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**ADVANCED CONCEPT TECHNOLOGY
DEMONSTRATIONS (ACTDs): CAN THEY
STREAMLINE THE JOINT ACQUISITION PROCESS?**

BY

LIEUTENANT COLONEL PHILIP R. WESTCOTT III
United States Marine Corps

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ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS (ACTDs): CAN THEY
STREAMLINE THE JOINT ACQUISITION PROCESS?

by

Lieutenant Colonel Philip R. Westcott III
United States Marine Corps

Captain Richard L. Recordon, USNR
Project Advisor

U.S. Army War College
Carlisle Barracks, Pennsylvania 17013

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ABSTRACT

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The Department of Defense's (DoD) acquisition system, fed by large defense budgets, flourished during the Reagan and Bush eras and produced technologically advanced weapons systems. But, today, declining defense budgets are forcing the Pentagon to explore new ways of fielding new technologies, cost-effectively and expeditiously, to the Services. Unfortunately, DoD's acquisition system has become too entangled in rigid rules and regulations to permit efficient and timely fielding of new technologies to the battlefield. The dilemma facing the military is how to get technologically advanced weapons and equipment to the field quickly and cost-effectively while dealing with a dwindling checkbook. The answer may be a new acquisition process called Advanced Concept Technology Demonstrations (ACTD). This paper will examine the notion behind ACTDs and its applicability to streamlining the acquisition process.

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INTRODUCTION

This paper examines the Department of Defense's (DoD) joint acquisition system that is responsible for the procurement and fielding of major new weapons systems and equipment to the Services. Its strengths and weaknesses are discussed but particular attention is paid to a new acquisition concept called Advanced Concept Technology Demonstrations (ACTD) and their potential impact on the Pentagon's unwieldy and complicated acquisition processes.

ACTDs are intended to address both current and projected deficiencies in relation to present and future threats. The objective is to quickly develop and field advanced technologies in limited numbers to fill these deficiency voids. But can ACTDs streamline the lengthy acquisition process by quickly and affordably fielding advanced weapons systems to the field?

The notion of ACTDs has fascinated me for the last couple of years. Prior to attending the Army War College I was a requirements officer and program sponsor for several joint programs on the Chief of Naval Operations staff (OPNAV) in the Pentagon. This is where I first learned of ACTDs and came to appreciate their significance to DoD's acquisition system.

In order to appreciate the principle motivation for ACTDs it is important to understand the complexities and problems of DoD's protracted acquisition system and the competing demands that are being made on the defense budget. This paper will attempt to explain these problems and, as stated earlier, illustrate why ACTDs may offer a means to efficiently field new and advanced

technologies to the military Services.

SHRINKING BUDGETS AND COSTLY MODERNIZATION

The Cold War was good for business. It stimulated industrial growth in both the defense and commercial sectors and drove technological competition for ever new and more advanced weapons systems. But this growth and competition didn't come without a price tag. Until 1989, the superpower faceoff between the United States and former Soviet Union justified the need for ever burgeoning defense budgets. During the Cold War the U.S. enjoyed the fruits of these large defense budgets: such things as new advances in stealth technologies, computers, state-of-the-art communications, smart munitions, intelligence systems and hardware, bigger ships, and faster aircraft. Our National Security Strategy (NSS) and National Military Strategy (NMS) supported and justified such large expenditures, all in the quest for ensuring U.S. technological superiority. But now the Cold War is over, the U.S. is the sole superpower and the so-called arms race that was so characteristic of the last forty years is a fading memory. Now what many wish could also be termed a fading memory is in fact reality...significantly smaller Department of Defense (DoD) budgets. For the end of the Cold War heralded, unfortunately, major changes in other areas of our defense establishment. These changes are almost all the results of the "trickle-down" effects of declining budgets. These effects are evident in the funding that sustains the health and readiness our military forces and, most importantly, the procurement and

research and development (R&D) monies that will carry the Services, in terms of modernization and capitalization, into the next century.

"The pattern has become all too familiar to U.S. military leaders. Each year they see the administration planning to increase purchases for new weapons and equipment the following year, but then other pressing needs intrude and funds are siphoned from the procurement accounts.

It happened again last week when the Clinton administration proposed its 1997 defense budget to Congress, recommending the lowest procurement spending in inflation-adjusted dollars since the start of the Korean War."¹

Consequently, in lieu of declining budgets, the Services are finding that the only viable way to keep pace with modernization, at some acceptable level, is to increase support for and participation in joint acquisition programs. But are joint acquisition programs the only answer to DoD's modernization problems?

AFFORDABLE ACQUISITION

Joint acquisition programs represent a way in which the Services, working together, can procure and field weapons systems that meet, most often, the requirements of each Service. Joint acquisition programs are viewed by DoD as the best and most economical way for the Services to field high cost weapons and systems. Quite often these programs represent multi-billion dollar investments by the Services over many years. The procurement of fixed-wing aircraft is but one example.

"The Services face an important decision on tactical aircraft. Three concurrent aircraft programs - the Navy's F/A-18E, the Air Force's F-22 and the multiservice Joint Advanced Strike Technology program - are consuming almost

half the procurement budget. The Services need to start buying common aircraft to reduce the cost per plane, Owens said."²

But the concept of joint acquisition has only been around a short time, really since the mid-eighties.

In the past, Service acquisition of new weapons systems were frequently marred by inefficiencies in requirements consolidation that tended to cause program extensions or delays, cost overruns, budget cuts, and the much heralded but unwanted Congressional (GAO) audits. Additionally, the Services would seldom consider benefits, in terms of requirements needs, to the other Services and what could be gained from such an approach. Each Service would consider only its individual needs in fielding new systems and minimally those of the other Services. Consequently, weapons systems, when successfully fielded, would not necessarily benefit (i.e., interoperability) the warfighting requirements of all the forces on the battlefield.

Consensus building among the Services, and even within an individual Service, on any specific program or new system was, frequently, another barrier to efficient and timely program acquisition. Service parochialisms, doctrine, and competing programs and funding priorities all served to slow the acquisition process and delayed expedient fielding of new weapons systems. Also, as frequently in the past, system performance, not price, was the key driver in program success. There was little interaction between price and system capability and even less incentive to control costs. Of course, until a few years

ago the Services could afford to take that position. They were still enjoying the abundances of larger and more generous DoD budgets. But the move to joint acquisition didn't come easily.

The Goldwater-Nichols Reorganization Act of 1986 was a watershed mark in the drive to make the Services more joint-oriented in terms of doctrine and requirements. Besides establishing the authority and framework from which the Services could move forward to develop joint doctrine, it also was intended to inject more realism (read: jointness) into the requirements process within the DoD.³ It was an honest attempt to be more efficient.⁴ But more had to be done if the concept of a joint acquisition process, efficient and supportive of the Services' requirements needs, could truly be a realistic and attainable goal. In June 1986, the President commissioned a body of acquisition experts known as the Packard Commission (President's Blue Ribbon Commission on Defense Management) to examine and make recommendations for improving the defense acquisition system. Their investigation discovered what many suspected or knew to be true.

"All of our analysis leads us unequivocally to the conclusion that the defense acquisition system has basic problems that must be corrected. These problems are deeply entrenched and have developed over several decades from an increasingly bureaucratic and overregulated process. As a result, all too many of our weapon systems cost too much, take too long to develop, and by the time they are fielded, incorporate obsolete technology."⁵

And fundamental to this observation was the bottom line in the report:

"...an unreasonably long acquisition cycle-ten to fifteen

years for our major weapon systems. This is a central problem from which most other acquisition problems stem:

> It leads to unnecessarily high costs of development. Time is money, and experience argues that a ten-year acquisition cycle is clearly more expensive than a five-year cycle.

> It leads to obsolete technology in our fielded equipment. We forfeit our five-year technological lead by the time it takes us to get our technology from the laboratory into the field.

> And it aggravates the very goldplating that is one of its causes. Users, knowing that the equipment to meet their requirements is fifteen years away, make extremely conservative threat estimates. Because long-term forecasts are uncertain at best, users tend to err on the side of overstating the threat."⁶

While the Packard Commission did "level the playing field" for the DoD by mandating closer cooperation between the Services in the pursuit of technology acquisition, even, today, this joint acquisition process has tended, often, to be more illusion than reality. Generally, the Services are onboard with the joint acquisition process, even if a lengthy process, and making substantive inroads into requirements consolidation but the acquisition system itself, even now, is tremendously complex and unwieldy.

"The challenge is clear. Taking eight, 10, or 12 years to develop and field a weapons system is a luxury we can no longer afford in dollars, time or technological performance. Administrative, development and production cycle times must be reduced dramatically, if we are to continue to provide our soldiers with technologically superior equipment."⁷

Even back in 1986 the Packard Commission saw a likely solution to the lengthy acquisition process:

"We recommend a high priority on building and testing prototype systems to demonstrate that new technology can substantially improve military capability, and to provide a basis for realistic cost estimates prior to a full-scale development decision. Operational testing should begin early in advanced development, using prototype hardware.

The early phase of R&D should employ extensive informal competition and use streamlined procurement processes."⁸

This recommendation "...on building and testing prototype systems..." would soon leap from the drawing board to become reality. Additionally, the commission recommended more reliance on commercial-off-the-shelf (COTS) technology, which offers advantages through reduced R&D costs and shorter production schedules. But adding to this cumbersome joint acquisition process are the still competing demands on the military's budget that would, in more abundant times, have adequately fueled the military's modernization needs.

Today, the Pentagon is trying to meet the increasing requirements of overseas contingencies and peace-keeping operations by funding readiness at the expense of force modernization and capitalization. This cost to keep readiness high within the Services is being felt in procurement and in research and development (R&D) funding (the lifeblood of DoD's future capitalization and modernization). Operations and maintenance (O&M) funding are increasing to maintain that high state of readiness but, again, at the expense of procurement and R&D.⁹

"Top Pentagon officials profess to being as worried as others about the relatively low level of procurement spending, but they feel in a bind. If they are to finance a force large enough to engage in two regional wars nearly simultaneously, as U.S. policy requires, and if they are to fund training and maintenance to keep readiness high, they have had little choice, they say, other than to shortchange procurement."¹⁰

While some see this spending tradeoff as a reflection of the times (i.e., smaller forces, less equipment), others worry of the long term impact to the Services. "What we do have to worry about is making sure that we can capitalize the force structure 15 years from now."¹¹ No longer do the Services have the unlimited budgets to spend on expensive weapons systems.

"The budget is perhaps the biggest challenge. Spending on military weapons has dropped by 70 percent over a decade, and despite repeated promises by the Clinton administration and Congress to reverse the trend, spending continues to fall. This year the military has \$39 billion to spend on new weapons. Senior defense officials have said about \$60 billion is needed. You've got to stop promising and start doing something about increasing procurement," Owens told the Armed Services Committee."¹²

The question that DOD must answer is: How can a satisfactory level of modernization be maintained into the next century in the face of increasing operational tempo, decreasing budgets and funding, while burdened with a ponderous and enigmatic acquisition system that doesn't permit timely or expedient fielding of much needed weapons systems? Put another way: How can it keep pace with the technology revolution in terms of keeping our military on modernization's "cutting edge" while avoiding the risk of fielding overly expensive weapons systems that may ultimately be obsolete before they reach the field? The answer to these questions may lie in Advanced Concept Technology Demonstrations (ACTD).

NEW APPROACH

"Advanced Concept Technology Demonstrations (ACTD) accelerate and facilitate the application of mature advanced

technologies to solve important military applications."¹³ The operative word being..."accelerate"...the application of matured technologies for fielding to the Services. ACTDs were introduced "to help revolutionize the DoD acquisition process to adapt to today's economic and threat environment."¹⁴ Simply stated, ACTDs are intended, in the early stages of the engineering and development cycle, to be distinct or independent from the curbs of the formal acquisition process.

"ACTDs, more importantly, are integrating efforts to assemble and demonstrate a significant new military capability, based upon maturing advanced technology(s), in a real-time operation at a scale size adequate to clearly establish operational utility and system integrity."¹⁵

They are, in effect, being touted as the wave of the future in the acquisition community and in many circles of the Pentagon. Certainly, it is reasonable to conclude that another means of efficiently acquiring advanced technology is required.

"A declining budget and increasing variety of threats, coupled with an acquisition process outstripped by the pace of technology, have hampered warfighter efforts to resolve significant military shortfalls. In addition, global proliferation of military technologies and potential adversaries with relatively easy access to these technologies have accentuated the need for rapidly transitioning technology."¹⁶

As implied earlier, "the ACTD process evolved in 1994 in response to recommendations of the Packard Commission (1986) and the Defense Science Board (1987, 1990, 1991)."¹⁷ ACTDs are goal-oriented with two primary objectives in mind: get user (i.e. Services) involvement and input throughout (start to finish) the demonstration and field a prototype system in less than five

years...preferably three to four years.

"Warfighter involvement is critical to the ACTD process. ACTDs are not just intended to increase the warfighter's early involvement in the technology and acquisition process. Rather, the ACTD must be driven by the military user and the user's perceived critical warfighting needs. The ACTDs objectives are to allow the user to gain a more thorough understanding of a new technology and its potential to support military operations."¹⁸

Furthermore, rather than just demonstrate technical performance, ACTDs are also intended to prove potential value for the warfighter. Each ACTD originates from a serious deficiency in military capability as identified by the operational warfighting community, whether it be JCS, CINCs, or the Services.

"They concentrate on the operational demonstration of the value for joint warfare of combinations of military technologies that are within the state of the art but that promise major improvements in military capability. To this end, they must deeply involve the ultimate military user."¹⁹

But it is a declining budget that, potentially, makes the concept of ACTDs so attractive and gives strength to the requirement to explore new ways of "cheaply" fielding new technologies to the Services while providing that "leap ahead" capability to the warfighter. The costs of full-scale development or production are only a consideration if the ACTD is successful and then only if the decision is to move forward into a limited production or full scale development.

The principle characteristics of an ACTD are:

- (1) Focus on a joint warfighting deficiency
- (2) Technologies, while advanced, should be sufficiently mature to allow ACTD completion in less than five years
- (3) Provide an operational capability to the user as an ACTD residual

(4) Provide the warfighter with additional information to facilitate doctrinal and material decisions²⁰

These characteristics give the warfighter a "leg-up" on the typical acquisition process. With warfighter involvement in the early stages, he is able to directly influence and steer a valid requirements process thereby, hopefully, avoiding the ever-present urge for "requirements creep". But while a five-year completion cycle is hardly adequate time to provide the military user with sufficient quantities of any particular weapons system, it will probably allow ample opportunity to determine military utility and worth; either towards a residual capability or later full-scale development. Furthermore, it will seemingly allow the user to make a valued judgement about future capability without the perils of committing large up-front sums of money to a, potentially, costly and risky program.

"...it is anticipated that the user will be able to develop and refine the doctrine, tactics, techniques, procedures, and concept of operations which will exploit the new technologies. It will also allow the user, based on experience in the field, to comment on and make suggestions for improvements or modifications to the equipment or system under evaluation. With the ACTD approach, these changes can be made during the relatively informal demonstration phase of a system's life cycle."²¹

The "valued judgement about future capability" mentioned above can also be realized in terms of the benefits it brings to the joint battlefield. "Another ACTD goal is to promote integrated, joint missions to reach beyond individual Service interests and capabilities."²²

The identification of a warfighting need is central to and

forms the basis for the ACTD concept or program and is integrated into a demonstration carried out by both the user (Service) and acquisition demonstration office.

"A crucial ground rule for any ACTD is the need for a close partnership between a sponsoring user organization and a Service or Agency acquisition organization that will serve as the Demonstration Program Office. Any candidate for ACTD status must identify and develop this relationship, at least in principle, before serious consideration can be provided. In reality, this is likely to be an iterative process initiated either by the acquisition community seeking to transition certain maturing technologies that emerge from exploratory development or by the warfighter community seeking solutions to a pressing operational deficiency."²³

Joint operational capabilities that are transparent (seamless) across Service lines serve to strengthen the interoperable warfighting efficacies of our battlefield forces. This, too, is another design of ACTDs. Recall earlier that mention was made that within the joint acquisition process there is still the need to further reduce risks and costs. "The emphasis on joint operations, where practical, further reduces potential risks and costs while propagating necessary technological advances throughout the Services."²⁴

The ACTD process is managed by the ACTD Steering Group which is chaired by the VCJCS and the USD(A&T) and has as members all the Service Acquisition Executives and Military Operations Deputies. The selection of ACTDs is reviewed by the Joint Requirements Oversight Council (JROC) using the Joint Warfare Capability Assessment (JWCA) groups as the medium for validating the need or requirement for the capability. Once ACTDs are reviewed by the JROC, management plans are then written. The

management plans incorporate all of the essential details for the ACTD programs, including resource allocations, equipment, personnel, and funding profiles. In effect, they are memorandums of agreement or understanding between the military users and the acquisition developers.

ACTD DEVELOPMENT PROCESS²⁵

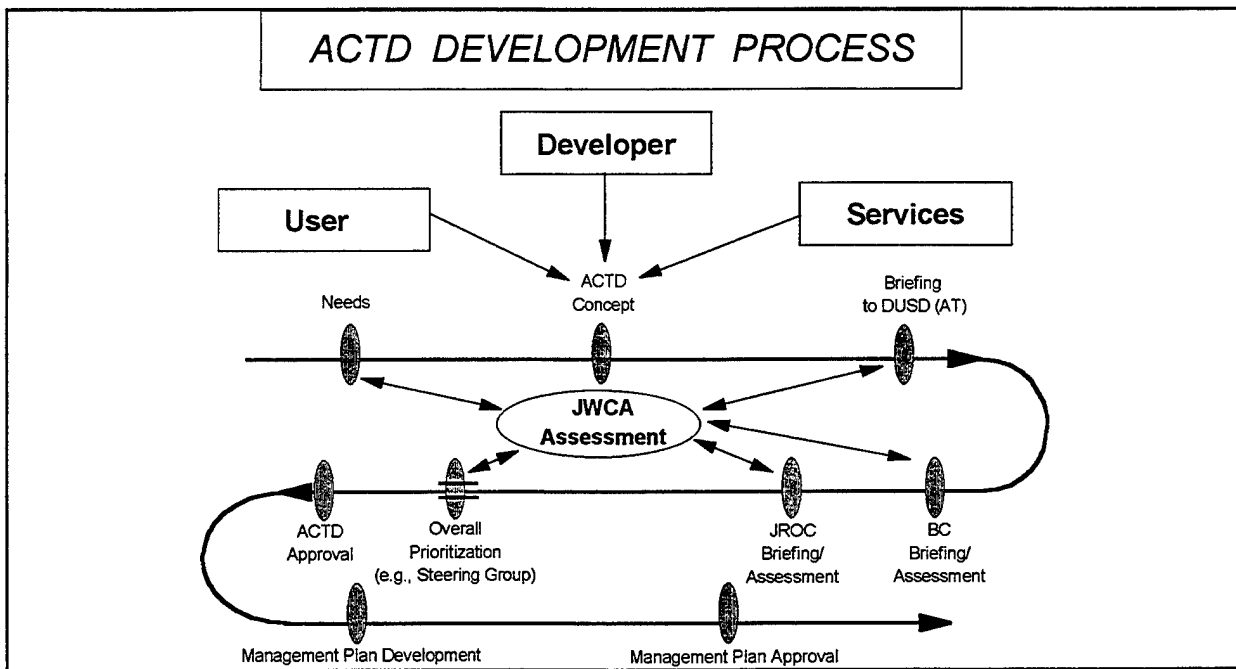


Figure 1

Source: Briefing Slides from Presentation by Dr. Louis C. Marquet, ADUSD (AD), 6 December 1995

The ACTD process can yield three or four different outcomes, depending upon the level of success and user satisfaction with the demonstration. But according to most people involved in ACTD programs the common presumption is that only three outcomes are possible.²⁶ If the user is not prepared to initiate an

acquisition then he can either terminate the program as not cost effective, place it on the shelf for later development or undertake further development to refine the technology. The ACTD, is in effect, put on the shelf as a hedge against future threats. If the user decides to initiate an acquisition based upon a successful demonstration then one of the following could occur. If the demonstrated system calls for a large production run then the program could enter the acquisition process at whatever stage or milestone is appropriate. This would in all likelihood be based upon the level and detail of operational evaluation conducted during the demonstration with the military user and probably require the approval of the test and evaluation community of the various Services. If the ACTD results showed that only a few systems would be needed to provide that capability to the Services then those few systems could be used as necessary and replicate as required.²⁷

POSSIBLE OUTCOMES OF AN ACTD²⁸

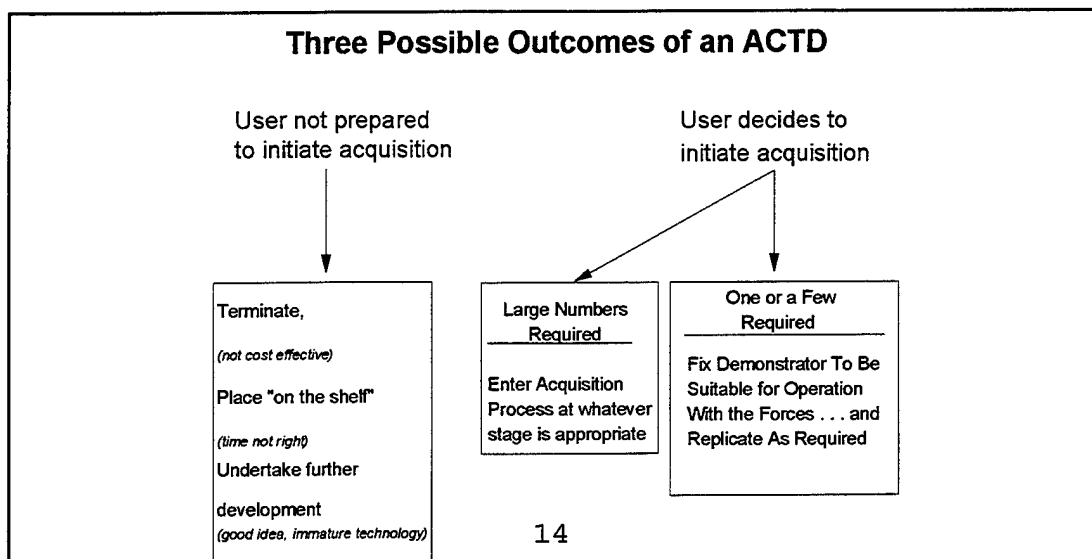


Figure 2

Source: Army RD&A (Sep-Oct 95), 13.

The selection criteria for ACTDs are streamlined and designed with the military user in mind; put the capability in his hands quickly and affordably. The technology must be sufficiently mature to justify the time and effort, as well as the expense, albeit, a lower cost for prototyping which is the fundamental concept for ACTDs. The ACTD must significantly increase military utility and provide affordability to the user. Certainly an important consideration in today's austere fiscal climate where "more bang for the buck" is DoD's primary consideration. The period from ACTD start to finish should be no more than two to four years. This is one of the principle conditions of the demonstration; get the technology to the user before it becomes obsolete. The military user must sign up to be intimately involved in the demonstration along with the acquisition developer. This ensures control and direction in terms of identifying, establishing, and testing to the user's requirements during the execution of the ACTD. But it is important to note that this partnership with the developer does not commit the user to any procurement agreement until after the ACTD and then only if the user deems the program a success and a worthwhile investment. It is clearly understood that there are no strings attached in terms of committing procurement money during the ACTD. The acquisition developer should provide a management plan that addresses all the essential aspects of the ACTD. This would normally include the proposed military user sponsor, ordinarily a CINC, military equipment to be used, risk

assessment, affordability, participating organizations, and any residual operational capability that might exist after the demonstration. Furthermore, funding should be programmed that will support approximately two years in the field participating in such events as joint exercises, deployments, etc.

There were ten ACTDs approved during fiscal year 1995 and another twelve were approved for fiscal year 1996.

"They can be categorized in a variety of ways. One of the ACTDs (dealing with North Korean Multiple Rocket Launchers) is driven by urgent needs of a field commander. Several (countermine, the UAVs, and the EFOG-M portion of the Rapid Force Projection Initiative) involve orphan missions or systems (those that either have no real home in a military service or that have been sacrificed to higher Service priorities). Several ACTDs focus information technology across organizational seams to produce improved "system of systems" performance (two--Synthetic Theater of War 97 and Advanced Joint Planning--use information technology to improve training and planning, while six -- SIGINT targeting, Cruise Missile Defense, Counter-MRL, Counter-Mine, Boost-Phase Intercept, and Rapid Force Projection -- focus on the netting together of existing or nearly developed technologies to enhance full sensor-to-shooter effectiveness for a particular sensor modality or against particular classes of targets)."²⁹

It is apparent that these programs are designed to explore high-risk technologies in new-concept weapons that have no counterpart in the current inventory. If successful, some of these ACTDs could, at least in theory if not in application, become a "system of systems" for follow-on technologies. It is, therefore, worthwhile to describe a couple of the approved ACTDs.

One of the most interesting ACTDs is the High Altitude Endurance Unmanned Air Vehicle (HAE UAV) program. It will demonstrate near continuous, all weather, day and night, wide

area surveillance over the battlefield. The program is composed of two UAV systems: the TIER II Plus and TIER III Minus. The TIER II Plus UAV will be the primary workhorse vehicle supporting about 80% of most military operations. It will be an unmanned air vehicle nearly the size of a U-2 aircraft and be able to fly over three thousand miles to an objective area, orbit for over 24 hours (total endurance - 40 hours+) in excess of sixty-five thousand feet and then return to its base of operations. It will be designed to provide the joint task force commander with near real-time reconnaissance at extended ranges and periods in both permissive and non-permissive environments.³⁰ The TIER III Minus air vehicle will be a low-observable (stealthy) platform capable of operating in high threat environments.

"This dual HAE UAV systems approach divides military requirements between two air vehicle and payload combinations that are optimized for coverage or survivability characteristics. Both systems will be under the direct control of the warfighters and will provide real time, high quality imagery. The systems must be capable of all-weather, day/night operation and must provide accurate targeting information in a timely and exploitable form. In addition, the systems must be able to loiter in a mission area, providing both area and spot coverage. A key objective of the program is reaching the \$10M unit fly-away price requirement. This requirement bounds affordability of the system and fosters innovation and discipline in the system design."³¹

At the conclusion of the program, the military user will have ten conventional TIER II Plus UAVs and four TIER III Minus UAVs and three common ground control stations. If the ACTD is successful and based upon DoD requirements, an acquisition program can either be established (refer to figure 2) for a larger production run or the systems can be shelved and used as needed. Another

interesting ACTD is the Joint Countermine (CM) program.

The Joint Countermine program will use existing doctrine from Operational Maneuver From The Sea (OMFTS) to demonstrate an increased capability to conduct military operations in the littoral regions of the world. It is reasonable to expect that most regional crises and military operations other than war (MOOTW) will be within easy reach of naval and joint combatant forces. After all, seventy percent of the world's population lives in the littoral regions of the earth or within about two hundred miles of the oceans' shorelines. "Mines are cheap and available worldwide and along with obstacles, can be used to restrict shipping, landing, and ground operations."³² Hence, a countermine capability is critically essential if U.S. military forces are to conduct military operations along the oceans' littorals.

"The Joint Countermine ACTD will demonstrate the capability to conduct seamless amphibious and ground force mine countermeasure operations with an emphasis on clandestine reconnaissance and surveillance. This demonstration will be accomplished by integrating Army, Navy, and Marine Corps technology developments and fielded military equipment. This ACTD will demonstrate the coupling of selected current capabilities with developing capabilities, leading to enhanced integration of joint capabilities to conduct countermine operations. The ACTD will also seek to identify improvements in the capabilities being developed or envisioned. The ultimate goal is to demonstrate emerging mine countermeasures technologies, operational concepts and doctrine in support of amphibious and other operations that involve OMFTS and follow-on land operations."³³

The Joint Countermine ACTD involves two closely connected demonstrations that concentrate on mine detection and neutralization and clandestine surveillance and reconnaissance.

"Demonstration I, planned for FY97, focuses on the near shore capabilities with emphasis on in-stride detection and neutralization of mines and obstacles. Demonstration II, planned for FY98, will emphasize the technologies of clandestine surveillance and reconnaissance as described in the *Navy FY94 Mine Warfare Plan* and will demonstrate all elements of a seamless transition of countermine operations from the sea to the land. In addition, a robust modeling and simulation effort, the Joint Countermine Operational Simulation, will expand the information base obtained from the live demonstrations through constructive modeling and distributed interactive simulation."³⁴

After completion of the ACTD, some of the equipment and hardware will be given to the operating forces for further use in the development and refinement of tactical and operational requirements.

The DoD acquisition process is governed, principally, by DoD Instructions 5000.1, (Defense Acquisition) and 5000.2 (Defense Acquisition Management Policies and Procedures), both dated 23 February 1991, and is the primary means and authority by which the Services procure new systems and/or introduce new capabilities either via upgrades to existing technologies or through new systems altogether.³⁵ The acquisition system is currently in the process of being reformed (includes rewrites of both 5000.1 and 5000.2) so that it may be more responsive to the needs of the warfighter.³⁶ Ultimately, this is where the future success of ACTDs may lie.

The old 5000.1 and 5000.2 instructions were often accused of being too event-driven and stringent in their adherence to milestone achievement. There was too much acquisition executive oversight in program development to keep costs down and not

enough consideration of warfighter requirements.

"Traditional acquisition practices were the by-product of risk avoidance that relied on detailed military specifications and standards, ponderous heel-to-toe oversight, extensive testing and inspection, and cumbersome contracting procedures."³⁷

Ironically, both the old 5000.1 and 5000.2, at least in language if not in practice, attempted to implement a more manageable and dynamic acquisition management structure. "A streamlined acquisition management structure shall be established with short, clearly defined lines of responsibility, authority, and accountability that promote increased efficiency and effectiveness."³⁸ It was anything but efficient. "These policies and procedures establish the basis for developing innovative and cost-effective acquisition strategies to reduce the time and cost of acquisition programs while maintaining or improving product quality."³⁹ The effectiveness of the system is harder to quantify because the U.S. does possess the best weapons in the world. But what is the measure of effectiveness when it takes an average eight to twelve years to field new systems to the Services? Is it the number of years that it is in the hands of the warfighter before it becomes obsolete? As stated earlier, some of today's technology is almost obsolete before it reaches the warfighter.

The new draft 5000.1 is a reflection of the changes that are occurring in the acquisition world in terms of acquisition reform. There seems to be more focus on off-the-shelf technology (ACTDs?), more technology demonstrations (ACTDs?), more up-front

study and analysis at the contractors' expense, and less initial requirement to commit Services to an expensive program until early evaluation of one or two test-bed experimental/prototype systems.

Early in the draft 5000.1 reference is made to broad management principles and discussions of definitions that imply more flexibility in program management and requirements generation. "The defense acquisition community shall maintain continuous and effective communications with the operational user."⁴⁰ The draft appears to be setting the stage toward allowing more flexible and open approaches to program acquisitions such as ACTDs. This approach appears to be through a relaxation of the rigid rules governing defense acquisition and attempts at opening up the playing field to more innovative ways of satisfying the warfighting requirements of the Services. This is evident because it addresses fourteen core issues that form the basis for all program approvals and starts.⁴¹ These core issues lend support to concepts such as ACTDs. Why is the program needed? Has the program been validated? What specific capabilities are necessary? When do the necessary capabilities need to be introduced to the field or fleet? How much will the program cost? Has the system been determined to be operationally effective and suitable?⁴²

It is important to keep in mind the fundamental purpose behind ACTDs: the rapid transfer of new technologies to operational units for evaluation at a significantly reduced cost

in comparison to past procurements or enhancements and in a fashion that provides the military with state-of-the-art capabilities to operate safely and effectively on an everchanging battlefield. In so doing they can serve several purposes: "...they can prove out new operational concepts and promote innovation in warfighting, fill gaps and provide integration among the development programs of the individual Services, and provide hedges against uncertainty and against unwelcome developments abroad."⁴³

In a period of declining budgets, ACTDs will allow evolutionary technological alternatives to be explored without the risks that are associated with high cost weapons systems and equipment. "With acquisition focused on system upgrades, ACTDs may also serve as a testing ground for the "system of systems" approach to joint warfare, maximizing the United States' current advantages in situational awareness, precision strike, and tactical adaptability."⁴⁴ Additionally, the end of the Cold War has changed the face of future conflict.

Conflicts in the next century will appear as small, and probably, short regional conflicts that require highly trained and equipped military forces. Such scenarios favor the advantages that ACTD technologies can give to the warfighter.

"Uncertainty about the nature of future threats enhances the option value of a portfolio of varied technological and operational experiments. The prospect of fighting smaller and more poorly trained forces (and attempting to do so with low U.S. casualties and limited collateral damage) places an increased value on capabilities that may result from the possession of small numbers of specialized systems."⁴⁵

CONCLUSION

An uncertain future brings with it the probability that conflicts through the end of this century and well into the next will span the full spectrum of military operations. This includes military operations other than war (MOOTW). Consequently, in order to be prepared for such contingencies substantive advances in technology innovations will have to be made; innovations that ACTDs are designed to demonstrate and put into the hands of the user quickly and cost-effectively.

ACTDs rely heavily on user involvement. Hence, they can bring the user back into the requirements process (where he belongs!!) to provide the linkage between the acquisition developers and the needs of the Services. Through the ACTD process both the user and acquisition developer can demonstrate and validate the technology with an experienced eye towards fielding only what is truly needed by the Services or as a vehicle for testing other technologies and concepts.

"An ACTD that does not lead immediately to a fielded system or a full-scale procurement should not necessarily be seen as a failure; it may still yield important benefits. Valuable learning has been purchased at relatively low cost..."⁴⁶

Lastly, ACTDs offer DoD and the Services a low-cost and effective means for researching technology innovation without the burdens and responsibilities of committing large up-front sums of money for large acquisition programs before evaluation and demonstration.

"ACTDs appear to serve several purposes -- they can prove out new operational concepts and promote innovation in warfighting, fill gaps and provide integration among the development programs of the individual Services, and provide hedges against uncertainty and against unwelcome developments abroad. They also reduce the uncertainty and perhaps even the overall cost of weapons acquisition and better equip our forces to deal with the wider variety of contingencies that seems to characterize the post-Cold War era."⁴⁷

If, between the military user and acquisition manager, ACTDs can be developed and managed correctly then maybe they can streamline the acquisition process.

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