

AoA Study Plan/Final Report Recommended Outline & Content

(Information to support CLR-151)

Notes:

1. **Blue bold** indicates information recommended to be added to study plan outline for the final report.
2. Every AoA is different, so tailor this outline as appropriate, and ensure guidance from the OSD, Director, CAPE for ACAT I and IA programs, any department/agency guidance is followed.

Executive Summary

- **Describe the purpose of the study**
- **Identify key organizations associated with the study**
- **Summarize the results of the study**

1. Introduction

1.1. Background

- Describe the history of developments that led to the necessity for the AoA
- Summarize relevant analyses that precede the AoA (e.g., Capabilities-Based Assessment and/or other studies)
- Highlight the applicable capability requirements document(s) (ICD/CDD)
- Include the study direction from the AoA study guidance, ADM, and any other terms of reference

1.2. Purpose

- Identify major issues to be studied
- Identify intended results in general terms
- Identify the Milestone to be supported

1.3. Scope

- Identify the level of detail and scope (breadth and depth) necessary to support the specific milestone
- Describe broadly the nature of possible alternative solutions to be considered

1.4. Capability Gaps

- Describe deficiency in system capabilities; refer to ICD or CDD as appropriate
- Identify the timeframe for the mission need

1.5. Stakeholders

- Describe the organizations that have an interest in the capabilities being studied

2. Ground Rules

2.1. Constraints and Assumptions for the AoA

- Describe AoA constraints and assumptions, including Initial Operating Capability, Full Operating Capability, and affordability
- Describe the implications of the constraints and assumptions
- Reference applicable sections in the ICD, CDD or AoA guidance
- Identify the AoA resources available (people, funds and time) and how they affect the scope of the AoA

2.2. Supporting Analysis

- Describe any analysis which may be leveraged to support this AoA

2.3. Threats and Scenarios

2.3.1. Scenarios

- Describe scenarios and rationale for selection
- Describe the planned analytic excursions to the baseline scenarios
- Discuss how alternatives are evaluated and compared using scenarios
- Discuss how scenarios are traceable back to strategic guidance (e.g., Defense Planning Guidance/National Security Strategy/National Defense Strategy/National Military Strategy/QDR Report)

2.3.2. Threats

- Describe briefly enemy tactics (include potential countermeasures)
- Paraphrase, quote, and reference the System Threat Assessment Report (STAR) , if it exists
- Identify other sources of projections
- Plan to approve or validate the threat through the Defense Intelligence Agency (DIA)
- Identify areas of uncertainty, if possible

2.3.3. Methodology

- Describe the methodology used for down-selecting the threats and scenarios used for evaluation of the alternatives

2.3.4. Environment

- Describe expected operating environment, including terrain, weather, location, and altitude
- Paraphrase, quote, and reference applicable sections in the ICD, CDD or AoA guidance documentation
- Consider the environmental impacts of alternative solutions with the environment

3. Range of Alternatives

3.1. Determining Alternatives

- Identify any alternatives required by the AoA study guidance
- Describe the procedures used to determine other alternatives which might provide the necessary capabilities

3.2. Description of Alternatives

- Identify the baseline case (this is usually the system in use today)

- Describe how the range of alternatives was kept manageable, while ensuring an adequate number of alternatives were considered (screening methodology)
- Categorize alternatives based on technology, delivery platform, kill mechanism, etc., if productive
- Summarize each alternative
- Use figures to show system functions or interfaces
- Discuss operational concepts variations for individual alternatives
- Describe how alternatives perform their function
- Consider whether the alternative systems are reasonable and feasible
- Discuss the availability of the alternatives within the assumed timeframe
- Describe the economic operating life of each alternative, both expected and required

3.3. Operational Concepts

- Identify the CONOPs used for the AoA
- Describe how each alternative fits the Concept of Operations (CONOPs)
- Reference applicable sections from the ICD or CDD
- Discuss specific tactics and doctrine used
- Describe basing and deployment concepts (contingency and wartime)
- Describe and include results of supportability analysis and trade-offs
- Address needs for interoperability with other systems
- Consider any recent field or test experiences that might be relevant

4. Effectiveness Analysis

4.1. Determination of Effectiveness Measures

4.1.1. Mission Tasks (MT)

- Identify what task or tasks need to be achieved to satisfy the ICD
- Ensure MTs are not be stated in solution-specific language
- Endeavor to keep MTs independent of one another
- Try to avoid MTs that use words such as “minimize,” “maximize,” and “optimize”

4.1.2. Measures of Effectiveness

- Identify MOEs from the ICD, and other derived MOEs from MTs
- Make military worth a prime consideration in the selection of MOEs
- Strive to form MOEs that can measure and compare the meaningful measures that affect performance of MTs
- Ensure MOEs are not solution-specific
- Support each MT with at least one MOE
- Consider that a MOE may support more than one MT, and may even support other MOEs
- Form ‘unbiased’ MOEs that are comparable across all alternatives
- Give preference to quantitative versus qualitative MOEs

4.1.3. Measures of Performance

- Identify MOPs derived from MOEs, and from the CDD (if the AoA supports Milestone B)
- Support each MOE with at least one MOP

- Consider that a MOP may support more than one MOE, and may even support other MOPs
- Make sure MOPs are “knowable” either analytically or through testing
- Define MOPs by system performance characteristics
- Identify MOPs recommended as KPPs and KSAs

4.2. Effectiveness Methodology

- Outline the approach and scope of the analysis, including the proper level of modeling military operations (e.g. campaign, mission, engineering, etc.)
- Plan to carry the baseline alternative through the final effectiveness analysis
- Plan to use MTs and, as appropriate, MOE values in the cost-effectiveness analysis
- Consider the influence of threshold performance criteria, if any, in the methodology
- Describe the methodology, including models and simulations to be used
- Ensure the modeling effort is focused on the computation of the specific MOEs established for the purpose of the AoA.
- Assign organizational responsibility for each step
- Describe the mechanisms to be used to obtain the buy-in to the methodology by the appropriate communities
- Plan to perform sensitivity tradeoff analysis, as appropriate
- Discuss how measures used in the AoA are measurable (or testable) and will support the development of the post-AoA documents (e.g., CDD, CPD, TES, TEMP)

4.3. Sensitivity Analysis

- Discuss planned methodologies

4.4. Analysis Tools and Data

- Describe briefly the analysis tools and processes that are planned, and the reasons for selection, the input data to be used, and the corresponding sources of the input data
- Give evidence that data for the scenarios, threats, and each of the alternatives will be current, accurate, and unbiased (technically sound and doctrinally correct)
- Describe how models interface and how they are used to calculate MOEs and MOPs (use figures for clarity)
- If M&S are to be used: - Discuss who will be running the models
- Discuss any potential model biases, such as “man-in-the-loop” biases
- Describe the planned Accreditation process to be used for the models

4.5. Accreditation

- Describe any accreditation issues with the models that will be used
- Describe the accreditation process for those models

4.6. Effectiveness Results

- **Describe the results of the effectiveness analysis**

5. Cost Analysis

5.1. Life Cycle Cost (LCC) Methodology

- Outline the approach and scope of the cost analysis

- Plan to carry the baseline alternative through the final cost analysis
- Consider the influence of threshold performance criteria, if any, in the methodology
- Use the same operational concepts for cost and effectiveness analyses
- Describe the methodology, including the models used
- Assign organizational responsibility for each step
- Describe the mechanisms to be used to obtain the buy-in to the methodology by the appropriate communities
- Plan to perform risk and sensitivity tradeoff analysis, as appropriate
- Identify the economic operating life of the alternatives (i.e., 10 yr., 20 yr., 25 yr. sustained Operations and Support (O&S) cost)
- Discuss the methodology for costing Research, Development, Testing, and Evaluation (RDT&E), Investment, O&S, Disposal, and LCC for each alternative
- If Total Ownership Cost (TOC) is used, describe the differences from LCC
- Describe the planned approach for addressing the Fully Burdened Cost of Energy (FBCE), for those AoAs where this issue is applicable
- Identify “sunk costs” for information purposes only

5.2. Cost Tools and Data

- Describe briefly the models used, their reason for selection, the input data to be used, and the corresponding sources of the input data
- Discuss any potential model shortfalls
- Request sufficiency review from department/agency Cost Center

5.3. Cost Risk Methodology

- Plan to identify cost drivers
- Describe the methodology for determining the level of uncertainty for each element of LCC/TOC, as applicable

5.4. Life Cycle Cost Results

- **Describe the results of the cost analysis**

6. Risk Assessment

6.1. Risk Assessment Methodology

- Describe the planned methodology for conducting risk analysis and who will be responsible for conducting the analysis
- Describe how technology risk and maturity will be assessed

6.2. Risk Assessment Tools

- Discuss risk assessment tools or models which may be used in the analysis

6.3. Risk Analysis Results

- **Describe the results of the Risk analysis**

7. Alternative Comparisons

7.1. Alternative Comparison Methodology and Presentations

- Outline the approach and scope of the analysis, including the proper level of analyzing military operations (e.g., campaign, mission, engineering, etc.)
- Consider cost, effectiveness and risk as equal players in the analysis
- Plan to carry the baseline alternative through to the final analysis
- Plan to combine the cost, effectiveness and risk analyses
- Describe the comparison rank ordering methodology
- Describe the methodology, including the analysis tools used
- Assign which organization is responsible for each step
- Describe the mechanisms to be used to obtain the buy-in to the methodology by the appropriate communities
- Plan to perform sensitivity tradeoff analysis, as appropriate
- Plan to use figures and graphics for clarity

7.2. Criteria for Final Screening of Alternatives

- Discuss criteria for selecting among alternatives
- Describe possible cost and performance thresholds

7.3. Alternative Comparison Results

- **Compare the alternatives using effectiveness, cost and risk**
- **Provide alternative ways to improve the energy efficiency of DoD tactical systems with end items that create a demand for energy, consistent with mission requirements and cost effectiveness**
- **Discuss appropriate system training, in terms of each alternative, that will ensure that effective and efficient training is provided with the system**
- **Provide an assessment of preferred alternative(s), if appropriate**

7.4. AoA Conclusions and Recommendations

- **Provide conclusions and recommendations based on the analysis**

8. Organization and Management

8.1. Study Team Organization

8.1.1. Team Membership

- Include a phone number and email list for each team member
- Include a phone number and email list for members of other organizations that support/advise the study team

8.1.2. Study Advisory Group (SAG) (if used) member's phone numbers and emails

8.1.2. Team Responsibilities

- If the team consists of several functional panels, describe each panel (e.g., Threats and Scenarios panel, O&S Concepts panel, Effectiveness Analysis panel, Cost Analysis panel, etc.)
- Describe the responsibilities and products for each study team member

8.2. AoA Oversight and Review Process

- Describe the review process for this particular AoA (use pictorial if appropriate)
- Working Level Integrated Product Teams (WIPTs)
- Overarching Integrated Process Team (OIPT)
- Functional Capabilities Board (FCB)
- Requirements Validation Authority
- Milestone Decision Authority (MDA)

8.3. Schedule

- Study Plan Preparation 1-4 Months
- Oversight: Review of Study Plan 1-2 Months
- Analysis 3-5 Months
- Oversight: Mid-term Review of Results 1-2 Months
- Any Further Analysis 3-5 Months
- Emerging results briefings to stakeholders (as necessary)
- Evaluate Results 1-2 Months
- Conduct briefings on AoA results (SAG, FCB (JROC and JCB Interest), Requirements Validation Authority, and MDA)
- Final study results (briefing) due to Director, CAPE 60 days prior to Milestone A (ACAT I and IA) (other ACATs in accordance with Component procedures)
- Final Study Report Preparation 1-2 Months
- Oversight: Review of Study Report 1-2 Months
- Post final AoA Report to KM/DS (JROC and JCB Interest programs)
- Total 13-24 Months

APPENDICES

- Acronyms
- References
- **Accreditation Plan/Final Report**
- **Data supporting analyses (if not included in body of report)**
- **Other appendices as necessary**