The Case for Considering Acquisition Program Executability Prior to Materiel Development Decision (MDD)

NDIA Conference Paper #11131

G. Laushine, H. Hayden
27 Oct 2010
Assess Executability Before MDD?
“But I don’t have a program yet!”

- GAO continually emphasizes having sufficient knowledge, early in decision process
- Need to consider trade space of programs, not just a concept
What is MDD Looking at?
All I need is requirements and AoA guidance, right?

• What Artifacts Do They Get?
  – ICD, AoA guidance

• What Decisions are really being made?
  – Do I have confidence that MSA will develop good info for a successful MS A decision?
    • Will we get a good Analysis of Alternatives (AoA)?
    • Will we get good Technology Development Strategies (TDSs)?
    • Is the MSA phase executable?
  – Do we need more info before we can review?
  – Should this effort be stopped?
Execution Considerations

10 Executability Dimensions

- Affordability
- Industry Base
- Complexity
- IOC date
- Feasibility
- Gov’t Operation
- Testing
- Manufacturing
- Technology
- Reqs
Current Approach is Required
But Not Sufficient to Avoid Breaches

JROC Authority
(CJCSI 3170, Goldwater-Nichols)

CAPE Authority
(DoDI 5000.02, WSARA)

MDA Authority
(DoDI 5000.02, Title 10)

Development Planning

Development

Systems Engineering (WSARA Authority)

NDIA Paper 11131, 27 Oct 2010
Hypothesis

A balanced look at execution considerations early on could help reduce number and magnitude of breaches
Executability Explored

KEY:
- JCIDS
- MDD
- TDS
- Add’l

Executability

Afford-ability
Feasibility
Complex-ity
Gov’t Operation
Industry Base
Testing
Manufacturing
Technology
Reqts
IOC date

NDIA Paper 11131, 27 Oct 2010
JCIDS Focus

• Requirements
  – Clarity, stability, completeness
  – GAO Cited as a major reason for cost growth

• IOC Date
  – Need date vs. other achievable IOC dates for alternatives
  – Development path sequences (proto IMS)
  – True IOC Date achievable may not look as attractive as getting 80% of the capability in ½ the time
MDD Focus

• Affordability
  – Total costs affecting ability to keep stable funding
  – Large budget over time is more vulnerable than small budget needed over short time frame
  – WSARA (Terminating MDAPs)

• Feasibility
  – Practical ability to do
  – Wasted time and effort
  – Lost opportunity cost

NDIA Paper 11131, 27 Oct 2010
TDS Focus

• Technology
  – The Known one
    • Identification of critical technologies in the alternative concept
    • Technology Readiness Levels (TRLs)
  – Why it matters
    • Major WSARA, DoD 5000 emphasis
    • Cited by GAO as major reason for cost growth
Additional Considerations

• **Complexity**
  - Numbers of functions, modes, interfaces (especially how it integrates with the operational environment, infrastructure)

• **Government Operation**
  - Sufficient manning of program office work force
  - Geographically separated units, communication

• **Industry Base**
  - Expertise, capacity, availability to study, produce, supply, sources and backup sources

• **Testing**
  - What needs to be tested, and are there adequate test facilities?

• **Manufacturing**
  - Maturity of processes to efficiently produce sufficient units to standards, without defects
DoD Development Reality: Challenges to Considering Executability Before MDD

• Organizational
  – Developers, Users, and funding sponsors usually separated
  – Fear of Technology Push
  – Linear Paradigm of JCIDS to DoD 5000.02

• Complexity (too much to deal with)

• Schedule Distractions
  – Budget cycle drives early decisions
  – Shift to rapid acquisition (no time)

• Requirements keep changing
  – Users want more
  – Threat picture keeps changing

• Resource Limitations
Summary

- GAO continually emphasizes having sufficient knowledge early in the decision process.
- Need to address all considerations at MDD in a balanced integrated perspective.
  - Then focus on next action (TDS).
- Not all elements will present the same risk of breach, but all elements have potential risk.
  - Bring developers in early to minimize total risk.
- Acquisition strategy should be thought of as executability implementation.

![Execution Readiness Diagram](image)
The Case for Considering Acquisition Program Executability Prior to Materiel Development Decision (MDD)

BACKUPS
Contact Info

Gregory Laushine
Science Applications International Corp. (SAIC)
(310) 936-4258
laushineg@saic.com
Accepted SE Practice:
Requirements and Developers work Together