Joint Mission Acquisition — An Idea Whose Time Has Come

BMDO's Role As Champion of Interoperability Crucial to Future of Missile Defense

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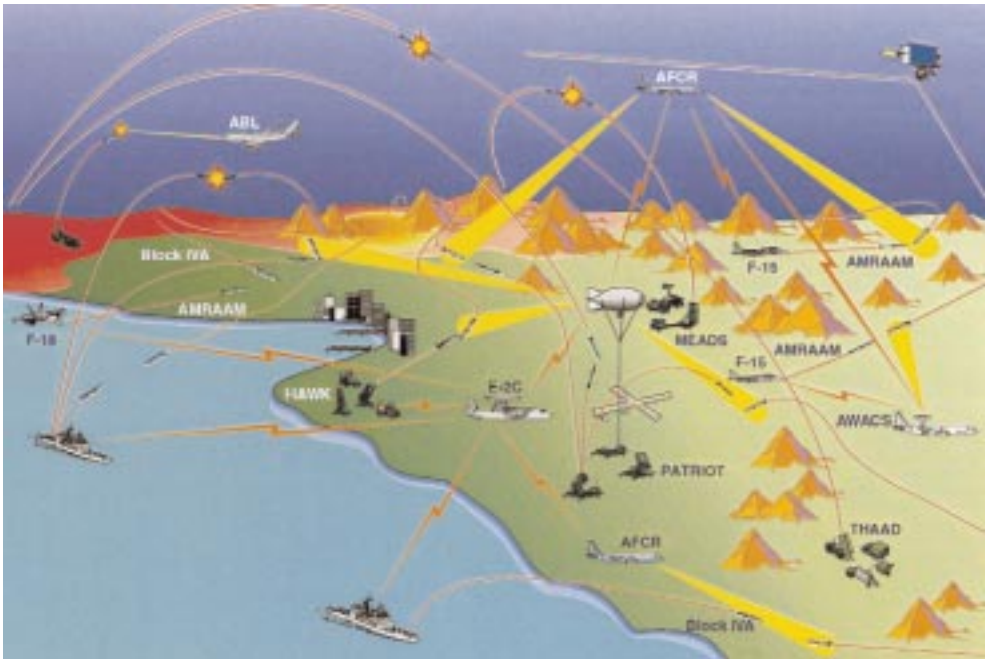
Victor Hugo's comment that nothing is so powerful as an idea whose time has come certainly seems true of ballistic missile defense. The Gulf War of 1991 witnessed the advent of missile defenses as a major operational concern and brought with it a profound change in the requirement for interoperability between Service-operated systems. Without complete integration of these systems, effective missile defenses are impossible. As *Joint Vision 2010* put the matter:

> Simply to retain our effectiveness with less redundancy, we will need to wring every ounce of capability from every available source. That outcome can only be accomplished through a more seamless integration of Service capabilities. **To achieve this integration while conducting military operations we must be fully joint: institutionally, organizationally, intellectually, and technically.** It is not enough just to be joint **when conducting future operations. We must find the most effective methods for integrating and improving interoperability with allied and coalition partners.**

This revolutionary increase in the requirement for interoperability has spawned a new approach to acquisition management: Joint Mission Acquisition.



JOINT THEATER AIR AND MISSILE DEFENSE. THE TMD BATTLESPACE IS THE VOLUME OF AIR AND SPACE DEFINED BY THE TRAJECTORIES OF ATTACKING MISSILES AND THE PERFORMANCE PARAMETERS OF DEFENSIVE SYSTEMS. HERE, TRADITIONAL DOMAINS OF WAR (LAND, SEA, AND AIR) MERGE, CREATING A REQUIREMENT FOR COMPLETE INTEROPERABILITY BETWEEN SERVICE-DEVELOPED SYSTEMS IN THE TMD ARCHITECTURE. INTEROPERABILITY IS CRUCIAL TO EFFECTIVE THEATER MISSILE DEFENSES AND CENTRAL TO THE CONCEPT OF JOINT MISSION ACQUISITION.

Commonality, Interoperability, Cost Reduction

Historically, improving interoperability has often been a goal in joint development programs, but the primary reason for such undertakings before Desert Storm was to reduce the cost of the force structure by eliminating unnecessary duplication in the development of weapons and support equipment. We see this point illustrated in the current Joint Strike Fighter (JSF) program. While this program does seek to enhance interoperability between three of our nation's four air arms, cost reduction is the principal reason DoD has charged the Air Force, Navy, and Marine Corps to work together with U.S. allies to develop "three different [strike fighter] designs" that "have in common the key high-cost components — engines, avionics, and many of the high-cost structural components. The idea here really is build-

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Photo courtesy Boeing

PATRIOT MISSILE CREWMEMBER WITH THE 35TH AIR DEFENSE ARTILLERY, FORT LEWIS, WASH., PULLS CAMOUFLAGE NETTING OVER A PATRIOT MISSILE LAUNCHER, DURING EXERCISE ROVING SANDS '97. THE PATRIOT PROVIDES MISSILE DEFENSE AGAINST ENEMY FIGHTER STRIKES AND SCUD MISSILE LAUNCHES.

ing different structures out of a common family of building blocks."

In the past, the Defense Department's principal approach to joint procurements like JSF has been to name a lead Service, which then appointed a program manager who headed a Joint Program Office (JPO) that included representatives from the other Service or Services involved in the program. In spite of a somewhat mixed performance, the JPO concept has been adequate to satisfy relatively limited requirements for commonality and interoperability that were largely of secondary concern.

One reason for this approach to joint procurement may have been that prior to the Goldwater-Nichols Reorganization Act of 1986, considerable authority was vested in the Services by Title 10. However, the 1986 act strengthened the Secretary of Defense, assuring him "full power over every facet of the Department of Defense." The act further specified that the "Secretary has sole and ultimate power within the Department of Defense on any matter on which the Secretary chooses to act." This has opened the door on a new approach to acquisition that has been dictated by the technological realities of modern warfare that became apparent in early 1991.

The opening days of the Gulf war witnessed history's first missile-versus-missile battles and heralded the birth of a major change in the significance of interoperability. Saddam Hussein's Scud missiles disrupted the economic and social lives of civilians in allied countries, killed 28 Americans in one incident, and narrowly missed a Navy munitions ship in another episode. In the next theater operation, the United States and its allies will surely face missiles that are much more formidable than the Scud.

A New Way of Thinking — Battlespace

When it comes to designing effective defenses against the improved long-range missiles the United States and its allies will face in future operations, traditional boundaries between land, sea, air, and space operations are virtually meaningless. Instead, we think in terms of battlespace — the volume of air and space defined by the trajectories of attacking missiles and the performance parameters of defensive weapons that can be brought to bear on the attackers.

> Without a joint mission acquisition agency like BMDO to incorporate interoperability requirements in the architecture for the theater missile defense family-of-systems and to champion these requirements in the Joint Requirements Oversight Council process, interoperability will not survive the program scrubs that inevitably occur in times of constrained Service budgets.

In some future contingency in the Middle East, a barrage of Shahab-3 and Shahab-4 missiles might be launched from the interior of Iran and traverse the Persian Gulf, en route to allied cities and bases on the Arabian Peninsula. During their boost phase, some of these missiles might be within range of Air Force airborne lasers orbiting over southern Arabia. Later, while still in their ascent phase and then during mid-course, these missiles would be vulnerable to Navy Theater Wide missiles deployed aboard ships in the Persian Gulf.

Still later in their mid-course, as they approach their targets, Army Theater High-Altitude Area Defense missiles on the

DoD photo

peninsula and Navy Theater Wide missiles aboard ships in the Red Sea might take them under fire. Then, as the survivors of earlier interceptor attacks draw nearer their assigned targets, Patriot PAC-3 and Navy Area missiles would attack the leakers.

In this scenario, the battlespace includes the entire trajectory of the missiles from a few thousand feet over their lift-off points to the sky immediately over defended areas, and the multiple systems that defend against the attackers constitute the layered defense that is essential to achieve a high kill probability against missiles that might well be carrying weapons of mass destruction.

Since the entire battle described above might encompass only 15 minutes, we should perhaps add time as a critical fourth dimension to our battlespace. Fifteen minutes is just about enough time to play a par five! Yet in this same amount of time, space- and ground-based sensors must detect and establish tracks on perhaps 15 to 20 missiles. They must relay this information to the battle management system that must already know the availability of defensive systems, regardless of which Service is operating them.

This battle management system must then establish its battle strategy. It will know that each type of defending missile has its "sweet spot" —that part of the battlespace in which it is most effective. As a result, the battle management system will lay each weapon against each target to achieve optimal results, holding other missiles in reserve in case the first shots fail to find their targets.

The sensors must be watching as these first defenders meet their targets so they can provide the data needed to determine the outcome of each engagement. The battle management system must then issue orders for second and perhaps third shots to ensure destruction of all attacking missiles, following each target until it is destroyed. This is what we call "fighting smart," and fighting smart is a *sine qua non* for success in the missile battles of the future.

This battlespace example makes it clear that interoperability specifications are as important as any other performance parameter associated with the development of a missile defense system. Yet, DoD faces a difficult task in acquiring interoperable systems.

To begin with, interoperability is an abstract quality that resides principally in the system architecture and its embodiment, the communications links and computers of the battle management system. From the architecture flows the specifications that must be built into Service-developed components to ensure interoperability when they are deployed. The Services are developing these components under tight fiscal constraints and are primarily concerned, understandably, with hard-performance criteria that they believe will guarantee adequate protection for their own forces. Given these conditions, how does DoD ensure the battlefield interoperability of Service systems?

Warfighting CINCs Need Family-of-Systems

The first answer is a new approach to acquisition. This new approach begins with the recognition that developing effective missile defenses involves a qualitatively different set of battlefield requirements. Furthermore, under this new approach, the warfighting Commanders in Chief (CINC), not the Services, constitute the principal constituency for the systems developed to satisfy these requirements.

Traditionally, each Service has developed its own unique suite of weapons, the mainline systems that allow it to carry out operations in its particular domain. To conduct joint operations, we meld together elements provided by the Services and place these elements under the command of a warfighting CINC.

Today, as the battlespace example cited earlier shows, it is no longer technically sound to think in terms of Service-oriented, stand-alone systems that are simply brought together under a CINC to provide theater-wide missile defenses. This is because effective operational missile defenses do not exist unless Service-developed components come to the field already integrated into a single, coherent missile defense family-of-systems. And it is this integrated family-of-systems that CINCs must have if they are to protect theater forces and civilian populations from missile attacks.

DoD has already made important institutional arrangements to see that CINC requirements for effective theater missile defenses are met, to include making the U.S. Atlantic Command (ACOM) responsible for consolidating theater missile-defense requirements. Additionally, the Under Secretary of Defense for Acquisition and Technology and the Vice Chairman of the Joint Chiefs of Staff established the Joint Theater Air and Missile Defense Organization (JTAMDO) to develop an operational architecture based upon the requirements supplied by ACOM. These two officials also directed the Ballistic Missile Defense Organization (BMDO), the "chief architect" for theater air and missile defense, to work closely with JTAMDO to see that these requirements are reflected in missile defense systems developed by the Services under the guidance of BMDO.

In its capacity as chief architect, BMDO becomes the champion of interoperability in the missile-defense community. Without a joint mission acquisition agency like BMDO to incorporate interoperability requirements in the architecture for the theater missile defense family-of-systems and to champion these requirements in the Joint Requirements Oversight Council process, interoperability will not survive the program scrubs that inevitably occur in times of constrained Service budgets. This connection between interoperability and effective missile defenses and their dependence on the independent role played by BMDO suggest that joint mission acquisition, like missile defense itself, is an idea whose time has come.

Editor's Note: A shorter version of this Op-Ed appeared in *Defense News,* August 1998, under the title "The Future is Interoperable."