

DEFENSE SYSTEMS MANAGEMENT COLLEGE

FUNDS MANAGEMENT DEPARTMENT

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TEACHING NOTE

ANALYSIS OF ALTERNATIVES

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INTRODUCTION

An *Analysis of Alternatives (AoA)* is a study of the operational effectiveness and life-cycle costs of the various alternatives that may be able to meet a mission area need. It answers the question, "What is the most cost-effective way to meet this mission need?" According to DoD 5000.2-R, the analysis is intended to:

- *Aid in decision-making by showing the risk, uncertainty, and relative advantages and disadvantages* of the considered alternatives. It *aids in the discussion of issues*. The analysis should show the sensitivity of each alternative to possible changes in key assumptions (e.g., threat) or system variables (e.g., selected performance capabilities). Where appropriate, it should include discussion of interoperability and commonality of components/systems that are functionally similar to other DoD programs or Allied programs. The analysis shall aid decision-makers in judging whether or not any of the proposed alternatives to an existing system offer sufficient military and/or economic benefit to be worth the cost. There should be a clear linkage between the analysis of alternatives, system requirements and measures of effectiveness used to evaluate the system.
- *Foster joint ownership and afford a better understanding of subsequent decisions* by early identification and discussion of reasonable alternatives among decisionmakers and staffs at all levels. The analysis should be quantitatively based, producing discussion on key assumptions and variables.

The AoA will normally include the following key sections:

- Mission Need, Deficiencies and Opportunities
- Threats
- Operational Environments
- Operational Concept
- Alternatives
- Measures of Effectiveness
- Life-Cycle Costs of each alternative
- Analysis of Alternatives (i.e., the actual analysis)

PREPARATION RESPONSIBILITIES

DoD Regulation 5000.2-R establishes the basis for developing an AoA to support milestone decision reviews. These policies and procedures specifically apply to acquisition category (ACAT) I programs and ACAT IA programs. Component Acquisition Executives (CAEs) may tailor the underlying principles as needed for ACAT II and III programs. (Until OSD revises all related documents to reflect the new AoA policy of DoD 5000.2-R, refer to the previous Cost and Operational Effectiveness Analysis (COEA) documentation for preparation of AoAs, which replaced the COEA).

The DoD Component responsible for the mission area in which a deficiency or opportunity has been identified normally prepares the AoA for ACAT I weapon systems. The OSD Principal Staff Assistant (PSA) office responsible for the functional area to be impacted normally prepares the AoA for ACAT IA automated information system programs. The Component Head or PSA is responsible for determining the independent activity which will perform the analysis. DoD 5000.2-R specifically prohibits the Program Manager to be delegated that responsibility.

For ACAT ID and ACAT IAM programs (where the milestone decision is made at the DoD-level), DoD 5000.2-R requires the Component Head or PSA (as applicable) to coordinate with key OSD officials and staffs early in the AoA process. This coordination is required to increase the likelihood that a full range of alternatives is considered; that organizational and operational plans for the alternatives are consistent with U.S. military strategy; and that joint-service issues such as interoperability, security, and common use are addressed in the AoA. This includes the staffs of USD(AT&L), the Assistant Secretary of Defense (Command, Control, Communications and Intelligence) (ASD(C³I)), the Joint Staff, the OSD PSA, the Director for Operational Test and Evaluation (DOT&E), and the Director, Program Analysis & Evaluation (PA&E), as applicable. The Director, PA&E is responsible for preparing guidance for the AoA in coordination with these offices, to be issued by USD(AT&L) or ASD(C³I).

MILESTONE DECISION REVIEWS OF AoAs

AoAs for both ACAT I and ACAT IA systems are required to be prepared and considered at appropriate milestone reviews beginning with program initiation (usually Milestone I, Program Definition and Risk Reduction Approval). The Milestone Decision Authority (MDA) may direct updates to the analysis for subsequent milestone decision reviews, if conditions warrant. The Component Acquisition Executive (CAE) has the authority to decide on the need for, and extent of, AoAs for programs classified as other than ACAT I or ACAT IA.

ACAT I programs: At Milestone I the analysis focuses on broad trade-offs available between a large range of different concepts. The analysis normally presents a “Go / No Go” recommendation. It demonstrates whether a new system is better than upgrading/modifying

an existing system. Cost estimates may be only a rough order of magnitude. At Milestone II, if the AoA is required to be updated, the analysis would be more focused. Hardware alternatives present a narrower range of choices. The analysis is more detailed than at Milestone I as the system is better defined and more cost data are available. Point estimates are given with uncertainty ranges. At production approval (Milestone III) the AoA is unlikely to be required, unless the program or circumstances (e.g., threat, alliances, operating areas, technology, etc.) have changed significantly.

- ACAT IA programs: The AoA for an ACAT IA program will be incorporated into the cost-benefit element structure and process agreed upon by that program's IPT. At Milestone I, the Component may conduct a sufficiency review of the PM's life-cycle cost estimate and life-cycle benefits in lieu of a full analysis. Normally, the IPT will establish the content for the sufficiency review. The AoA is usually updated at Milestone II in conjunction with the program's life-cycle cost-benefit analysis update.

SERVICE PREPARATION PROCESSES

Each Service conducts the AoA preparation process in a unique fashion:

Navy: The Office of the Assistant Secretary of the Navy (Research, Development and Acquisition) (ASN(RDA)) released guidance on the preparation of AoAs. An AoA proposal prepared by ASN(RDA) in coordination with the program sponsor, program manager (PM) and appropriate System Command/Program Executive Office will initiate the AoA for ACAT I programs. An appointed oversight board will frame issues for ASN(RDA) and OP-08/DCS(RP) decision when consensus cannot be readily obtained. A study team prepares the AoA. The PM will be represented on the study team and the oversight board. Funding for AoAs will be separately identified through the PM with funding from resource sponsors. The PM will provide information and support as necessary to the study team.

Air Force: The Department of the Air Force published two documents to provide guidance for conducting an AoA, AFPD 10-6 and AFI 10-601. The lead MAJCOM for a new system will identify, explore and evaluate potential alternative solutions by accomplishing an AoA.

Army: In the Department of the Army, the Training and Doctrine Command (TRADOC) and the user community bear the responsibility for preparation of the AoA. The PM is a contributor of information and participates in the preparation process. AR 71-9 and the Army Acquisition Handbook provide information on AoA preparation.