same level of teamwork. It takes effort on the part of a leader, through communication skills, to keep the team motivated and on track. The effectiveness of the team really depends on getting the team members to trust and communicate with each other.

FIGURE 3: Virtual Team Leadership Issues



My biggest personal “ah ha” was MBTI –understanding what the different types mean and how to speed-read people. I found this fascinating and very useful in my personal life. It helped to answer the question, “Why did that person do that?” If I had to do this project again, I would have focused more keenly on applying MBTI considerations in my personal leadership style.

Some people may believe that MBTI is “touchy, feely stuff” –not something that is actually useful. I would definitely, however, recommend the MBTI to everyone. It helps you understand why people act or say the things they do and in what perspective something is said or done. And that, in turn, leads to better understanding, which leads to *effective* communication.

Editor’s Note: The author welcomes questions and comments on this article. Contact her at YoungPM@NAVSEA.NAVY.MIL

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CHECK THIS OUT! SHARE A-76 WEB SITE!

SHARE A-76! is a place for people throughout the Department of Defense community to share knowledge and lessons learned about the A-76 process. The Web site is designed to capture and communicate the experiences of field operators from all DoD Components, including contractors and consultants, as well as anyone interested in the A-76 cost comparison process.

<http://emissary.acq.osd.mil/inst/share.nsf>

WEB-ENABLED COURSES FOR DEFENSE INDUSTRY STUDENTS

In fiscal 2000, the Defense Acquisition University (DAU) developed a plan to offer all Web-enabled (online) courses to students who work for corporations in the Defense Industry. The program began at the start of the new fiscal year in October 2000.

A nominal tuition fee will be charged to students for the online courses. This key feature of the program should encourage defense industry students to enroll in the courses, thereby building upon and enhancing the skills of the Defense Industry professional acquisition workforce. Students will find application for enrollment very easy, since the program

will use the same online application form that is currently used by industry students who apply for DAU resident courses –available at:

http://www.dsmc.dsm.mil/registrar/industry_applic.htm

The following courses are available to industry students online:

- Fundamentals of Systems Acquisition Management (ACQ 101)
- Fundamentals of Earned Value Management (BCF 102)
- Basic Information Systems Acquisition (IRM 101)

- Basic Software Acquisition Management (SAM 201)
- Acquisition Business Management (BCF 211)
- Simplified Acquisition Procedures (CON 237)
- Acquisition Logistics Fundamentals (LOG 101)
- Introduction to Acquisition Workforce Test and Evaluation (TST 101)

DAU has put together a high-quality program, and the University is confident the program not only has long-term growth potential, but will also be of great benefit to the Defense Industry as well as the students.

For more information, contact Art McCormick, Registrar for Industry Students:

Phone: 703-805-4498 Fax: 703-805-3709 E-mail: arthur.mccormick@dau.mil



University Research Initiative Awards Announced

The Department of Defense (DoD) announced today plans to award 20 grants totaling \$9.3 million in fiscal 2001 to 16 academic institutions to conduct research in 13 topic areas. These grants will be made under the fiscal 2001 DoD University Research Initiative (URI) program, designed to enhance universities' capabilities to perform science and engineering research and related education in science and engineering areas critical to national defense.

This targeted competition for both critical information protection (CIP) and high-confidence adaptable software is in addition to the fiscal 2001 URI competitions in the areas of multidisciplinary research, nanotechnology, and high-energy laser technology.

Subject to the successful completion of negotiation between DoD and the academic institutions, the 20 awards will provide long-term support for research, graduate students, and the purchase of equipment supporting specific science and engineering research themes in the fields related to CIP and software.

The average award will be \$875,000 per year over a three-year period. Two more years of

funding will be possible as options to bring the total award to five years. Out-year funding is subject to the availability of appropriations.

Today's announcement is the result of rigorous competition over many months under the DoD URI program. The competition drew 115 white papers, from which 74 proposals were received. After a thorough evaluation by technical expert teams, 20 of these proposals were selected for funding.

The list of projects selected for fiscal 2001 funding may be found on the Web at <http://www.defenselink.mil/news/Feb2001/d20010213cipuri.xls> or <http://www.defenselink.mil/news/Feb2001/d20010213cipuri.pdf>.

Editor's Note: This information is in the public domain at <http://www.defenselink.mil/news>. More information on the DoD science and technology partnership with universities may be found on the World Wide Web at <http://www.dtic.mil/dusdst/news.html>.

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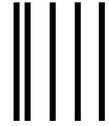
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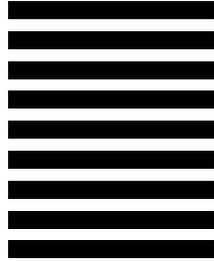
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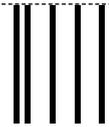
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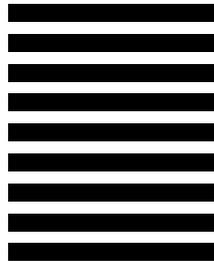
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Integrating Government Compliance Requirements with Commercial Business Realities

A Candid Look at Commercial Business Practices — Non-Government Business vs. Business Under a GSA Schedule Contract

TONY MACKEY

As a result of the emphasis placed on commercial practices and a relaxation of the old government regulatory rules that forced companies to develop customized pricing, accounting, invoicing, and data accumulation systems to conform to strict government requirements, companies that ordinarily produce and sell only commercial products in the commercial arena have been scrambling to sell their products and services to the Federal Government. The avenue for gaining entry to the government marketplace has often involved the commercial company acquiring a General Services Administration (GSA) Schedule Contract in which to place a never-ending list of products and services for government agencies to peruse and order.

However, this new emphasis on commerciality has not come about without its own unique and little understood set of problems. Those companies seeking to do business with the Federal Government must be aware of and avoid regulatory and legal entanglements that can easily adversely affect their government business and cause them to run afoul of the Federal Acquisition Regulation (FAR) as well as other non-FAR legalities.

This article identifies the interaction between commercial practices involved

with non-government business and government business under a GSA Schedule Contract. It discusses the general compliance requirements of GSA business and the nexus and influence of non-government business practices and also illuminates the importance of keeping one balanced by the other.

Avoiding the Pitfalls and Liabilities

The responsibility for compliance with GSA's regulatory requirements should be considered and treated as part of the various legal responsibilities with which a corporate business entity must recognize and comply. While the generic federal business unit should have primary responsibility to respond to this challenge, this responsibility should be shared among all business segments. The corporate commercial product groups should be keenly aware of the legalities involved in this aspect of their business (selling their products to the government through this contract vehicle) and take them into account when making business decisions in their respective competitive commercial environments. Such due diligence will go far in avoiding internal conflicts and government compliance problems.

The legalities of GSA compliance are not the only legal constraints that are imposed upon corporate business activity

and behavior by our body of state and national laws. Other laws govern corporate business decisions in ways such as how corporations compete with one another, deal with individuals, dispose of waste products, or even engineer products that are accessible to people with disabilities.

A better understanding of the legalities associated with GSA compliance will make it easier for a business to avoid the pitfalls and liabilities of violations. A better understanding will also serve to create a strong bond of teamwork and coordination for expanding business across all business sectors in much the same way that a corporation responds to other legally imposed constraints.

Fair Dealing

The basic rule of GSA compliance is fair dealing. GSA expects and legally requires that a business provide accurate, current, and complete information about its business practices with respect to its commercial distribution channels. What this legal requirement amounts to is a full disclosure of the terms and conditions of its distributor, reseller, and major end-user agreements to determine or establish a "basis of negotiation" for the terms and conditions of a GSA contract. In other words, it is GSA's way of finding out how a company conducts its business affairs in the commercial envi-

Mackey is a business manager for the Hewlett-Packard Company, located in Cupertino, Calif. His career includes over 20 years' experience in commercial and government contracting for major international corporations such as Hughes Aircraft Co., Litton Systems, and Sun Microsystems. Mackey holds an M.A. in Economics from the University of California at Santa Barbara, and has been a member of the National Contract Management Association for 14 years.

ronment so that they (GSA) have some leverage in negotiating with the commercial firm. Disclosure not only establishes a fair business relationship, but also takes into account the government's dollar volume and embraces fair and reasonable prices.

Basis of Negotiation

Since the government considers itself to be a large end-user customer, the basis of negotiation is quite often formulated on the relative distinctions in discounts that the company maintains among the different categories of commercial corporate customers; and the relative differences between the terms and conditions that are maintained among the company's distributors vs. resellers vs. end-users. (Another term that is used for this in the commercial marketplace is "vertical price maintenance" or "channel alignment," wherein a manufacturer would ordinarily grant a larger discount to a distributor vs. an end-user.)

Once this "basis of negotiation" is established for a GSA Contract, GSA expects it to remain fixed for as long as the contract is in place, unless disturbed by a change in corporate commercial business practices. Major deviations or changes to the underlying commercial relationships, in turn, give GSA justification to insist on changes or adjustments to the basis of negotiation. Changing or adjusting the basis of negotiation in effect brings it into line with the new set of relative distinctions in the corporation's commercial relationships. A classic example follows:

A manufacturer has established a dual distribution channel for marketing and selling its products through wholesale distributors, resellers, and direct sales to end-users. The pricing mechanism it has decided to use is to establish list prices and grant a fixed discount to each class of customer. It will grant a discount of 30 percent off the list price to its distributors, a 25 percent discount to its resellers, and an 18 percent discount to end-user customers. In its negotiations with GSA to establish a basis of negotiation, the relative difference between the distributor discount and the end-user



GSA expects and legally requires that a business provide accurate, current, and complete information about its business practices with respect to its commercial distribution channels.

discount – 30 percent minus 18 percent, or 12 percentage points – will be pegged as a reference point in negotiating the discount for the GSA Contract.

If the manufacturer caused this reference point to change by increasing its discount from 18 to 20 percent to its end-user customers during the term of the GSA Contract, it would be required by regulatory law for the manufacturer to report the change(s) to GSA. This disclosure would then be used by GSA to determine whether the government should receive the same discount increase for the same products that the manufacturer sold commercially at the lower price.

The Price Reduction Clause

The Price Reduction Clause, which is in all GSA Schedule Contracts, can also be explained in a basic, straightforward manner.

Negotiation and award of GSA multiple award schedule contracts are normally conducted on the basis of discounts from an established commercial price list. From this list, substantial sales are made to the general public at the pub-

lished prices. Once this information is received, GSA uses it to identify a certain category of customer and to establish a "basis of negotiation" relationship, which must be maintained throughout the contract period. Any change in the company's commercial pricing practices or discount arrangement applicable to this identified category of customer (known as the *tracking customer*) that increases the established discount will constitute a price reduction and possibly trigger the Price Reduction Clause.

When the provisions of the Price Reduction Clause are invoked, it has the practical effect of rolling back prices for products that have been sold to the government under the GSA contract at the higher price. Such rolling back is effective from the time the established commercial discount applicable to the *tracking customer* was increased, through the current date and continuing until the end of the contract term. This rolling back of prices will create a government monetary claim against the company for the cumulative amount of government overpayments, which the company will have to satisfy by writing a check. Credit memos are unacceptable in this case.

While regulations require government contractors who have GSA Schedule Contracts to disclose all events that would potentially disturb the basis of negotiation within 15 days of their occurrence, some contractors do, in fact, fail to observe this performance requirement. However, if the government does not find out about these events until its auditors perform an official audit (and they will perform one sooner or later), the monetary claim will be larger, and other noncompliance penalties could be assessed for failing to self-disclose.

Reporting Requirements

Several contract clauses or GSA regulations require a company to make reports to GSA about the status of the basis of discounts during the contract period. As previously stated in this article, GSA uses the information provided by the company about the terms and conditions of its distributor, reseller, and major

end-user agreements for the purpose of determining or establishing a “basis of negotiation” for the terms and conditions of the GSA contract.

Once the basis of negotiation is established and used to identify a category of customer (i.e., distributor, reseller, or end-user), a contract award is made. The category of customer identified during the disclosure and negotiation process will be *tracked* during the entire contract period to determine whether the government’s discount relationship to the category of customer changes in any significant manner. Any *increase* in the original discount arrangement with the identified category of customer that disturbs this relationship will constitute a price reduction.

During the contract period, the company is required to report to GSA all price reductions to the category of customer that was the basis of contract award. The company’s report is required to include an explanation of the conditions under which the reductions were made *if* the company took any of the following actions:

- Revised its commercial catalog, price list, schedule, or other document upon which the contract award was predicated to reduce its prices to the category of customer.
- Granted more favorable discounts or terms and conditions than those contained in the commercial catalog, price list schedule, or other documents upon which contract award was predicated.
- Granted special discounts to the category of customer that was the basis of award, and the change disturbs the price/discount relationship of the government to the category of customer that was the basis of award.

The response time for making such reports to GSA is within 15 calendar days after the effective date of the price reduction.

Country of Manufacture

The body of government regulations that restricts the government from purchas-

ing end-item products manufactured in certain countries is known as the Buy American Act (BAA) and the Trade Agreements Act (TAA). These laws, in a manner of speaking, act as national and international socioeconomic programs.

Buy American Act. The basic intent of the BAA legislation is to provide a preference, with respect to the government’s expenditure of taxpayer dollars, for domestic end-products over foreign end-products. In practical terms, this boils down to the government using taxpayer dollars to buy products that are manufactured in the United States. Such products are not only manufactured in the United States, but their cost content of domestic components must exceed 50 percent of the cost of all the components, so as to maximize the economic benefit for U.S. citizens and manufacturers. Labor and facilities’ costs may be included in the 50 percent total manufacturing cost threshold.

Trade Agreements Act. When it’s impossible for the government to find U.S. domestic end-products that satisfy its needs and still meet the BAA restrictions, the TAA allows the government to spend the taxpayer’s money to benefit the citizens of America’s trading partners. These partners are signatories to certain treaties, namely The Agreement on Government Procurement, as approved by the U.S. Congress in the Trade Agreements Act of 1979, and amended by the Uruguay Round Agreements Act. The signatory countries to these treaties and agreements are generally considered friendly to the United States, and their products therefore qualify for an exception to the government’s preference to procure only domestic end-products. These exceptions are referred to as “designated,” “qualifying,” “NAFTA” [North American Free Trade Agreement], or “Caribbean Basin” end-products.

A few examples of the countries that are not signatories to these treaties and agreements are Malaysia, Taiwan, Peoples Republic of North Korea, Peoples Republic of China, Cuba, Iran, Iraq, and Sudan.

Ordinarily, the BAA applies to government purchases of supplies and services that are greater than \$2,500, but less than \$186,000 (subject to annual adjustment), while imposing a strict requirement that more than 50 percent of the cost of each end-product be attributable to manufacturing or production activity in the United States.

The TAA applies to all contracts in excess of \$186,000 (subject to annual adjustment). It allows for products made in certain countries to be considered the same as domestic products. These countries are those that have signed the Government Procurement Code under the World Trade Organization (WTO), Caribbean Basin Trade Initiative, and NAFTA. However, the dollar threshold for application of the TAA is subject to the policy set by the U.S. Trade Representative. For example, the dollar threshold that applies to NAFTA contracts is \$53,150. None of these laws apply to small orders less than \$2,500 in value, referred to as micro-purchases.

Substantial Transformation Rule

The TAA allows a significant exception to the greater than 50 percent rule by creating a process known as the “Substantial Transformation Rule.” The Substantial Transformation Rule allows the government to buy commercial end-products comprised of parts, components, or subassemblies that have been purchased by signatory countries (United States included) from *non-signatory* countries, provided that the signatory country has added sufficient costs and materiality such as parts, components, labor, or facilities during the manufacturing or production process.

End-products bought in this manner, however, must constitute a new and different article of commerce with a name, character, or use distinct from that of the noncompliant, *non-signatory* country end-products from which they derive. (In other words, a signatory country can take *some* noncompliant parts and components from *non-signatory* countries; add a good measure of compliant parts and components, labor, and facilities costs; and create an end-product distinct

from its individual parts, which will be a TAA-compliant product.) This is the exception that governs many sales to the government through the GSA business channel, whether via federal resellers or direct GSA Schedule Contract sales.

Of course, the law provides for the government to assess or impose penalties on companies that fail to observe and comply with the regulatory requirements of the TAA. That is the primary reason that companies with a heritage of leadership in government service and participation in the Reagan-appointed Packard Commission maintain a diligent and vigilant effort to keep track of the manufacturing origin of the products they offer for sale. In the words of the Packard Commission's Interim Report of Feb. 28, 1986:

"To assure that their houses are in order, defense contractors must promulgate and vigilantly enforce codes of ethics that address the unique problems and procedures incident to defense procurement. They must also develop and implement internal controls to monitor these codes of ethics and sensitive aspects of contract compliance."

Channel Conflicts to Avoid

Most contracts with GSA require most favored customer pricing. That is to say, the company must offer GSA the best pricing afforded its end-user customers, given a few exceptions. A departure from offering only published discounts is justified under certain conditions, such as:

Meeting Competition. Granting preferential terms, pricing, or promotional services and allowances to a commercial customer for the purpose of meeting competition in a competitive program will generally result in no violation of GSA's rules associated with the basis of negotiation and price reduction clause, since meeting competition is a recognized defense to anti-price discrimination statutes in general. To document such actions, sales personnel should obtain sales management approval for such competitive concessions and proof of the competitive offer before granting such concessions. A competi-

tive offer report containing information about the competitive offer should be prepared and submitted prior to authorization.

Restricted or Special Product Offerings. Restricting special preferential terms and pricing to a small subset of products, or special configurations that are customized only for a particular customer, may also serve as a defense against allegations of violating GSA's basis of negotiation rules, price discrimination, or unfair treatment since the preference involves a relatively few, specially configured products that would only be sold to a particular customer. This defense alone, however, is not sufficient to establish a strong defense against such liability. It should be combined with the next two conditions: Significant Minimum Purchase, Accelerated Delivery; and Exclusivity.

Significant Minimum Purchase, Accelerated Delivery. Significant volume within this context means that the commercial deal will involve preferential terms and pricing and will be a transaction of sufficient magnitude (in terms of minimum quantity *and/or* minimum dollar value to be purchased) to exceed any reasonable expectations that it would be matched by the customer's competitors, or GSA. Accelerated delivery means that the minimum required purchase volume would have to be ordered *and* delivered within a relatively brief time frame. To refute the scrutiny and allegations that the agreed-upon minimum purchase commitment is only a non-binding sham that looks good but has no real consequences for noncompliance or breach of contract, the transactions agreement should include contractual remedies for the company in the event the customer does not meet or fulfill the minimum purchase requirement.

Exclusivity. The last generally recognized condition – needed along with the other three conditions to form an adequate defense against price-reduction allegations by GSA; liability from federal anti-price discrimination and unfair treatment statutes; and customer satisfaction issues in general – is *exclusivity*. Exclu-

sivity in this compliance outline means that a material condition of the deal, expressed in the transaction agreement or contract, is that the customer receiving the preferential terms and pricing will be committed to purchasing the subject products only from the company named in the contract during the agreement or contract term.

This requirement does not preclude both parties from continuing, in good faith, to renegotiate prices and terms periodically as market conditions dictate, during the contract period. But it does prevent the customer from "willy-nilly" walking away before the end of the contract period without cause, only to buy the subject products from a competitor.

Other Compliance-Related Issues

Promotions are generally special deals with regard to products, pricing, and any other combination of terms that are offered to *all* customers in a certain category for a limited amount of time. Promotions will not violate GSA's rule of fair dealing as long as they are made available on proportionately equal terms to GSA customers and involve products that are offered to all resellers or distributors of the same business classification.

Growth in Harmony With GSA

This article does not draw any conclusions, but rather seeks to illuminate and present a cogent and rational discussion of issues that few seem to sufficiently grasp. I suspect that this general lack of understanding results in a significant amount of frustration, lost effort, time, and money in attempting to understand, or to find someone else who understands and can clearly explain to corporate management, the intricacies of integrating government compliance requirements with commercial business realities. Hopefully, this article will help companies to grow their commercial business in harmony and concert with their GSA business – *not* at the expense of it.

Editor's Note: The author welcomes questions or comments on this article. Contact him at tony_mackey@hp.com.

Incentive Strategies for Defense Acquisitions



ACQUISITION,
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THE UNDER SECRETARY OF DEFENSE
3010 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-3010

MEMORANDUM FOR SERVICE ACQUISITION EXECUTIVES
DIRECTORS, DEFENSE AGENCIES
DIRECTOR, DEFENSE LOGISTICS AGENCY

SUBJECT: Incentive Strategies for Defense Acquisitions

Incentives exist in every business arrangement. The effective application of incentives is key to building successful business arrangements that jointly maximize value for all parties. It is essential that the Department adopt incentive strategies to successfully attract, motivate, and reward traditional and nontraditional contractors, thus ensuring successful performance. Incentive strategies must also maximize the use of commercial practices to enhance our ability to attract nontraditional contractors.

Incentives can be monetary or non-monetary, and should be positive but balanced, when necessary, with remedies for missing specific program targets or objectives. They can be based on price, cost, schedule, and/or performance. Regardless of the final composition and structure of the incentive(s), the goal is to encourage and motivate optimal performance.

Historically, choice of contract type has been the primary strategy for structuring contractual incentives. With the exception of competitive firm fixed price awards, procurement incentives have predominately been based on projected or actual costs. This practice, while effective where costs cannot be precisely estimated, does not always ensure that contractors maximize efficiencies regarding underutilized or inefficient operations, practices, and facilities. Such incentives can have the opposite effect of rewarding industry for the retention of inefficient practices or underutilized capability. When cost-based incentives are used, care should be taken to ensure that these unintended consequences do not occur.

Alternatively, non-cost-based incentive strategies more closely approximate commercial agreements and are based on clearly defined performance objectives or product functionality rather than detailed requirements. Such agreements reflect joint goals of efficiency and effectiveness, reflect acceptable risks for all parties, and establish performance metrics. Program teams should structure incentive strategies to attract nontraditional defense entities, as well as to reward successful performance of traditional defense firms. Thorough market research should be conducted to develop a better understanding of the business strategy from both the government's and the contractor's viewpoints, leading to behavior that jointly achieves the mutual goals of all parties (e.g., best value acquisitions and targeting high performance based on best business practices).

The attached guidance amplifies existing policy regarding use of incentives in defense acquisitions. In addition, to assist the acquisition workforce, an *Incentive Guidebook* is being developed based on work conducted by the Army and the Massachusetts Institute of Technology.

Attachment:
As Stated



J.S. Gansler

Editor's Note: This information is in the public domain. To download the attachment to Gansler's memorandum, go to the Defense Acquisition Reform Web site at www.acq.osd.mil/ar/whatsnew.htm.





Fiscal 2001 Advanced Concept Technology Demos Announced

David R. Oliver Jr., [Acting] Under Secretary of Defense for Acquisition, Technology and Logistics, announced today the selection of 14 new Advanced Concept Technology Demonstration (ACTD) projects for fiscal 2001. The ACTD program aids in rapidly transitioning advanced technology into the hands of the unified commanders.

The Military Services, theater commanders, and Joint Staff submitted more than 60 proposed projects. Representatives of the Military Services and unified commanders reviewed the list of proposals and provided their priorities to the Joint Requirements Oversight Council.

Marrying new operational concepts with new technologies, ACTDs reduce the time required to field new systems and increase user involvement in system design and integration.

The ACTDs selected for initiation in fiscal 2001 in alphabetical order include:

- Active Network Intrusion Defense: A distributed system architecture enabling real-time detection and response to network intrusions, including automatically disabling routes used by hackers.
- Adaptive Battlespace Awareness: An integrated system improving information aggregation supporting the CINC [Com-

mander in Chief] and Joint Task Force common operating picture and situational awareness.

- Advanced Tactical Laser: Includes a laser, optics, and control systems enabling existing fire control systems on fixed and rotary wing aircraft to precisely direct laser fire on targets from 15 kilometers.
- Advanced Technology Ordnance Surveillance: A system of miniature electronic tags and sensors to remotely perform ordnance inventory surveillance and monitoring of storage environmental conditions.
- Coalition Combat Identification: An integrated system and operational concepts utilizing situational awareness and target identification technologies to improve interoperability of coalition air-to-surface and surface-to-surface operations.
- Coalition Theater Logistics: A system of logistics information technologies and combat support tools, enhancing command and control of combat support for coalition task forces.
- Coastal Area Protection System: A system to improve surveillance, identification, and exclusion of threats to ships in ports and harbors.

- Hunter Standoff Killer Team: A command and control system to increase Joint Maneuver Commander's situational awareness, while decreasing decision and reaction timelines.
- Joint Area Clearance: De-mining equipment and information systems to improve de-mining and explosive ordnance disposal for area clearance of airfields, fuel/ammunition distribution points, hospital sites, main supply routes, and other rear area activities.
- Loitering Electronic Warfare Killer: A recoverable unmanned aerial vehicle providing electronic warfare jamming at a low cost and capable of being launched from air, sea, or ground assets.
- Network-Centric Collaborative Targeting: A network of existing operational intelligence, surveillance, and reconnaissance sensors to improve detection, identification, and location of time-critical targets.
- Personnel Recovery Extraction Survivability Aided by Smart Sensors: An integrated system of devices and information tools to improve overall personnel recovery process, evader extraction platforms, and approaches for U.S. and coalition force combat search and rescue missions.
- Tactical Missile Penetrator: A missile providing high-availability, all-weather, survivable, and short-response-time destruction of hard and deeply buried targets.
- Theater Integrated Planning System: An automated network to improve crisis planning, target planning turnaround time, and CINC interoperability, while reducing the manpower requirement.

Editor's Note: This information is in the public domain at <http://www.defenselink.mil/news>. More information on the ACTD program is on the World Wide Web at <http://www.acq.osd.mil/at>.

Academic Quality in DoD Civilian Educational Institutions

DoD Chancellor's Office Facilitates Development of Academic Standards, Metrics, Quality Levels for Metrics of Excellence Project (MEP)

BEVERLY J. ANDERSON • BEVERLY POPELKA

By Department of Defense Directive 5124.7, former Secretary of Defense William Cohen formally established the Office of the Chancellor for Education and Professional Development, effective Sept. 27, 1999. Generally speaking, this Directive charges the Chancellor to be a partner of change with the Department of Defense education and professional community to ensure high-quality and cost-effective civilian education and professional development programs.

DoD Chancellor's Charge

The Chancellor's charge is directed toward DoD-conducted, -sponsored, -contracted, or -funded programs; curriculum; and institutions concerned with education or professional development of DoD civilians. Specifically, this general charge includes the following responsibilities:

- Development of DoD standards of academic quality and cost effectiveness.
- Review and evaluation of the curriculum, faculty hiring practices, academic operations, organizational structure, position management, and resource management.
- Review and evaluation of plans, programs, budgets, and performance of

DoD civilian education and professional development.

- Management of working groups of representatives from DoD institutions and programs to develop standards in concert with external accreditation and certification entities.

As a result of the November 1997 Defense Reform Initiative (DRI) report, which made specific recommendations for improving efficiency by adopting effective practices used in corporate businesses, the position of Chancellor was established. On Oct. 2, 1998, the Chancellor was appointed.

Metrics of Excellence Project

The Metrics of Excellence Project (MEP) is the name used to refer to all of the activities of the Office of the Chancellor in response to Department of Defense Directive 5124.7. It involves the organization and all of the processes leading to the high-quality and cost-effective civilian education and professional development under the purview of the Chancellor.

The project focused on the development of academic and resource standards and attendant metrics for DoD civilian institutions. These institutions have been created to respond to the education and training needs of approximately 700,000 individuals in the civilian workforce.

Throughout the process of academic standards and metrics development, the

Academic Programs Division worked closely with the Academic Quality Working Group (AQWG), the Steering Group, and their attendant peer groups in addressing the prescribed tasks and in building consensus on every major step in the process.

At the first meeting in January 2000, representatives designed a peer organizational structure for the MEP. This delineation by peer subgroups allowed for a means to compare like institutions; served as a resource for benchmarking and best practices sharing; assisted in executive decision making; fostered meaningful dialogue and consensus building; and maximized synergy among like/similar institutions.

The peer group organizational structure of the MEP also facilitated within-group input, which focused on ensuring accountability, raising academic standards, challenging faculty, inspiring students, and building a community among DoD civilian institutions. The group structure also provided an opportunity for the Office of the Chancellor to hear concerns of the respective peer groups and to avert any consequences that might adversely affect DoD institutions.

Chancellor's Philosophy

The Chancellor enumerated several beliefs and concerns that frame a philosophy of standards and metrics development. He asserted the importance of several initiatives:

Anderson is a Research Fellow with the Office of the DoD Chancellor for Education and Professional Development, Arlington, Va. Popelka is also with the Office of the DoD Chancellor for Education and Professional Development, and serves as Chief, Academic Programs Division.

- Obtaining maximum involvement from DoD civilian institutions throughout the duration of the MEP.
- Seeking a clear understanding of the connection between standards and metrics.
- Working collaboratively in the development of appropriate standards and ensuring that the standards meet the direction and guidance of the Department of Defense leadership.
- Helping institutions measure their progress.
- Linking measures to processes and outcomes.
- Ensuring that the measures are highly intuitive, self-administrable, and auditable.
- Identifying meaningful measures [for a standard] that reflect the heart of the matter and also the progress made at DoD civilian institutions, recognizing that no measures have yet been developed that assess outcomes in depth.

He also stated that assessment and accountability in education are paramount in today's world, and that efforts to improve DoD civilian education will be supported by DoD because of the senior leadership focus on Return on Investment.

Principles, Processes Pinpointed

Bearing in mind the beliefs and concerns expressed by the Chancellor, the activities of the Academic Programs Division in MEP were guided by the five following overarching principles and processes:

- Follow the guidance from the Chancellor and the Steering Group.
- Coordinate and converge activities with the Academic Quality Working Group.
- Ensure that the process is collegial, collaborative, iterative, and inclusive.
- Build consensus within and among the peer groups.
- Use a research paradigm and controls for internal validity and reliability.

Choosing a Model

In an effort to create and maintain a quality environment for Department of Defense civilian educational institutions, the Academic Programs Division used



The peer group organizational structure of the MEP also facilitated within-group input, which focused on ensuring accountability, raising academic standards, challenging faculty, inspiring students, and building a community among DoD civilian institutions.

an eclectic approach of current and innovative models for standards and metrics development. At the same time, the Division ensured that the quality standards developed were in concert with external accreditation and certification entities.

Banta Model

A modified version of the Banta Model was used in conjunction with aspects of the model used by the Council on Higher Education Accreditation (CHEA) to develop standards, objectives, metrics, and ultimately, levels of quality.

The model advanced by Dr. Trudy Banta, Vice Chancellor for Planning and Institutional Improvement, Indiana University-Purdue University Indianapolis, is a comprehensive framework for standards and metrics development. This authoritative model provides insights on possible concerns of major stakeholders, as

well as salient questions that must be addressed in arriving at appropriate standards. The Banta model stresses four points:

- Importance of quality assessment in post secondary programs and professional development.
- Importance of an all-inclusive strategy for developing assessment tools that match the stated goals and objectives.
- Need for assessment to be continuous and not episodic.
- Importance of partnerships with major stakeholders, both internal and external, in assessment.

Baldrige Model

The process for developing the standards was also influenced by the Baldrige Model, five major models of regional and specialized accrediting bodies, and the expertise of the Chancellor, Vice Chancellor, and representatives from DoD institutions. The Baldrige Model is a continuous self-improvement, data-driven, and outcomes-focused model that calls for maximum inclusion of all stakeholders and maximum interfacing of all processes. It stresses creation, maintenance, and accessibility of pertinent data and information and forces an institution to know and communicate to all stakeholders how major processes work and how they interface with one another.

CHEA Model

The CHEA model is an evidence-generated approach to institutional accreditation. It focuses on key learning processes and educational outcomes, and is designed to promote greater consistency and rigor in making judgments about institutional performance.

Several aspects of the CHEA accreditation model were most appealing to the AQWG, the peer groups, and staff; specifically, the focus on educational outcomes as well as the quality levels used for metrics. Several peer group members expressed that the quality-levels metrics could capture the essence of an institution's programs, curriculum, faculty and staff, and support services at the same time that they convey what is needed for an institution to advance to the next and

ultimately to the highest quality level. These quality levels as metrics are in stark contrast to the more inductive and traditional metrics often used to assess performance of institutions, programs, curriculum, faculty and staff, and student support services.

For MEP, the Banta Model provided a meaningful and useful process for developing standards and metrics; the Baldrige Model provided a meaningful and useful philosophy as DoD civilian post secondary institutions strive for excellence, and the CHEA model provided a concrete format for quality-based metrics. The quality levels in the CHEA model make clear what an institution must do to achieve the next quality level and ultimately become excellent in a given category.

Development of Standards

The process of developing world-class standards for curriculum, faculty, and student support services for DoD educational institutions was indeed collaborative and iterative. Bearing in mind the key elements of the Banta, Baldrige, and CHEA models and the concerns of the Chancellor, the Academic Programs Division prepared three baseline, six-column matrices of standards used by six accrediting bodies – the first, a matrix of curriculum standards; the second, one of faculty standards; and the third, a matrix of student support standards.

DoD Conference on Civilian Education and Professional Development

The Third DoD Conference on Civilian Education and Professional Development will be co-hosted by The Joint Military Intelligence College, Bolling AFB, June 26–27, 2001. Watch for more details of the conference on the DoD Chancellor's Web site at <http://www.chancellor.osd.mil>.

The Metrics of Excellence Project model will be validated and then presented as the DoD Model for high-quality civilian post secondary education and professional development.

The Academic Programs Division presented these matrices to the AQWG for their consideration in developing standards for DoD civilian post secondary institutions. Standards were presented from the New England Association of Schools and Colleges (NEASC), North Central Association of Colleges and Schools (NCACS), Southern Association of Colleges and Schools (SACS), Council on Occupational Education (COE), Accrediting Council for Continuing Education and Training (ACCET), and Middle States Association of Colleges and Schools (MSACS).

Upon review and further refinement of the three baseline sets of standards, the Steering Group approved 11 standards covering the academic quality areas of curriculum, faculty and staff, and students on June 28, 2000. Several iterations were developed before the final version was approved.

From Standards to Objectives and Metric Topics

Shortly after the 11 standards were approved by the Steering Group, two brainstorming sessions were held to discuss how to ensure the achievement of the standards and how to determine if indeed the standards are being met. Following these sessions, the staff proceeded to develop the first iteration of draft objectives and metric topics as a

baseline to present to the peer groups. Each peer group was presented with the same set of baseline objectives and metric topics to review, revise, and edit. They were charged to generate a set of objectives and metric topics for their respective institutions, programs, and curriculum.

The peer group on degree-granting institutions participated in a two-day workshop at the National Defense University July 25–26, 2000. The all-day discussions were rich with input from all members of the peer group, the Deputy Chancellor, and the staff. The draft objectives and metric topics attendant to the 11 standards were transformed into a derived version of objectives and metric topics.

Likewise, the other two peer groups met and were presented with the same draft objectives and metric topics as were presented to the degree-granting Peer Group two weeks earlier. The Job-Specific Peer Group met for a one-day session on Aug. 10, 2000. All of the Career Development (and International Group) Peer Group member institutions were represented at Fort Belvoir, Va., on Aug. 21, 2000, to complete the same task presented to the other groups.

Once again, the Deputy Chancellor was present, the discussions were lively, and the groups were focused on completing the task for the day in consensus-building sessions. By the end of each peer group session, a derived matrix of objectives and metric topics was developed for the respective peer groups in each of the academic quality areas: curriculum, faculty, and student support services.

At this point, all three peer groups had met and agreed upon a refined list of objectives and metric topics for each of the general topics: curriculum, faculty, and student support services. Now the challenge of the staff turned to preparing and presenting to the Steering Group at its Sept. 12, 2000, meeting (only three weeks away) a consolidated and integrated set of objectives and metric topics for each of the general topics. These matrices consisted of the final set of ob-

jectives and metric topics and the integrated or derived list of objectives and metric topics prepared by the staff.

On Sept. 12, 2000, the Metrics of Excellence Steering Group endorsed the process used to move from the standards to the derived objectives and metric topics for academic quality, and encouraged the staff to proceed with the final step in the metrics development process: the actual development of a measurement system. Notwithstanding, the Steering Group also expressed its desire to expand the standards, objectives, and metric topics for faculty to also include staff. The Chancellor's staff made the necessary changes, and noted that standards and attendant objectives and metric topics for academic quality now exist for curriculum, faculty and staff, and student support services.

Quality Levels as Metrics

The greatest challenge of the Academic Programs Division was the creation of metrics for the objectives and metric topics. Baseline quality levels were developed for each of the three major groups of standards – curriculum, faculty and staff, and student support services. In developing the draft quality levels for review by the AQWG, the staff once again used guiding principles that became the measurement philosophy for this project. Accordingly, the staff determined that measurement is all of the following:

- Self-Reflective
- Flexible
- Serious but not onerous
- Designed for improvement, but not proscriptive
- Reflects engagement and commitment.

The five quality levels were prepared for AQWG in each academic quality area as the first iteration or baseline metrics. These quality levels tended to focus on learning outcomes in the areas of curriculum and student support services, and addressed terms and conditions for faculty and staff. Other characteristics of the quality levels are that they accommodate traditional as well as distributed learning; they reduce institu-

tional burden; they promote consistency; and they allow for peer review and third-party audits.

Process and Product

The process of the Academic Programs Division on MEP that led to the development of standards, objectives, metrics, and levels of quality in three broad areas – curriculum, faculty and staff, and student support services – resulted in a much-needed product for use in enhancing and affirming the academic quality at DoD civilian post secondary institutions. The process and product were in response to the general charge to the Chancellor by former Secretary of Defense Cohen: The project, which addressed academic quality, was designed primarily to enhance the educational experiences and personal learning of students in these institutions by focusing on their meeting standards for curriculum, faculty and staff, and student support services.

Model Soon to be Validated

The model used in the MEP to ensure high-quality civilian post secondary education and professional development programs was based on key elements of the Banta, Baldrige, and CHEA Models. The 11 quality standards generated from this project are consistent with those of external accrediting bodies.

Additionally, the MEP model for institutional excellence is an all inclusive, self-improvement, and auditable model that stresses student outcomes, institutional processes, terms and conditions for faculty and staff, and stakeholder involvement in assessment. The Metrics of Excellence Project model will be validated and then presented as the DoD model for high-quality civilian post secondary education and professional development.

Editor's Note: The authors welcome questions or comments on this article. Contact Anderson at Andersbj@osd.pentagon.mil; contact Popelka at Popelkba@osd.pentagon.mil.

Fiscal 2000 Refined Packard Acquisition Workforce Count Now Online

The Department of Defense Key Acquisition and Technology Workforce Report for fiscal 2000 is now online at <http://www.acq.osd.mil/ar/#count>. The report provides an overview as well as summary data on the numbers of personnel serving in key positions throughout the acquisition and technology workforce for fiscal 2000. Based on Defense Manpower Data Center data, the fiscal 2000 workforce consisted of 135,014 civilian and military personnel as of Sept. 30, 2000.

The report is third in a series of reports initiated by the Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, and prepared by Jefferson Solutions (Solutions), a division of the Jefferson Consulting Group. Solutions' May 1999 and May 2000 reports sized the fiscal 1998 and 1999 workforces at 146,071 and 138,851, respectively.

COMMERCIAL OPERATIONS & SUPPORT SAVINGS INITIATIVE (COSSI)

The Commercial Operations and Support Savings Initiative (COSSI) is seeking innovative ideas for using commercial technologies to reduce the operations and support costs of legacy systems. For information on how to submit a proposal see: <http://www.acq.osd.mil/es/dut/cossi/FY02/Index.htm>.



Soldiers Register For eArmyU

JOE BURLAS

WASHINGTON, D.C. (Army News Service, Jan. 24, 2001) – Ensuring that they would be among the first in line for the Army’s newest distance learning initiative, soldiers camped out overnight in their sleeping bags just outside Army Education Services doors Jan. 15, at Fort Benning, Ga.

More than 663 soldiers enrolled for Army University Access Online (AUAO) during the first week of operations at the three installations, where the program is initially being implemented. Those posts are Fort Benning; Fort Campbell, Ky.; and Fort Hood, Texas.

Staff Sgt. Jeffrey L. Matthews from Fort Campbell, Sgt. Christopher M. Jones from Fort Benning, and Staff Sgt. Keva A. Wallace from Fort Hood pre-registered for the program last December so that they could be part of the contract award announcement.

“I think it is truly remarkable that six months after the initiative was first announced and just over a month after the contractor was selected, Army University Access Online is up and running,” said Susie Johnson, online program advisor with the Office of the Assistant Secretary of the Army for Manpower and Reserve Affairs. “The soldiers who camped outside the Fort Benning Army Education Services building demonstrated first-

hand how much they want to be a part of the program.

“The AUAO staff at Fort Benning that came in at 4 a.m. were amazed literally to see hundreds of soldiers waiting in line to enroll.”

Secretary of the Army Louis Caldera first announced the initiative July 10 with the goals of enhancing recruiting, increasing retention, and developing more educated, technology-savvy soldiers. He announced Dec. 14 [2000], the selection of PricewaterhouseCoopers as the Army’s implementing partner under a \$453 million, five-year contract.

PricewaterhouseCoopers is leading a consortium of 29 academic institutions in an AUAO Learning Network with more than a dozen supporting technology companies in launching the education initiative. More academic institutions are expected to join the network in coming months, Johnson said.

Participating institutions must be members of the Servicemembers Opportunity Colleges Army Degree program that guarantees the transferability of credit among other participating institutions.

Registered participants will be able to work on academic certificates or degrees free of charge. The AUOA program covers all costs,

including tuition, books, lab fees, Internet access, technical assistance, tutoring, and mentoring programs.

AUAO is currently being offered to enlisted soldiers at the first three participating installations. Other installations will be phased in to cover the entire Army over the next few years. Eventually, the program will also be offered to the officer corps, the reserve component, and family members, Johnson said.

To register, soldiers at participating installations must first visit an Army Continuing Education System (ACES) counselor to get the necessary paperwork, set education goals, and determine if program eligibility requirements can be met.

Those requirements include:

- A high school diploma or General Education Development certificate.
- At least three years remaining on current enlistment.
- At least six months remaining at the participating installation.
- Meeting the school admissions criteria.
- The approval of company commander.
- A signed AUAO participation agreement.

After an ACES counselor talks to the enrolling soldier, the soldier meets with AUAO

staff. Technical staff issue the soldier a technology package consisting of a laptop computer, printer, Internet service provider account, and e-mail account. An AUAO program mentor assists the soldier in registering for classes via the AUAO portal, eArmyU.com, before leaving the building.

Johnson described the portal as a virtual doorway to diverse courses leading to degrees, certificates, and a full range of student support services. It is used to attend all classes, complete coursework and access educational advisory services, and technical and administrative support.

In return for this opportunity, Johnson said, soldiers are required to complete 12 semester hours in the first two years of enrollment.

“One of the great features of Army University Access Online – and there are many great features – is all the support services available to participants,” Johnson said. “There are mentoring, tutoring, and technical help services available via the portal, 1-800 numbers, and on site at each participating installation. Help is there 24-hours-a-day, seven-days-a-week.”

Editor’s Note: This information is in the public domain at <http://www.dtic.mil/army/link/news> on the Internet.

Electrifying the Arsenal

Army's National Automotive Center Teams with United Defense on Hybrid-Electric Vehicle

CARL JOHNSON

A triangular yellow sign hangs in the maintenance bay amidst the hulking Abrams tanks being serviced at Fort Hood, Texas. The sign reads, *Caution: Noise Hazard Area*. Good advice, since the intense heat and high-pitched scream emanating from the turbine-driven diesel engines that propel these 70-ton behemoths can melt glass and will deafen unprotected ears.

But that level of noise and heat emissions will soon be a thing of the past. A new kind of armored vehicle propulsion system is being developed by the U.S. Army Tank-automotive Research, Development and Engineering Center's National Automotive Center (NAC) and its industry partner, United Defense (UD). An innovative application of both mature and new technologies, the new propulsion system keeps noise and heat emissions low and vehicle performance high.

Army — Industry Teaming

The Army's goal is to field a lean, modern, and efficient military ground vehicle fleet. Key to that goal is exploiting the economic benefits of cooperative development programs with industry. The NAC supports the Army's goal by identifying opportunities to partner military, commercial, and academic entities in cost-sharing programs that focus and accelerate the development of technologies, thereby enhancing automotive performance. Such partnerships avoid the expense of a unique military program

Johnson is an electrical engineer in the U.S. Army Tank-automotive Research, Development and Engineering Center's National Automotive Center, located at the U.S. Army Tank-automotive and Armaments Command in Warren, Mich.

A key advantage of the system is its ability to perform in an all-electric mode without use of the engine in the PPU [prime power unit]. The result is the near-silent movement of a 15-ton combat vehicle and a greatly reduced heat signature.

by structuring these technology development programs to provide benefits for both defense and commercial industry.

Such cooperation is achieved because both parties will profit in acquiring technologies enhancing the automotive per-



formance of their mobility platforms. The Army will acquire ground vehicles that have increased performance with decreased Life Cycle Cost. Industry will accrue the same performance benefits and be competitive in the commercial market.

Goal — A Hybrid Fleet

For this partner project, the target technology is hybrid electric propulsion — a combination of a conventional engine, generator, a battery pack, and electric-drive motors. While the automotive industry has developed viable hybrid electric designs for passenger cars and light transports, UD has the technology in place to make the first hybrid-drive ar-

mored combat vehicle available for mass production in as little as two years.

UD and NAC have already built a hybrid-drive demonstrator vehicle that was on display in October 2000 at the annual Association of the U.S. Army (AUSA) Convention in Washington, D.C. The overall purpose of this demonstrator is to showcase supporting technologies that are essential for the Army's Fu-

said Elmer Doty, vice president and general manager of United Defense's Steel Products Division. "These technologies are much closer to production than most people understand, and it's happening at exactly the right time for the Army."

The Moving Parts

The centerpiece technology of the demonstrator is the propulsion system. Its primary components are two 250hp

the track sprockets and auxiliary equipment. The batteries will be used as a supplemental source for transient power needs such as accelerating, steering and climbing, and to store the energy produced when the brakes are applied on the vehicle.

The PPU will keep the battery pack at a nearly constant state-of-charge over the course of a normal mission. By using batteries to supply the transient peak power demands, the engine can be built much smaller than that required for a conventional combat vehicle.

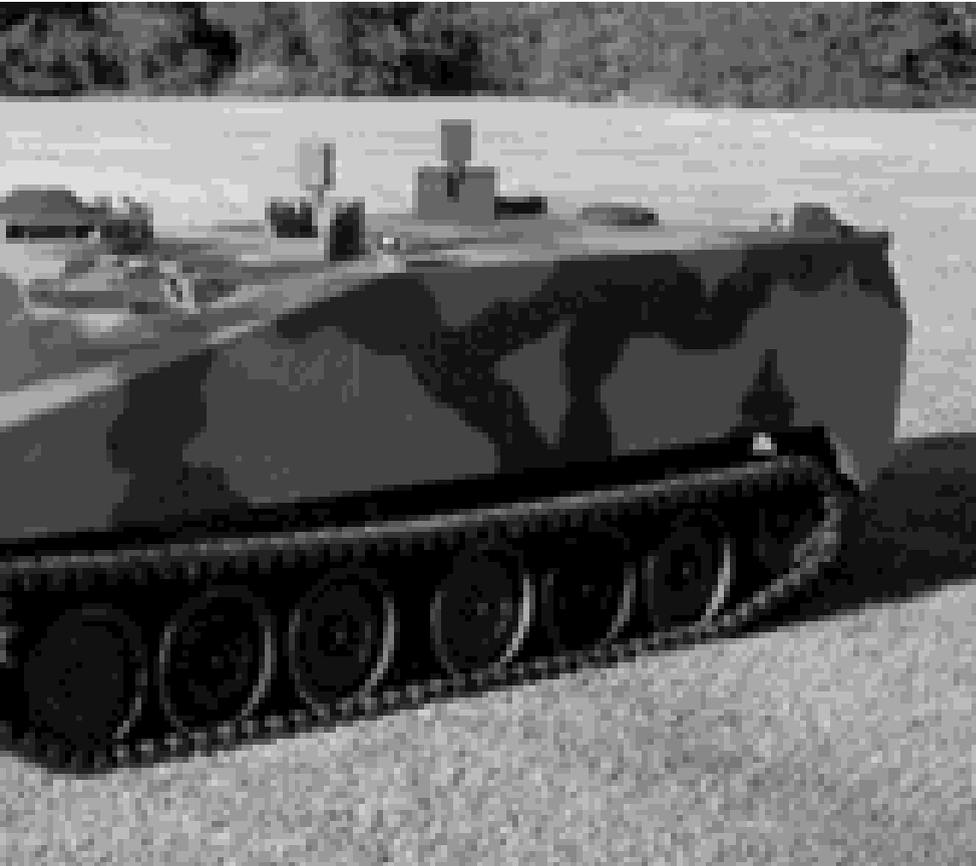
True Stealth Mode

A key advantage of the system is its ability to perform in an all-electric mode without use of the engine in the PPU. The result is the near-silent movement of a 15-ton combat vehicle and a greatly reduced heat signature. The system is equipped with a temperature-modulated, electrically driven cooling fan that significantly reduces noise and power consumption under normal operating conditions and ambient temperatures.

The demonstrator, as configured, is capable of about 10 miles of silent all-electric propulsion. If stationary, it could perform in an extended "silent watch" mode for 24 hours or more depending on the equipment installed. Alternatively, when stationary, the vehicle can generate about 200kw of electricity and function as an auxiliary power unit to power lights and other electrical equipment for troops in the field.

Performance and Payload

In addition to all this operational capability, vehicle performance and power actually increase. Relative to the M113A3, its closest conventional cousin, this vehicle will produce nearly 500hp in acceleration vs. 275hp for the M113A3. This 500hp burst is achieved by supplementing the conventional engine's generated power with the energy stored in the battery pack. Conversely, the use of a "small" engine constantly running at its "sweet spot" will provide a doubling in fuel economy, thereby increasing range of travel and reducing logistics requirements.



Hybrid-drive demonstrator vehicle. United Defense and the National Automotive Center put the vehicle on display in October 2000 at the AUSA Convention in Washington, D.C. United Defense has the technology in place to make the first hybrid-drive armored combat vehicle available for mass production in as little as two years.

ture Combat System as well as to demonstrate that some of these advanced automotive technologies are ready for near-term implementation in existing systems.

The demonstrator started with an M113 armored personnel carrier chassis. Beyond that, it has little in common with its venerable forebears. "This vehicle is the culmination of nearly 30 years of research and development by UD in electric-drive science and human factors,"

oil-cooled electric motors to drive the sprockets, a battery pack for energy storage, and a diesel-powered, engine-driven generator housed in the prime power unit (PPU).

The system operates as a true hybrid. When the vehicle is being accelerated, the battery pack and the engine-driven generator simultaneously provide power. When the vehicle is operating at "normal" speeds, the PPU is providing the "average" electric power needed to drive

The nature of the hybrid electric power train allows maximum interior space for payload. Since the front of the vehicle has no power pack, the driver and commander sit roughly side by side for better coordination. The sloped front of the vehicle also improves visibility, signature, and survivability. The lengthened hull results in a larger and more efficient interior for troops and cargo.

Given the redesign opportunity, UD has also enhanced the ergonomics of the seating and instrument panel. And for the troops, they've added a combination integral air conditioner, heat pump, and several 110V outlets for such modern battlefield necessities as laptops and cell phones.

Treading Softly

Another feature of this demonstration vehicle is a one-piece rubber "band" track. Molded from high performance rubber with bonded steel reinforcement,

this track has been developed and extensively tested in cooperation with the Army, UD, and its partner company — Soucy, Inc., of Canada, manufacturers of industrial rubber products. For the 15- to 20-ton weight class, it offers increased durability, reduced weight, reduced heat and noise, and a vastly improved ride when compared to conventional steel track. And the fact that its design features a one-piece assembly reduces the track maintenance costs.

Tracking the Future

The hybrid-electric drive demonstrator clearly was a big hit at the AUSA Convention. The lighter weight, the modularity, and the stealth of the design seem to align perfectly with the Army's transformation vision, which was the theme of the conference.

Adding to the viability of the program is the cost. "In production, the power train and track shown on this demonstrator

could conceivably cost about the same as the subsystems they would be replacing," says Doty. "Vastly improved performance, reduced life cycle costs, and a reduced logistics burden — this is exactly the kind of innovation the Army is looking to us to provide right now."

The NAC, in partnership with UD, has developed a demonstrator that is clearly the direction of future powertrains. This partnership, supported by other NAC partners, will help guarantee that the Army's soldiers are equipped with the best technology in the world today and well into the future.

Editor's Note: For questions or comments on this article, contact Margaret Compton, U.S. Army Tank-automotive and Armaments Command Public Affairs, at comptonm@acom.army.mil.

LIST OF TOP 100 DEFENSE CONTRACTORS NOW AVAILABLE

The Department of Defense announced today [Jan. 24, 2001] that the fiscal year 2000 listing of the 100 companies receiving the largest dollar volume of prime contract awards is now available on the Web at <http://web1.whs.osd.mil/peidhome/procstat/p01/fy2000/top100.htm>.

The top ten defense contractors for fiscal year 2000 and the dollar value (in billions) of their prime contracts are as follows:

- Lockheed Martin Corp. (\$15.1)
- The Boeing Co. (\$12.0)
- Raytheon Corp. (\$6.3)
- General Dynamics Corp. (\$4.1)
- Northrop Grumman Corp. (\$3.1)
- Litton Industries Inc. (\$2.7)
- United Technologies Corp. (\$2.1)
- TRW Inc. (\$2.0)
- General Electric Co. (\$1.6)
- Science Applications International Corp. (\$1.5)

Editor's Note: This DoD Press Advisory is in the public domain at <http://www.defenselink.mil/news/>.

DoD RELEASES INDUSTRIAL CAPABILITIES REPORT TO CONGRESS

The Department of Defense "Annual Industrial Capabilities Report to Congress" is now available on the Web at <http://www.acq.osd.mil/ia/>. The report is required by section 2504 of Title 10, U.S. Code, to be delivered to the Senate and House Armed Services Committees by March 1st of each year.

This year's report emphasizes that DoD's ability to execute its national defense strategy is predicated on its ability to access a supplier base that can: 1) design and produce next-generation weapons; 2) innovate to preserve technological leadership; 3) reduce cycle times to respond to evolving threats; 4) lower costs; and 5) support interoperability for joint and combined operations with coalition partners.

The report also states that the competitive pressure on the marketplace is the best vehicle to shape an industrial environment that supports the defense strategy.

Editor's Note: This DoD Press Advisory, published Jan. 23, 2001, is in the public domain at <http://www.defenselink.mil/news/>.

PM

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DAU Team Shares in Hammer Award

Dr. Anne Marie SuPrise, representing the Office of Naval Research Best Manufacturing Practices (BMP) Program team, presents a replica of the team's recent Hammer Award to Frank J. Anderson Jr., Defense Acquisition University President. Anderson accepted the award on behalf of the Defense Systems Management College (DSMC) Manufacturing Management Department team in a ceremony at Fort Belvoir, Va., Feb. 28.

Dr. SuPrise said that the BMP team's Hammer Award is a reflection and recognition of eight years of fruitful strategic partnership efforts the team had enjoyed with DSMC. "We are convinced that our partnership with DSMC was a decisive factor in our organization winning this prestigious award. We are honored to have you [DSMC] as a partner," she said.

Expressing his gratitude for this special recognition, Anderson said that the only way to achieve success in identifying and implementing best practices is by aligning with teaming. He also emphasized that DSMC's role of contributing to the acquisition community can't be limited just to educating students attending classes. Stressing the importance of strategic partnerships and alliances, he told Dr.

SuPrise, "We are thrilled to be your teammates – to have you as partners in our acquisition educational efforts."

The Hammer Award is former Vice President Al Gore's special recognition of teams that have achieved excellence in "reinventing" government in support of the president's National Performance Review principles, which are:

- Putting customers first.
- Cutting red tape.
- Empowering employees.
- Getting back to basics.

The Hammer award was named after a defense program that came to represent what was wrong with government procurement – the \$400 hammer. Today, the Hammer Award represents what is right about government – beating down the old system and building up a new one.

The work of the DSMC team and the work of all Department of Defense (DoD) Hammer Award winners pose a challenge for everyone in the Department to accelerate their efforts to overhaul the way DoD is doing business in the 21st century



From left: Tim Shannon, Dean, Faculty Division, DSMC; Bill Motley, Manufacturing Management Department Chair, DSMC; SuPrise; Anderson; and retired Rear Adm. Mike Sullivan, Navy Chair, DAU.

Army Brig. Gen. Harrington Joins Defense Contract Management Agency as Director

LYNFORD MORTON

U.S. Army Brig. Gen. Edward M. Harrington today [Feb. 9, 2001] became the new Defense Contract Management Agency (DCMA) director, succeeding Air Force Maj. Gen. Timothy P. Malishenko, who is retiring after 31 years of commissioned service.

The transfer took place during a change of command ceremony in the Andrew T. McNamara Building auditorium on Fort Belvoir, Va. David R. Oliver, [Acting] Under Secretary of Defense (Acquisition, Technology, and Logistics) and Gen. Lester L. Lyles, commander, Air Force Materiel Command presided.

“My intent is to continue the legacy of customer focus and delivery of excellence to our warfighters,” said Harrington in remarks during the ceremony. “Ultimately, the spares, components, assemblies, and major weapons systems we approve and accept this morning may have to be in the hands of our soldiers, sailors, airmen, and Marines to go off to war this afternoon. Our mission is critical.”

As DCMA director, Harrington will be the senior contract manager responsible for ensuring that all DoD acquisition programs, supplies, and services are delivered on time, within cost, and [meet] performance standards. This involves management of 325,000 prime contracts presently valued at \$852 billion.

DCMA became an independent combat support Defense agency last year, reporting directly to the Under Secretary of Defense (Acquisition, Technology and

Morton is a public affairs specialist with the Defense Contract Management Agency Public Affairs Office, Springfield, Va.



Brig. Gen. Edward M. Harrington, USA

“My intent is to continue the legacy of customer focus and delivery of excellence to our warfighters.”

Logistics). The agency is organized into three districts – East, West, and International. The districts oversee 67 offices responsible for contract management performed by 12,800 civilian and military professionals at more than 900 operating locations worldwide. DCMA was formerly a command within the Defense Logistics Agency.

In prior tours with then Defense Contract Management Command, Harrington commanded DCMC Syracuse, N.Y., from July 1994 to January 1997. From May 1998 to September 1999, he was the commander of the Defense Contract Management District East, Boston, Mass.

Since his commissioning as a Quartermaster officer in 1971, Harrington has served in numerous command and staff positions of ever increasing responsibility. Prior to this assignment, he served from 1999 to 2001 as the Deputy for Systems Acquisition (DSA) at the Army Tank-automotive and Armaments Command, Warren, Mich. He has served two tours on the Army staff; first, as a procurement action officer, and later as chief of staff and executive officer to the Assistant Secretary of the Army for Research, Development, and Acquisition. Born in Marshfield, Mass., Harrington entered the Army as a draftee and served as an enlisted infantryman prior to his selection for Officer Candidate School at Fort Benning, Ga. In the early years of his commissioned career, he served two tours in Vietnam and various assignments with the XVIII Corps at Fort Bragg, N.C.

Harrington holds a bachelor of science degree in business administration from Northeastern University and a master’s



David R. Oliver, (third from left) Acting Under Secretary of Defense (Acquisition, Technology, and Logistics) congratulates Air Force Maj. Gen. Timothy Malishenko (right) who retires from 31 years of active duty during the DCMA change of command. From left Air Force Maj. Jennifer Thorpe; Army Brig. Gen. Edward Harrington, DCMA Director; Oliver; and Malishenko.

degree in contracting and acquisition management from the Florida Institute of Technology. In 1992, he was selected to attend the Senior Service College Fellowship Program at the University of Texas, Austin. He is Joint Service-certified and a member of the Army's Acquisition Corps. Harrington is also certified at level III in both program management and contracting.

His decorations and awards include: the Defense Superior Service Medal, Legion of Merit with two oak leaf clusters, Bronze Star Medal, Defense Meritorious Service Medal, Meritorious Service Medal with two oak leaf clusters, Joint Service Commendation Medal, Army Commendation Medal with eight oak leaf clusters, Army Achievement Medal, the Army Staff Identification Badge, and the Parachutist Badge Medal.

Editor's Note: This information, released Feb. 9, 2001, by the Defense Contract Management Agency, is in the public domain at <http://www.dcmsa.mil>. For additional information, contact Lynford Morton at (703) 428-1715.

NASA GOES ONLINE WITH NEW JOURNAL

NASA's Academy of Program and Project Leadership (APPL) has achieved a new milestone. As part of its Knowledge Sharing Initiative, APPL has released a new online journal, *ASK* magazine, at:

http://appl.nasa.gov/knowledge/ask_home.htm

The new journal features first-person stories, interviews, and best practices by NASA managers, project and program officers, and Agency leaders. The magazine was launched in January and will be published bi-monthly.

ENHANCING THE RULEMAKING PROCESS VIA THE WORLD WIDE WEB

The Defense Acquisition Regulations (DAR) Directorate in the Office of the Secretary of Defense has implemented new procedures to improve the rulemaking process. The new procedures make it easier for the public to submit and view comments on proposed revisions to the Defense Federal Acquisition Regulation Supplement (DFARS).

Interested parties are no longer restricted to paper copies, faxes, or e-mails when submitting comments on proposed revisions to the DFARS. The public may now submit comments directly on the World Wide Web by typing the comments in a text box or by attaching documents at <http://emissary.acq.osd.mil/dar/dfars.nsf/pubcomm>. The World Wide Web is now the preferred method of submitting comments.

Another new feature enables the public to view comments on proposed DFARS revisions on the World Wide Web at <http://emissary.acq.osd.mil/dar/dfars.nsf>. The DAR Directorate will post comments to the World Wide Web the day after a comment period closes. Previously, anyone interested in reading the comments submitted by others had to request paper copies of the comments from the DAR Directorate.

Deidre A. Lee, the Director of Defense Procurement, stated that "these improvements will enhance public participation in the rulemaking process by providing a simpler method for submission of comments and for viewing of comments submitted by others." For additional information, contact Kathleen Fenk, DAR Directorate Automation Program Manager, at (703) 602-0296.

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OBJECTIVE

The purpose of this Conference is to bring together key participants involved in the implementation of Simulation Based Acquisition (SBA) in Defense Acquisition. The Conference will summarize the efforts to date, at both the DoD and the Services level. It will provide discussion of current key enablers, review current implementation policies and strategies, provide overviews of key technology elements, take a look at program successes and how they achieved that success, discuss the cultural changes of employing SBA in program execution; and provide in-depth discussion of the economic and programmatic benefits.

TOPICS TO BE INCLUDED

- Educating the Acquisition Workforce
- Learning to Work in Collaborative Environments
- Defining and Making the SBA Business Case
- Linking Simulations and Ranges
- Federating Simulations – The High Level Architecture (HLA)
- Integrated Strategy for Acquisition Reform
- Integrating Test & Evaluation in the SBA Process
- SBA Policy Enablers in the Defense Acquisition System
- The Criticality of Simulation Based Acquisition
- SBA Then and Now
- Integrating Government and Contractor Operations

To register online, visit the NDIA Web site at
<http://register.ndia.org/interview/register.ndia>.

Predator Missile Launch Test Totally Successful

SUE BAKER

WRIGHT-PATTERSON AIR FORCE BASE, Ohio, (AFP) — Aerospace history was made recently with the successful launch of a live missile from an unmanned aerial vehicle.

The Air Force's Predator Unmanned Aerial Vehicle (UAV) program is evolving from a non-lethal, reconnaissance asset, to an armed, highly accurate tank-killer, according to senior program officials from Air Combat Command (ACC) at Langley Air Force Base, Va., and Aeronautical Systems Center here.

"Capping a three-part series of demonstration flight tests on Feb. 21, Predator successfully aimed and launched a 'live' Hellfire-C, laser-guided missile that struck an unmanned, stationary Army tank on the ground at Indian Springs Air Force Auxiliary Airfield near Nellis Air Force Base, Nev.," said Maj. Ray Pry, Predator program manager.

Flown by a pilot and sensor-operator from the 53rd Test and Evaluation Group at Nellis, who were located in a nearby Ground Control Station (GCS), Predator launched the missile using line-of-sight communication, inflicting heavy damage to the tank, Pry said.

The final flight, part of the Phase I feasibility demonstration that began in August, was preceded by two similar, completely successful Hellfire launches, Pry said.

"This first recorded missile launch from a UAV took place on Feb. 16," he said. "Equipped with a single, inert Hellfire-C missile, the Predator, using its line-of-sight communication band and infrared 'Kosovo' laser-ball, aimed and struck the tank-turret about 6 inches to the right of dead-center, spinning the turret around about 30 degrees. It made a big, gray dent in the turret — just beautiful."

Following that first launch, the Predator/Hellfire launch team reviewed telemetry data and camera footage captured by the GCS crew and

a helicopter from the Nellis Range, Pry said. "We wanted to be sure that we had captured what we thought we had seen — that the stress and loads were within Predator's limits, and that the guides worked perfectly," he said. "With two shots planned for Feb. 21 using both satellite and LOS [Launcher Operation Station] communications links, we wanted to ensure we could use the satellite link to fire the missile."

With the initial weaponization feasibility tests successfully completed, Gen. John Jumper, ACC commander will review the results to determine when Phase II will begin, said Lt. Col. Tom Carlson, director of ACC's advanced weapons requirements branch.

"Phase II will take the Predator/Hellfire combination to more realistic, operational altitudes and conditions, including the challenge of a moving target," Carlson said. "This will complete the demonstration of the objectives we set down at the beginning of this process, to demo the technology, and prove its operational feasibility."

There are still some challenges ahead, the colonel said. "We need to do some re-engineering on the missile, to take it up to higher altitudes. Once we're given the 'green light' to proceed to Phase II — and all indications are that we will — it will require another symphony of players, brought together by Maj. Pry and his team, to execute the second round of demonstration flights.

"The bottom line is that we are taking a Hellfire missile, normally launched from an Army helicopter with its landing-skids 'in the trees,' or from the deck of a seaborne Navy carrier, flying under 2,000 feet, and asking it to fly at higher altitudes," Carlson said. "The recent Predator launches were done within the normal operating elevations for Hellfire."

Editor's Note: This information is in the public domain at www.af.mil/news.

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VOL. 7

NO. 4

Kenneth Strayer Thomas Hoivik Susan Page Hovevar	The Use of Advanced Warfighting Experiments to Support Acquisition Decisions	281
Maj Joseph Besselman, USAF Ashish Arora Patrick Larkey	Measuring the Readiness Cost of "One-Size-Shoe-Fits-All" Public Policy: A Fact-Based Look at Cost-, Hybrid-, and Price-Based Purchasing	295
C. David Brown, Ph.D. Col Gordon Grant, Canadian Forces LTC Donald Kotchman, USA COL Robert Reyenga, USA Lt Col Terence Szanto, USAF	Building a Business Case for Modeling and Simulation	311
Paul J. McIlvaine	The Evolution of 21st Century Acquisition and Logistics Reform	329
Col Michael A. Kaye, USAF Lt Col Mark S. Sobota, USAF David R. Graham Allen L. Gotwald	Cost as an Independent Variable: Principles and Implementation	353
William N. Washington	Participatory Contracting	373

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Under Secretary of Defense
(Acquisition, Technology and Logistics)

Rear Adm. Patrick Moneymaker
USN (Ret.)
Ocean Systems Engineering Corporation

Dr. Barry Boehm
USC Center for Software Engineering

Ms. Mitra Azizirad
Microsoft Federal Systems

Mr. Steven R. Perkins
Oracle's Federal and
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“Star” Encounter for DAU Execs Visiting Port Hueneme

Frank Anderson Jr., DAU President and Rich Reed, DAU Provost “mingled with the stars” during a routine tour of the DAU Port Hueneme campus in sunny California. The two were there to take part in a Feb. 21 dedication ceremony of the renovated Civil Engineers Corps Officer’s School (CECOS) building – where the DAU Education and Training Center (ETC) resides.

Coincidentally, Anderson and Reed also met with David James Elliot, who stars as U.S. Navy Cmdr. Harmon “Harm” Rabb Jr., a Navy lawyer and officer in the Navy’s Judge Advocate General (JAG) Corps in the CBS-TV show *JAG*.

The *JAG* crew was filming a courtroom scene for a new episode using one of the newly renovated CECOS rooms as the courtroom, and the Seabee Naval Base at Port Hueneme as the background for the episode. Last season, *JAG* received the Red Cross “Spirit Award” for positive representation of the military – combining all the visceral excitement of military conflict and all the suspense of a criminal investigation. An international hit as well, *JAG* is seen in 90 countries, and is a Top 10 series in Australia.

Other highlights of the trip included the retirement ceremony of Dr. Gregory Kailian, ETC Director as well as a Townhall meeting with faculty members.



From left: Cheryl Scott, DAU Port Hueneme, Calif., Contract Management Department Chair; Anderson; Elliot – CBS *JAG*’s Cmdr. Harm; Reed; and Dolores Smith, Professor, DAU Norfolk, Va., campus.



Wolfowitz Sworn in as 28th Deputy Secretary of Defense

Dr. Paul Wolfowitz was sworn in as the 28th Deputy Secretary of Defense during a ceremony held at 3:30 p.m. EST today, March 2, 2001, in the Pentagon, Washington, D.C.

Vice President Richard B. Cheney and Secretary of Defense Donald H. Rumsfeld made introductory remarks formally welcoming Wolfowitz back to the Pentagon.

In remarks during the ceremony, Wolfowitz said, "This job is a great honor because we work for the people, but it is also a great responsibility. No one person can do any of these jobs alone, and I am thankful for the great patriots in and out of uniform who are here to help Secretary Rumsfeld and I get it right."

Until being sworn in as the 28th Deputy Secretary of Defense, Wolfowitz served for seven years as Dean and Professor of International

Relations at the Paul H. Nitze School of Advanced International Studies [at] the Johns Hopkins University.

He has served two previous tours in the Pentagon: as Under Secretary of Defense for Policy from 1989 to 1993, and as Deputy Assistant Secretary of Defense for Regional Programs from 1977 to 1980. He has also served as U.S. Ambassador to Indonesia, Assistant Secretary of State for East Asia and Pacific Affairs, and head of the State Department's Policy Planning Staff.

Wolfowitz is a graduate of Cornell University and the University of Chicago. He is the father of three children and lives in Chevy Chase, Md.

Editor's Note: This information is in the public domain at <http://www.defenselink.mil>.



Defense Secretary Donald Rumsfeld (left) and Deputy Defense Secretary-designate Paul Wolfowitz take questions from reporters during a March 1 Pentagon news briefing.
Photo by Sgt. 1st Class Kathleen T. Rhem, USA

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Surfing the Net

DEPARTMENT OF DEFENSE

Under Secretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L))

<http://www.acq.osd.mil/>

ACQWeb offers a library of USD(A&T) documents, a means to view streaming videos, and jump points to many other valuable sites.

Deputy Under Secretary of Defense (Acquisition Reform) (DUSD(AR))

<http://www.acq.osd.mil/ar>

AR news and events; reference library; DUSD(AR) organizational breakout; acquisition education and training policy and guidance.

DoD Inspector General

<http://www.dodig.osd.mil/pubs/index.html>

Search for audit and evaluation reports, Inspector General testimony, and planned and ongoing audit projects of interest to the acquisition community.

Deputy Director, Systems Engineering, USD(AT&L/IO/SE)

<http://www.acq.osd.mil/io/se/index.htm>

Systems engineering mission; Defense Acquisition Workforce Improvement Act information, training, and related sites; information on key areas of systems engineering responsibility.

Defense Acquisition Deskbook

<http://web1.deskbook.osd.mil>

Automated acquisition reference tool covering mandatory and discretionary practices.

Defense Acquisition University (DAU)

<http://www.dau.mil>

DAU Course Catalog, *Program Manager* magazine and *Acquisition Review Quarterly* journal; course schedule; policy documents; and training news from the Defense Acquisition Workforce.

Defense Acquisition University Virtual Campus

<https://dau.fedworld.gov>

Take DAU courses online at your desk, at home, at your convenience!

Acquisition Reform Communications Center (ARCC)

<http://www.dau.mil/arcc>

Acquisition Reform training opportunities and materials; announcements of upcoming Acquisition Reform events; and Issues Forum for discussion.

Army Acquisition Corps (AAC)

<http://dacm.sarda.army.mil>

News; policy; publications; personnel demo; contacts; training opportunities.

Army Acquisition

<http://acqnet.sarda.army.mil>

A-MART; documents library; training and business opportunities; past performance; paperless contracting; labor rates.

Navy Acquisition Reform

<http://www.acq-ref.navy.mil/>

Acquisition policy and guidance; World-Class Practices; Acquisition Center of Excellence; training opportunities.

Navy Acquisition, Research and Development Information Center

<http://nardic.onr.navy.mil>

News and announcements; acronyms; publications and regulations; technical reports; "How to Do Business with the Navy"; much more!

Naval Sea Systems Command

<http://www.navsea.navy.mil/sea017/toc.htm>

Total Ownership Cost (TOC); documentation and policy; Reduction Plan; Implementation Timeline; TOC reporting templates; Frequently Asked Questions (FAQ).

Navy Acquisition and Business Management

<http://www.abm.rda.hq.navy.mil>

Policy documents; training opportunities; guides on areas such as risk management, acquisition environmental issues, past performance, and more; news and assistance for the Standardized Procurement System (SPS) community; notices of upcoming events.

Space and Naval Warfare Systems Command (SPAWAR)

<https://e-commerce.spawar.navy.mil>

Your source for SPAWAR business opportunities, acquisition news, solicitations, and small business information.

Air Force (Acquisition)

<http://www.safaq.hq.af.mil/>

Policy; career development and training opportunities; reducing TOC; library; links.

Air Force Materiel Command (AFMC) Contracting Laboratory's Federal Acquisition Regulation (FAR) Site

<http://farsite.hill.af.mil/>

FAR search tool; *Commerce Business Daily* Announcements (CBDNet); *Federal Register*; Electronic Forms Library.

Defense Systems Management College (DSMC)

<http://www.dsmc.dsm.mil>

DSMC educational products and services; course schedules; job opportunities.

Defense Advanced Research Projects Agency (DARPA)

<http://www.darpa.mil>

News releases; current solicitations; "Doing Business with DARPA."

Defense Information Systems Agency (DISA)

<http://www.disa.mil>

Structure and mission of DISA; Defense Information System Network; Defense Message System; Global Command and Control System; much more!

National Imagery and Mapping Agency

<http://www.nima.mil>

Imagery; maps and geodata; Freedom of Information Act resources; publications.

Defense Modeling and Simulation Office (DMSO)

<http://www.dmsomil>

DoD Modeling and Simulation Master Plan; document library; events; services.

Defense Technical Information Center (DTIC)

<http://www.dtic.mil/>

Technical reports; products and services; registration with DTIC; special programs; acronyms; DTIC FAQs.

Joint Electronic Commerce Program Office (JECPO)

<http://www.acq.osd.mil/jecpo/>

Policy; newsletters; Central Contractor Registration; Assistance Centers; DoD Electronic Commerce Partners.

Open Systems Joint Task Force

<http://www.acq.osd.mil/osjtf>

Open Systems education and training opportunities; studies and assessments; projects, initiatives and plans; reference library.

Government Education and Training Network (GETN) (For Department of Defense Only)

<http://atn.afit.af.mil>

Schedule of distance learning opportunities.

Government-Industry Data Exchange Program (GIDEP)

<http://www.gidep.corona.navy.mil>

Federally funded co-op of government and industry participants that provides an electronic forum to exchange technical information essential during research, design, development, production, and operational phases of the life cycle of systems, facilities, and equipment.



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Acquisition Reform Network (ARNET)

<http://www.arnet.gov/>

Virtual library; federal acquisition and procurement opportunities; best practices; electronic forums; business opportunities; acquisition training; Excluded Parties List.

Federal Acquisition Institute (FAI)

<http://www.faionline.com>

Virtual campus for learning opportunities as well as information access and performance support.

Federal Acquisition Jump Station

<http://nais.nasa.gov/fedproc/home.html>

Procurement and acquisition servers by contracting activity; CBDNet; Reference Library.

Federal Aviation Administration (FAA)

<http://www.asu.faa.gov>

Online policy and guidance for all aspects of the acquisition process.

General Accounting Office (GAO)

<http://www.gao.gov>

Access to GAO reports, policy and guidance, and FAQs.

General Services Administration (GSA)

<http://www.gsa.gov>

Online shopping for commercial items to support government interests.

Library of Congress

<http://www.loc.gov>

Research services; Congress at Work; Copyright Office; FAQs.

National Technical Information Service (NTIS)

<http://chaos.fedworld.gov/onow/>

Online service for purchasing technical reports, computer products, videotapes, audiocassettes, and more!

Small Business Administration (SBA)

<http://www.SBAonline.SBA.gov>

Communications network for small businesses.

U.S. Coast Guard

<http://www.uscg.mil>

News and current events; services; points of contact; FAQs.

TOPICAL LISTINGS

MANPRINT (Manpower and Personnel Integration)

<http://www.MANPRINT.army.mil>

Points of contact for program managers; relevant regulations; policy letters from the Army Acquisition Executive; as well as briefings on the MANPRINT program.

DoD Specifications and Standards Home Page

<http://www.dsp.dla.mil>

All about DoD standardization; key Points of Contact; FAQs; Military Specifications and Standards Reform; newsletters; training; nongovernment standards; links to related sites.

Joint Advanced Distributed Simulation (JADS) Joint Test Force

<http://www.jads.abq.com>

JADS is a one-stop shop for complete information on distributed simulation and its applicability to test and evaluation and acquisition.

Risk Management

http://www.acq.osd.mil/io/se/risk_management/index.htm

Risk policies and procedures; risk tools and products; events and ongoing efforts; related papers, speeches, publications, and Web sites.

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<http://www.govcon.com/>

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INDUSTRY AND PROFESSIONAL ORGANIZATIONS

DSMC Alumni Association

<http://www.dsmcaa.org>

Acquisition tools and resources; government and related links; career opportunities; member forums.

Electronic Industries Alliance (EIA)

<http://www.eia.org>

Government Relations Department; includes links to issue councils; market research assistance.

National Contract Management Association (NCMA)

<http://www.ncmahq.org>

"What's New in Contracting?"; educational products catalog; career center.

National Defense Industrial Association (NDIA)

<http://www.ndia.org>

Association news; events; government policy; *National Defense* magazine.

International Society of Logistics

<http://www.sole.org/>

Online desk references that link to logistics problem-solving advice; Certified Professional Logistician certification.

Computer Assisted Technology Transfer (CATT) Program

<http://catt.bus.okstate.edu>

Collaborative effort between government, industry, and academia. Learn about CATT and how to participate.

Software Program Managers Network

<http://www.spmn.com>

Site supports project managers, software practitioners, and government contractors. Contains publications on highly effective software development best practices.

Association of Old Crows (AOC)

<http://www.crows.org>

Association news; conventions, conferences and courses; *Journal of Electronic Defense* magazine.

If you would like to add your acquisition or acquisition reform-related Web site to this list, please call the Acquisition Reform Communications Center (ARCC) at 1-888-747-ARCC. DAU encourages the reciprocal linking of its Home Page together interested agencies. Contact the DAU Webmaster at dau_webmaster@acq.osd.mil

DSMCAA 18th Annual Symposium

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The Defense Systems Management College Alumni Association (DSMCAA) will hold its 18th Annual Symposium, June 4-7, 2001, at Fort Belvoir, Va. The 2001 Symposium also marks two major milestones: DAU's 10th Anniversary as a consortium of DoD education and training institutions and organizations; and DSMC's 30th Anniversary as an educational institution promoting systems management excellence through education, research, consulting, and information dissemination.

The DAU, in partnership with the DSMCAA, will sponsor the first ever DAU-DSMCAA Golf Tournament. In addition, DAU-DSMC will host an Open House at the DAU-DSMC Fort Belvoir, Va., campus.

The Golf Tournament, Anniversary Events, and Symposium will take place on the following dates:

June 4

First Annual DAU-DSMCAA Golf Tournament.

June 5

Anniversary Events, Workshops, Speakers, Panels. If you are a former employee of either DSMC or DAU, contact **rhonda.jenkins@dau.mil** to have your name added to the list of those attending the Anniversary Events. Due to space limitations, the number of attendees may be limited, so contact us soon.

June 6

Defense Acquisition Workforce Improvement Act (DAWIA) Segmentation Day and Dinner (DAWIA segments will be reviewed by a panel and speakers).

June 7

"Strategic Partnerships in Progress" Presentations — Developing Partnerships with DoD, Industry, and Legislative Branch.

Future updates on the Golf Tournament, Anniversary Events, and Symposium will be added to the DAU, DSMC, and DSMCAA Web sites at:

<http://www.dau.mil>
<http://www.dsmc.dsm.mil>
<http://www.dsmcaa.org>





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