
Affordable Weapons Systems: A Design for the Future

By

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I am pleased to be here with you today to take part in the Precision Strike Association's Annual Programs Review. I feel right at home with you. I have spent more than 40 years on both sides of the military/industrial complex, with most of my career in the missile field.

Today, I would like to take a few minutes to discuss precision strike and other acquisition challenges as they relate to current and future U.S. military strategy and to brief you on the vital role that members of the Precision Strike Association—both defense industry and Defense Department representatives—play in this whole process.

America's greatest challenges in this post-Cold War era are to retain the overall superiority of our military forces and restructure our defense industry to insure our national security and to do this within available resources. To do this will require simultaneously a Revolution in Military Affairs and a Revolution in Business Affairs—the latter to pay for the former.

The end of the Cold War has brought great changes in the threat to our security. Today, we are much less preoccupied with a superpower adversary whose intentions are relatively predictable, and much more concerned with a whole host of potential enemies, ranging from terrorists and transnational organizations to rogue nations, whose intentions are highly unpredictable and, therefore, in many ways much more difficult to defend against. To counter this threat, the U.S. military must have the weapon systems and equipment needed to conduct multiple, concurrent contingency operations worldwide. And it must be able to do so in any environment—including the most likely one—in which an adversary does not try to match us plane for plane, ship for ship or tank for tank, but uses asymmetric means, such as nuclear, biological or chemical weapons; information warfare; and large numbers of low-cost cruise and ballistic missiles.

These new, asymmetric threats create a highly unstable future environment and a potential danger every bit as deadly and perhaps even more likely than the prior threat from a single nuclear super power. How do we respond to this new environment? The answer: we must completely change the way we fight. Combat in the future will be "come-as-you-are": limited, low intensity engagements, undoubtedly in a coalition with our allies. It likely will require smaller, lighter, more mobile forces and equipment. The greatest shift will be from warfare of attrition—each side engaging massive forces to try to wear the other side down—to "reconnaissance/strike warfare"—with each side using advanced technology to achieve information superiority based on total battlespace awareness, then using precision weapons delivered from long range to minimize battlefield casualties.

Clearly, the ability of our combat forces to retain total battlespace dominance in the new environment of early 21st century warfare will require modernization of our current systems to take advantage of rapidly changing technological advances (adding the "digital battlefield" to older platforms, for example). Mostly, these are the systems we will be living with over the coming years. However, modernization also means development of the new systems needed for 21st century combat. As you know, we have dropped our procurement account by 70 percent over the last 10 years and must now apply vast new resources to modernization—perhaps \$10

[billion] to \$30 billion a year more—in order to provide the dollars we need to maintain total superiority in the future battlespace.

To do so, our acquisition objectives must address both what we buy and how we buy it. First, in terms of our requirements for modernization, I have set five goals:

1. In the information area, we must achieve an integrated, secure and “smart” command, control, communications, computer, intelligence, surveillance and reconnaissance (C4ISR) infrastructure that encompasses both strategic and tactical needs. Enhanced situation awareness and information assurances are the critical elements of an effective 21st century warfighting capability. They are the keys to the Revolution in Military Affairs.
2. In the “strike” area, we must develop and deploy—in sufficient quantities -- long-range, all-weather, low-cost, precise, and “brilliant” weapons for both offensive and defensive uses. In many cases, they will be capable of in-flight retargeting from remote sensors. The key here is sufficient quantities, so they must be low cost.
3. We must achieve rapid force projection, global reach and great mobility for our forces. With uncertainty over where they will be required, and the need for extremely rapid response to a crisis anywhere in the world, this capability—when combined with the first two elements—will provide us with overwhelming military superiority.
4. With regard to the new threats, we must develop and deploy credible deterrents and, if necessary, military defense against projected, less traditional, early 21st century threats—biological, chemical and nuclear weapons; urban combat; information warfare; and large numbers of low-cost ballistic and cruise missiles. These threats represent priority issues for our resources—even if it means impacting some of our more traditional areas.
5. We must encourage interoperability among our allies—essential for coalition warfare. We must insure that our partners’ technologies complement those of our forces and that the joint operations that are becoming increasingly common within our own military are extended to our allies. To accomplish our goal of information superiority, we must make certain that the C4ISR and advanced weapons—such as theater missile defense systems—are fully interoperable. The worldwide proliferation of weapons of mass destruction and the development of longer-range delivery systems by rogue nations threaten not only our forward-deployed forces but also those of our allies in many parts of the world; and, in a coalition environment, one weak link makes everyone vulnerable. As threats to our coalition become increasingly sophisticated, the technical challenges of interoperability multiply and become increasingly difficult to surmount. Developing a single, integrated air picture and joint operational defense capability for future coalition operations is a significant undertaking. I am confident that we are up to the challenge. But, there is still too much autonomy in the systems we produce. This increases costs. It also increases confusion on the battlespace. We must develop and deploy systems built from the ground up with the ability to communicate and fight side by side in a joint battlespace environment.

These five priorities form the acquisition building blocks of the Revolution in Military Affairs—a strategy for maintaining our strength and building our security in the face of a new generation of threats. Then, to pay for this required modernization to achieve the Revolution in Military Affairs, we must simultaneously engage in a Revolution in Business Affairs. This means designing and building affordable systems and, simultaneously, cutting support and infrastructure costs. While continuing to explore long-term qualitative leaps forward in military technology, we must also lead the way in low-cost, advanced technology. Affordability is just as great a technical challenge as performance. Here we must take full advantage of the cost-sensitive, product and process technologies and the management lessons that have turned around

American commerce and industry during the past decade. The big challenge is to develop an affordable system of systems that will be ready when initially required and evolve as the threat becomes more sophisticated and longer range. This requires urgent action. If we fail to invest now in these systems, they will not be around when we do need them five or ten years down the road.

Let me give you an example of what I mean. The Joint Air-to-Surface Standoff Missile (JASSM). I am sure you are all familiar with this weapon system and how it will perform. Perhaps you are not as familiar with how we acquired it. This missile, as you know, is designed to meet the need for a conventional weapon that can penetrate advanced defense systems—hardened targets—with lethal force. This system should provide our combat forces with a dominant, long-range, precision strike capability well into the 21st century. It also provides us with an affordable system. The design and engineering of the missile were carried out with “price” included as an essential technical requirement. We also established, as part of the requirements, that we receive a firm fixed-price for the first 1,300 missiles produced by the contractor. This system had to meet both technical requirements and cost requirements. By designing price into the specifications, we have achieved a major savings on the system and have created a system that promises much better performance—or the contractor pays for it. Meeting this challenge required innovation and ingenuity on the part of the competing bidders. This is what we get under the contract:

- Each missile will cost us under \$300,000, well below our requirement of no more than \$400,000 per unit, and the CAIG [Cost Analysis Improvement Group] estimate of \$700,000.
- The Joint Air-To-Surface Standoff Missile also comes with a full 15-year “bumper-to-bumper” warranty included in the fixed price. The bumper-to-bumper warranty places the burden of performance and reliability on the contractor, not on the buyer. If something breaks, the contractor fixes it—at their expense.
- An accelerated production schedule will enable us to take delivery starting in the third quarter of the year 2001.

Clearly, the Joint Air to Surface Standoff Missile comes to us better, faster and cheaper—meeting all the criteria of our major reform initiatives. One of the reasons this missile system is affordable is that the contractor took proven, reliable commercial processes and components and adapted them to create a low-cost airframe. This includes the use of Vacuum Assisted Resin Transfer Molding from the boating industry for the airframe body and foam core materials from the surfboard industry for the wings and tail. The molding process borrowed from the boating industry provides extra strength to weight ratios combined with lower fabrication costs. The foam cores borrowed from surfboard industry provide stiffness and durability for the wings and tail with the benefit of lower material costs. Using these proven commercial processes also reduces cycle times—in this case by six months. The result is a high performance system at an affordable price, delivered much earlier to the field. The message here is that DoD can and does achieve lower costs, improved performance, and reduced cycle time. It takes a lot of hard work and commitment on the part of our acquisition team, but it is an effort that is paying off in increased combat readiness, better equipment, faster deployment and overall superiority for the United States military. Building on our past success, we must instill in each and every member of our defense acquisition team a sense of urgency. We must build now for the future if the Revolution in Military Affairs is to succeed; and we must make more radical changes in restructuring our acquisition processes if the Revolution in Business Affairs is to succeed. To do this, I have set five priorities:

ONE. We must implement aggressively and fully the acquisition reform initiatives of the past few years; and add to these where appropriate. This expanded definition of acquisition reform includes much more uniform use of commercial practices and distribution systems to satisfy materiel support requirements; more competitive sourcing of current in-house work; and

greatly expanded purchase of common-use, commercially available items. One recent example of the use of commercially available items is the major contract awarded to Boeing as the lead system integrator for the National Missile Defense System. The company will develop the ground-based interceptor using commercial off-the-shelf boosters. Here again, the Ballistic Missile Defense Organization specified in its initial Request for Proposals that "affordability" would be a critical factor in its final decision on what system provides us with the "best value." This contract demonstrates the advantages of adapting commercial technology to defense-unique projects to meet the requirement for affordable systems. One of my goals as undersecretary of defense for acquisition and technology is to greatly expand and institutionalize the concept of "Total Cost of Ownership"—a seamless architecture which links concept, design, manufacture, testing and evaluation, maintenance, repair and environmental impact—the entire life cycle of our acquisition process. The Total Cost of Ownership concept already has a proven record of success. The Joint Air to Surface Standoff Missile—designed with price in mind, purchased on a fixed price contract, delivered with a full 15-year warranty—is a perfect example.

We must also operate on much faster cycle times in order to make the best use of continuing advances in technology, as well as trim costs. Our Year 2000 acquisition commitment to the vice president is to deliver new major defense systems to users in 25 percent less time. We hope to exceed that goal; and we must. Information Age technology cycles are 18 months, not the typical DoD cycles that can run 11 [to] 13 years, or even longer. Testing is a particularly difficult challenge as we seek to reduce our overall cycle costs and time. When we consider the interlocking strata of technical hurdles we must overcome on many of our new weapons—each of the individual elements incorporated into a complex system: then each system combined with multiple systems into a "family of systems": all of them operating in joint service and allied battlespace environments—we know that we require a high level of testing and evaluation. Techniques like simulation and modeling can help us in both areas by reducing the risk associated with new products and processes, by saving time in the development and production phase of new systems, and by making efficient use of scarce and increasingly expensive resources.

TWO. We must work to bring about far greater civilian/military industrial integration. We seek a greatly expanded partnership with a revived and prospering commercial industry—not a partnership in which we become simply the purchasers of commercial products and processes, but a dynamic and vigorous engagement that, through R&D [research and development], creates advanced products and systems with common technological bases and that, through use of flexible manufacturing, allows production of our low-volume, defense-unique items on the same lines with high-volume commercial items. TRW, for example, has been producing defense-unique electronic circuit boards for the Air Force's F-22 fighter aircraft and the Army's Comanche helicopter on the same production line as its high volume commercial electronics products. This has resulted in 30 [percent to] 50 percent savings and a product that actually exceeds our performance requirements.

Civilian/military integration will not fully succeed unless we are able to encourage more world-class high tech firms—particularly in the R&D field—to do business with the Defense Department. In order to take full advantage of opportunities for increased competition and access to the superior products and processes that many world-class companies offer, we must overhaul our unique government cost accounting and auditing systems: consider how we can accommodate some bidders' need for long-term contractual relationships: and deal with troublesome intellectual capital/property rights issues.

THREE. The department must shift the major share of its resources from infrastructure and support to modernization and combat. Currently, about 65 percent of the DoD budget goes into the support and infrastructure area. Reducing our support costs will make more of our limited funds available for modernization and combat—shifting \$10 [billion] to \$30 billion per year into modernization. Here also, we must learn to capture commercial technology (both product and process technologies) wherever applicable and apply them to defense-unique use. Increasingly,

we must look to the private sector to competitively supply a wide range of goods and services, many of which they can deliver faster, better and cheaper. As we look to the future, I see a Department of Defense, not exclusively restructured on the private sector model, but one that at least concentrates its mission much more on its core, inherently governmental, capabilities: warfighting, policy, management and oversight. For all other activities, it will utilize competitive sourcing to achieve the best performance at the lowest cost—to get the best value for the government from both the public and private sectors.

FOUR. We must totally reengineer our DoD logistics system. We are living today with a 1950's logistics model that is no longer affordable and that fails to provide acceptable performance. Advanced information systems and rapid transportation are keys to our success in this area. Two of our Year 2000 logistics support commitments to the vice president are to achieve visibility of at least 90 percent of all DoD materiel assets and reduce order to receipt time by more than 50 percent. Such actions will have huge advantages in warfighting sustainment and, simultaneously, in support cost reductions.

FIFTH, AND FINALLY, we must focus on continuous training and educating our acquisition workforce to meet the demands of this massive transformation effort. Unless we all know how best to do what we are doing; understand why we are doing it; comprehend the benefits to be derived from doing it better and appreciate the urgency of the need, acquisition reform will not succeed. The key to our transformation is a well-educated, aggressive, and committed acquisition team. Additionally, our acquisition strategy can only be successful if we forge an effective partnership with industry. Industry must recognize our fiduciary responsibility and share our accountability to the taxpayer. The American taxpayer will not accept prices that are significantly higher now, under competitive sourcing, than they were under the old cost-based system—unless we can demonstrate the value that has been added. Americans are intelligent consumers; and they know how to shop around for the best price and best value. Therefore, they are unlikely to accept contrived explanations as to why DoD is paying \$100 for a common hardware item they know they can purchase for \$1.50 at any hardware store. We need industry to work with us to find ways to structure and price contracts to insure that our new commercial partnerships take full advantage of the flexibility provided under the law—and assure taxpayers that their money is being spent prudently.

As we move to commercial buying practices, we must become more professional at the bargaining table. We will train our workforce to use the best techniques available to insure the government gets best value for its dollars. We also will continue to train our workforce to become more proficient and astute in their management of our suppliers—utilizing tools such as competition, market research and price analysis. And we are also looking to industry to insure that its acquisition and selling professionals fully understand the demands of the defense market and do their share to insure highest quality, decreased cycle times, lowest prices, and maximum performance. We should demand and receive nothing less.

In closing, let me again emphasize the criticality and urgency of the dual transformation that is underway and that we, collectively government and industry, must rapidly and successfully implement—that is, the Revolution in Military Affairs and the Revolution in Business Affairs—to pay for it. Only with your help will we succeed. I know I can count on it. America's future security depends on it.