Cost Capability Policy Update

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HQ AFMC/A5C
25 March 14
Purpose

• Provide an overview of recent direction requiring **cost capability analysis** to be presented at:
  – All Air Force Requirements Oversight Councils (AFROCs)
  – Air Force Requirements Review Groups (AFRRGs)
  – Air Force Review Board (AFRBs)
  – Configuration Steering Boards (CSBs)
Overview

• Background / New Air Force Policy
• Cost Capability Analysis Defined
• Decision Framework
• “Pilot” Programs – What We are Learning
• Roles and Responsibilities
• Examples – How its Done
• What’s Coming
• Summary
Motivation – Inform Life Cycle Affordability

Life Cycle Cost for one Program

- ASR
- SFR
- PDR
- CDR
- TRR
- FCA/PRR
- SVR/PCA
- Production Completion

Life Cycle Cost Commitment Curve

Expenditure Curve

Are we buying things right – efficient

Are we buying the right things – mission effectiveness

Product development/product support information available to support decision making
Cost Capability Analysis: The Concept

The analysis must be defensible, repeatable.
Background

Contractual Requirements Sufficiency

• 2011 CORONA Fall Tasker-9 directed AF/A3/5 and SAF/AQ to conduct Contractual Requirements Sufficiency
  – Problem: Too many programs are too costly resulting in either lower quantity fielded or terminating programs
  – Goal: Improve understanding of effects of requirements on cost and cycle time to inform affordability decisions
  – Solution: Determine explicit steps to vet affordability and cycle-time trades in requirements and acquisition processes

• Acquisition Continuous Process Improvement (CPI 2.0) identified seven root causes and solution to strengthen linkage between acquisition and requirements

Number one root cause: “Decision makers are not demanding cost capability analysis to inform decisions in acquisition or requirement forums”
• 22 Jun 12, CSAF and SECAF signed CPI 2.0 Plan

  - **Process Simplification:**
    Streamline acquisition oversight process

  - **Requirements Sufficiency:**
    Affordability trades

  - **Value Proposition:**
    Increasing business acumen

  - **Workforce:**
    Optimize workforce throughout the Acquisition Enterprise

Mandates cost/schedule capability/design trade-off curves throughout the lifecycle!
Background

Contractual Requirements Sufficiency Memo

Issued by SAF/AQ & AF/A3/5:

The goal is to improve the understanding of effects of requirements on cost and cycle time to inform affordability

Presentation of cost capability tradeoff analysis is required for all AFROCs, AFRRG, AFRB and CSBs.

Codified in AFI 10-601: “Lead Command/CFLI in conjunction with the Implementing Command, produces and presents cost capability analysis, provides results at all requirements and acquisition forums, and includes in Analysis of Alternative (AoA) Final Reports, Capability Development Document (CDD), and Capability Production Document (CPD)”

The AF Must Do Cost Capability Analysis
What is Cost Capability Analysis?

- Multi-objective decision analysis (MODA) using cost and military utility for a representative broad range of alternatives that results in a trade space between cost and warfighting capabilities
  - Identifies cost and operational effectiveness drivers
  - Identifies relative value in terms of warfighting capability (i.e. mission tasks, measure of effectiveness)
  - Integrates cost and military utility to illuminate the trade space
  - Yields information to compare many options cost and capability
  - Reduces potential sources of bias for development of candidate solutions
  - Intended to inform affordability decisions throughout the program’s life cycle
When to Perform It?

• Start early!
  - Works best when used at the earliest point before the ICD is developed to understand what the realm of the possible is; then throughout Life Cycle

• Reported at AFROIC for AoA final report, Capability Development Document (CDD) and Capability Production Document (CPD)
Benefits of the Analysis

• Facilitates Communication
  – Provides a way to depict and show what capability is lost or gained from one alternative to another and at what cost

• Aids Decision Making
  – Helps to clarify pros and cons for alternatives
  – Provides a way to down-select alternatives based on affordability and minimum acceptable capability
  – Focuses on military outcome (operational capability)

• Documents Decisions
  – Record of logic and analysis considered by decision makers
  – Provide basis for requirements trade-offs
  – Provides analytical pedigree and verifies application of systems engineering principles

Not just checking a box. Cost capability analysis is part of the decision making process!
## Cost Capability Analysis Decision Framework

### Decision Points

<table>
<thead>
<tr>
<th>Decision Points</th>
<th>AF Decision Maker*</th>
<th>Key Question</th>
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<tbody>
<tr>
<td>1</td>
<td>AFROC</td>
<td>What are the affordable and viable military concepts to mitigating the identified capability gap? Does the AoA Study Plan adequately describe the methodology for estimating the life cycle costs and operational effectiveness of the potential concepts identified in the study guidance to close the gap identified in the ICD?</td>
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* Final decision maker, other reviews may occur prior to final decision, i.e. AFRRG RSR for AF
Cost/Capability Pilot Programs
- What We’re Learning

• Trial programs for developing the analysis and capturing lessons learned:

  Advanced Pilot Training (T-X)
  Presidential Aircraft Recapitalization (PAR)
  Ground-Based Strategic Deterrence (GBSD)
  Global Aircrew Strategic Network Terminal (Global ASNT)
  Three-Dimensional Expeditionary Long Range Radar (3DELRR)
  F-15 Eagle Passive/Active Warning and Survivability System (EPAWSS)

  – No formal cost/capability process existed
  – Difficult to define military value/worth of a proposed capability
    • Must define military value before trades can be evaluated
  – Multi-disciplined team approach needed
    • Requirement owner/warfighter, PM, EN, cost analyst, ops research
    • Requires tight coupling of engineering and cost functions within the program office
  – Depicting results of analysis more difficult than expected
  – Industry analysis provided valuable insights to decisions
  – Cost capability methodology should be started in Development Planning (DP) and Analysis of Alternatives (AoA) timeframe and used throughout lifecycle
Roles and Responsibilities of the Stakeholders

**Sponsor**
- Develop operational requirements based on capability needs
- Determine appropriate balance between cost/schedule and capability

**Materiel Developer**
- Identify which requirements are cost/schedule drivers
- Identify cost/schedule impacts

**AFROC/SPONSOR**
- Determine the best cost capability value
F-15 EPAWSS AoA Pilot Program

- ACC defined the priority—or operational value—derived from each measure under four AoA Mission Tasks
- Performing cost & effectiveness analysis at detail level
- Aggregating normalized results to compare Alternatives

- First down-selecting Alternatives that are on the “Pareto Front”
- Further down-selecting Alternatives based on affordability and minimum acceptable capability

EPAWSS = Eagle Passive/Active Warning Survivability System
“Didn’t truly understand what we could live with and without until cost is a variable in the trade space discussions”
Respond to SECAF question on what resources it will take to do cost capability analysis

- Develop recommendations for implementation
  - Standardized methodologies
  - Standardized tools and data
  - Skill sets and expertise
  - Policy and procedures
  - Training
  - Organizational construct

- Recommendations will be linked to Air Force affordability/trade decisions (Decision Framework)

- Guidebook
  - To assist requirement sponsors, program offices, decision making bodies throughout the Air Force in conducting the analysis
Summary

- Cost capability policy is now in effect
  - Required to be presented at the AFROCC, AFRRG, AFRB and CSB
- Captured lessons from AF “Pilot” programs
- Guidebook is being written

Supports AF and DoD Decisions
Understanding the Trade Space

Can we afford to fill a capability gap?

What alternatives exist to fill a capability gap?

Are there cost / schedule / requirements trades to meet affordability goals?

Materiel Solution Analysis

Prototype and System Spec (Detailed Engineering Design)

LCC vs. Alternatives

LCC vs. KPPs / KSAs and Cost Drivers

AFROC pilot programs are implementing cost-capability process tailored to each program’s phase and specific needs
Key Questions to be Answered

• What are the operational requirements/conditions that are the primary drivers for cost/schedule/risk?

• What is the impact upon operational effectiveness, cost and schedule if these drivers are adjusted?

• What are the best value option that provides acceptable capability to the warfighter?

Spending a large % of a program’s budget to get the last few % of KPP/KSA performance is not always the “Best Value”
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