R&M: Critical to Success in a Technology Reliant World

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Office of the Deputy Assistant Secretary of Defense for Systems Engineering

Reliability and Maintainability Symposium

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DASD, Systems Engineering Mission

Systems Engineering focuses on engineering excellence – the creative application of scientific principles:

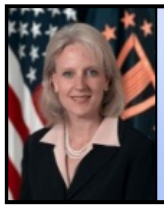
- To design, develop, construct and operate complex systems
- To forecast their behavior under specific operating conditions
- To deliver their intended function while addressing economic efficiency, environmental stewardship and safety of life and property

DASD(SE) Mission: Develop and grow the Systems Engineering capability of the Department of Defense – through engineering policy, continuous engagement with component Systems Engineering organizations and through substantive technical engagement throughout the acquisition life cycle with major and selected acquisition programs

Robust Systems Engineering Capability across the Department requires Attention to Policy, People and Practice

- ***US Department of Defense is the World's Largest Engineering Organization***
- ***Over 108,000 Uniformed and Civilian Engineers***
- ***Over 39,000 in the Engineering (ENG) Acquisition Workforce***

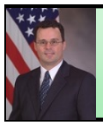
DASD, Systems Engineering



Acting Deputy Assistant Secretary of Defense and Principal Deputy, Systems Engineering
Kristen Baldwin

Homeland Defense Capability Development
Robin Hicks

Major Program Support
James Thompson



Engineering Enterprise
Robert Gold

Supporting USD(AT&L) Decisions with Independent Engineering Expertise

- Engineering Assessment / Mentoring of Major Defense Programs
- Program Support Assessments
- Overarching Integrated Product Team and Defense Acquisition Board Support
- Systems Engineering Plans
- Systemic Root Cause Analysis
- Development Planning/Early SE
- Program Protection

Leading Systems Engineering Practice in DoD and Industry

- Systems Engineering Policy and Guidance
- Technical Workforce Development
- Specialty Engineering (System Safety, Reliability and Maintainability, Quality, Manufacturing, Producibility, Human Systems Integration)
- Security, Anti-Tamper, Counterfeit Prevention
- Standardization
- Engineering Tools and Environments

Providing technical support and SE leadership and oversight to USD(AT&L) in support of planned and ongoing acquisition programs

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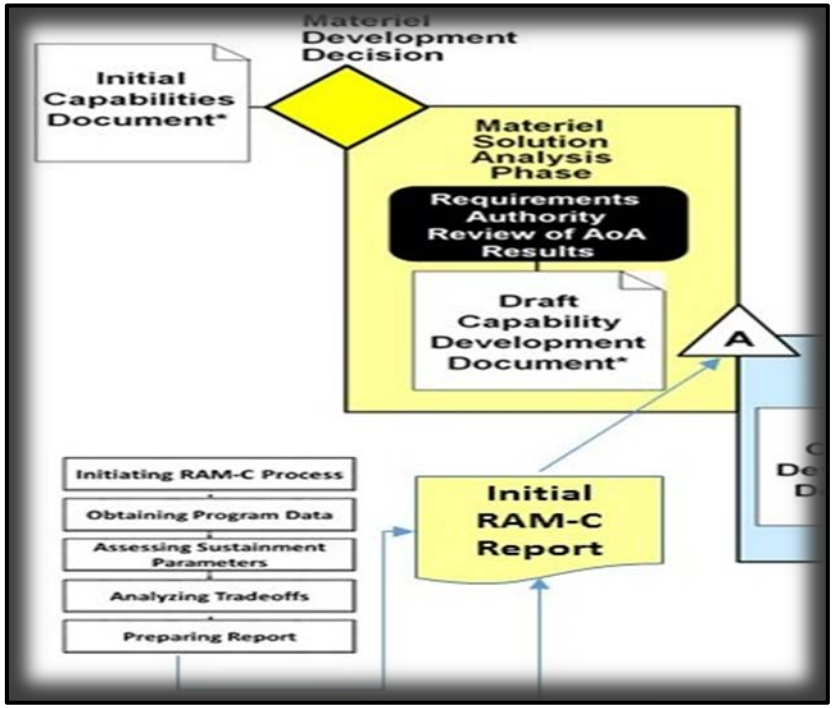
Effective R&M Engineering needed to Design, Develop and Deliver DoD's Complex Weapon Systems

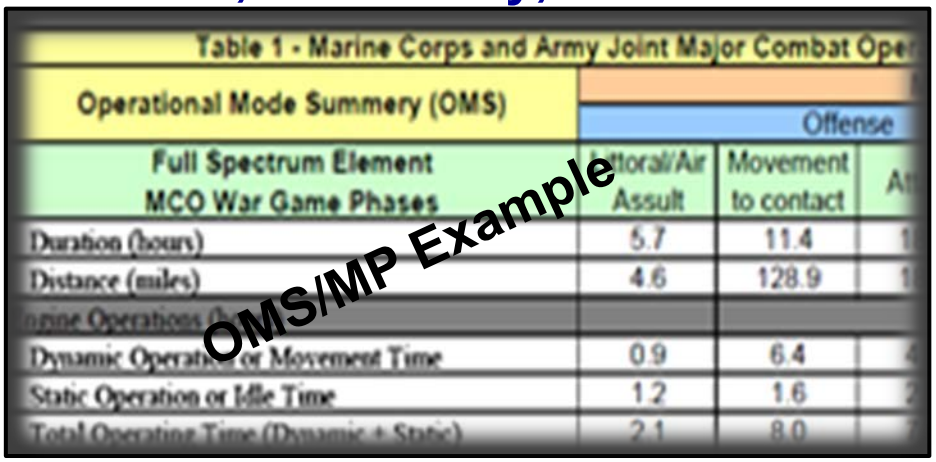
R&M Lessons Learned
"The Deadly Sins"

1. Lack of Management Dedication
2. Lack of Adequate Resources
3. Unrealistic Performance Requirements
4. Unrealistic Schedules
5. Lack of Tailored R&M Engineering Activities
6. Misunderstanding of the Differences between Acquisition and Operational (Field) Measures of R&M
7. Inadequate Failure Reporting Analysis and Corrective Action System (FRACAS)

Get Your Requirements Right

- **Provide early R&M assessments of alternative concepts, including early formulation of maintenance and support concepts**
- **Support the Operational Mode Summary/Mission Profile (OMS/MP), Concept of Operations, and maintenance concepts**
- **Ensure correct balance between the R&M, availability, and cost metrics**





Ensuring requirements are realistic and correct can provide early risk reduction

Get Your Requirements Right

- Use the best information available at the time with an understanding of the underlying assumptions
- Verifies that the definitions of failure for each parameter are understood
- Develop a model of the composite system based on comparison data and current state of the art, and determine feasibility
- Conduct comprehensive analysis using techniques appropriate to the information available and acquisition phase (analogy, parametric, engineering, M&S)
- Demonstrate an understanding of the alternatives available within the trade space and show how this information is used to make better program sustainment decisions

Getting the R&M Requirements Right Upfront will Ensure Success in a Technology Reliant World

For Additional Information

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