THE SINGLE INTEGRATED AIR PICTURE

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Introduction

Interoperability requirements are here to stay. As most acquisition professionals know, the August 1999 revision to the Chairman of the Joint Chiefs of Staff Instruction 3170.01A requires that system development programs address interoperability factors. Additionally, weapon systems operational requirements documents now have an interoperability key-performance parameter. Within each Service, a Program Executive Officer or the Acquisition Executive coordinates programs to meet interoperability requirements. Joint interoperability is a difficult problem because the lack of a central acquisition organization to deal with synchronization and management of joint weapon system interfaces.

Background

In the Joint Theater Air and Missile Defense (JTAMD) mission area, interoperability has been a high priority because of the mix of forces that defend the battlespace and the potential for civilian casualties and fratricide. Since the late 1980s, air picture interoperability issues have been identified through various real-world and exercise scenarios. In 1988, the Navy AEGIS cruiser *Vincennes* incorrectly identified an Iranian airliner and shot it down over the Persian Gulf, killing all 290 passengers.

In April 1994, the tragic shooting down of two Army BLACK HAWK helicopters over Northern Iraq resulted in the deaths of 26 people and further illustrated the need for a clear and accurate air picture. Additionally, All-Service Combat Identification Exercise Tests have continually revealed shortcomings in the joint air picture, but little progress has been made to address the joint capability problem. As such, in March 2000, the Joint Requirements Oversight Council (JROC) directed the Services to "stand up" the Single Integrated Air Picture Systems Engineering (SIAP SE) Task Force to begin working on part of the JTAMD interoperability problem.

This article examines the SIAP SE Task Force approach and structure, as well as its impact on future interoperability efforts. SIAP is a warfighting concept that will allow all elements in the JTAMD architecture to have an accurate, common view of objects in the air space. Together with combat identification capabilities, the SIAP is one of the building blocks for the overall JTAMD 2010 operational concept. It allows air defense shooters to confidently engage with their weapon systems at the maximum range with low risk of fratricide. Currently, Army air defense weapons employment is restricted to areas where friendly aircraft operate. However, with the emerging cruise missile and unmanned aerial vehicle threat, all weapons must be able to engage at their maximum range. In addition, SIAP is envisioned to support advanced engagement concepts that allow shooters to use nonorganic sensors.

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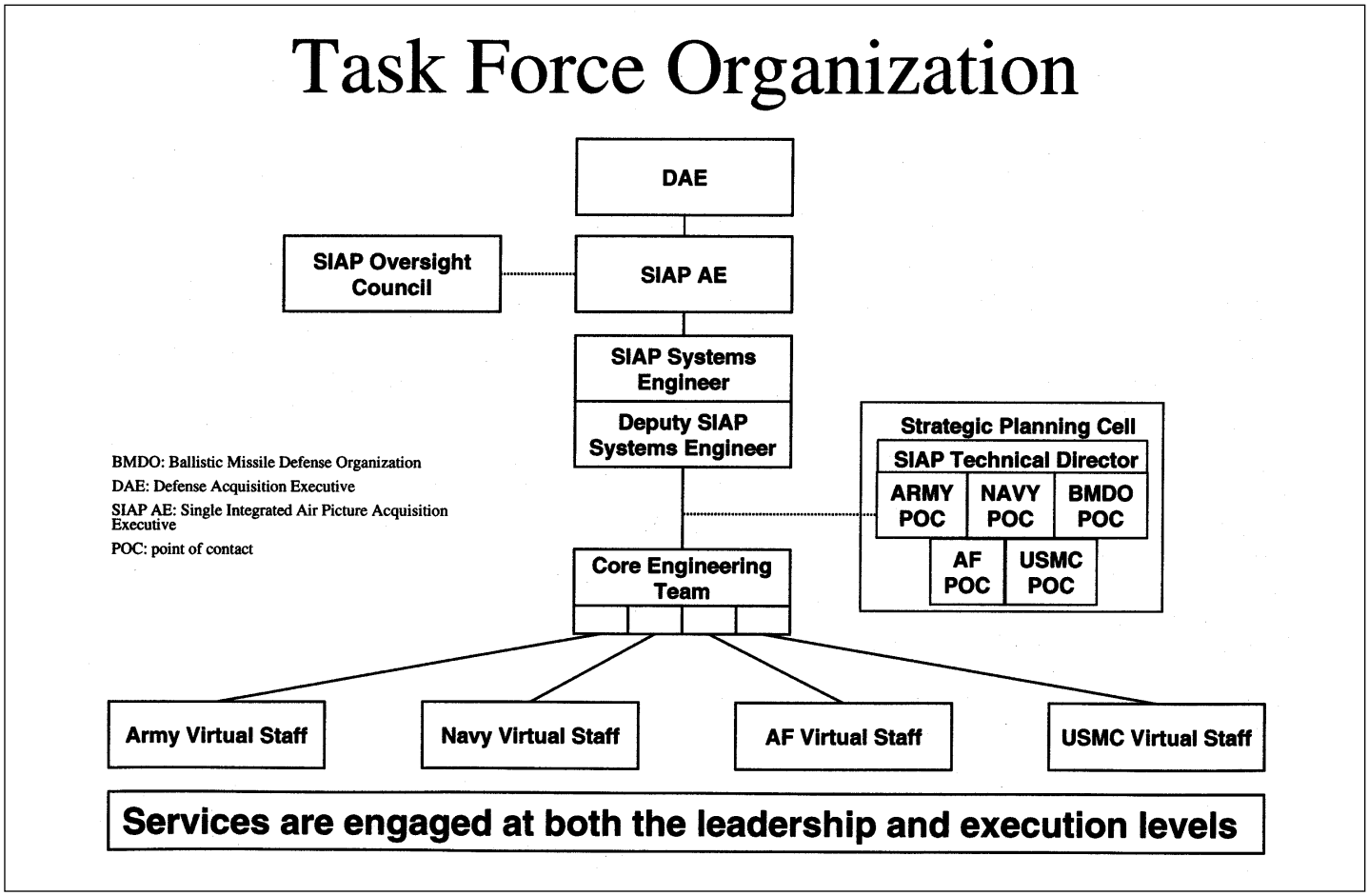

Implementation Standards

The development of a SIAP has been hampered by differing approaches to implementing the Joint Data Network (JDN, aka Link 16) standards (MILSTD 6016A), including position location and timing differences, as well as varying rule interpretations. Some of the systems impacted by this dilemma include the Army's PATRIOT, Forward Area Air Defense Command and Control, Air and Missile Defense Workstation, the Air Force's Airborne Warning and Control System, and the Navy's AEGIS Weapons System. Each Service may believe it has complied with MILSTD 6016A; however, when systems are linked in a joint environment, the air picture can differ significantly from one system to another.

Getting all systems to comply with a common standard would appear to be a relatively simple task, but in practice it has been difficult. Each Service has made a significant investment in its systems, and the potential cost for changes could be high. Because the Services believe they met their requirements by implementing the MILSTD, they have no incentive to fund changes for fielded systems to address interoperability solutions. The JROC-directed SIAP SE Task Force coordinates the Services' efforts to solve long-standing JDN implementation and interpretation problems while preparing an architecture and road map that supports the Theater Air and Missile Defense Capstone Requirements Document.

As with most joint efforts, the real difficulty lies in the details of cross-Services implementation. In its concept for the task force, the JROC sought to make the Services full participants in the effort. The joint staff had previously worked through the Ballistic Missile Defense Organization (BMDO) to achieve joint SIAP objectives, with the Services involved through their respective BMDO or Link 16 user programs.

The original Army position on SIAP work was that the BMDO should serve as the lead agent for SIAP. However, the BMDO was not anxious to accept the lead and the Navy had expressed a desire to lead the effort. The JROC stated that joint interoperability is a four-Service problem and should be resolved by the Services. Thus, the JROC construct addressed the various concerns, including the Army position, and assigned the Navy as the "Lead Engineer" for executing the effort and the Army Acquisition Executive for overseeing the effort. The JROC further directed that the task force be composed of no more than

30 core task-force members working with the virtual staffs from each Service and agency (Figure on Page 9). BMDO and the Services were to provide funding with a JROC review of the task force's progress planned for 2 years after standup.

The Services and BMDO initiated a working group to draft a charter and prepare to stand up the organization. Charter preparation took about 60 days and involved difficult negotiations to resolve all Service concerns. The issue of a "sunset" clause for the task force was highly debated with the solution ultimately left to JROC to review after 2 years. The Services were clearly concerned about the prospect of having to fund the organization for an indeterminate period.

The task-force charter addressed the tough issues of Service equities and issue adjudication via the complex relationship between the SE and the JTAMD requirements process. The task force also established an oversight council consisting of the Service and BMDO Acquisition Executives and their designated three-star-level representatives. Funding issues were deferred to a follow-on detailed implementation plan.

Costs

In May 2000, the JROC reviewed the progress toward standing up the task force and approved a preliminary funding breakout that included funding from all Services and BMDO. The effort was estimated to cost $60-80 million over 2 years (split into 3 budget years).

Settling on a financial management construct was no small task. Each Service has its own method for working on joint programs, and the short duration of the effort was new to everyone involved. The financial management construct ended up with the Services and BMDO reprogramming to a Navy program element for simplicity of execution. This was a positive step in standing up the task force because the Services had to show trust by committing funds to the program.

At the May review, the JROC also called for the task force to provide a detailed implementation plan describing proposed work and the associated costs. This detailed implementation plan was to be the basis for approval of funding levels beyond an initial $4 million. The plan addressed many issues such as Service work share and systems engineering team focus that had previously been pushed to follow-on documents. As of December 2000, the plan is still in staffing with the difficult issue of work share among the Services remaining as an outstanding Army issue. Regarding this issue and others in the formation of the task force, the Army can address issues through its oversight role as provided by the JROC.

The Single Integrated Air Picture Systems Engineering Task Force concept forces the Services to collaborate as stakeholders to address specific interoperability issues.

The organizational construct will require active oversight by the SIAP Acquisition Executive to protect Army (and other Service) interests and balance them with progress on joint solutions to the air picture deficiencies. The end result will raise the visibility of SIAP interoperability issues to the level of Service assistant secretaries, which may provide the emphasis needed to achieve joint interoperability.

Conclusion

So what does all this mean for Army acquisition and future interoperability efforts? Through the SIAP Task Force, the JROC is pressing hard on joint interoperability issues. It has tended to place responsibility with the Services where the vice chiefs have directive authority, rather than in Defense agencies. This gives more control to the Services, but it comes with associated funding requirements and issues of Service equity.

The SIAP SE Task Force concept forces the Services to collaborate as stakeholders to address specific interoperability issues. The Army must actively participate in the SIAP SE Task Force to protect its substantial investment in its weapon systems, and to manage required changes within software and system upgrade cycles. The challenge is to orient the task force on specific improvements with a finite timeline and evolve successful efforts or rapidly end efforts that fail to meet objectives. The Army Acquisition Executive has set specific objectives that the SIAP SE must meet by July 2001. These objectives will provide an opportunity to judge the success of this new method of addressing interoperability.

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