Implementing the 2007 Developmental Test & Evaluation Defense Science Board Results

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Problem Definition

- Approximately 50% of programs completing Initial Operational Test and Evaluation (IOT&E) have not been evaluated as operationally effective and operationally suitable. These results in IOT&E suggest deficiencies in our DT&E processes.

  ➢ Substantial increase in the number of systems not suitable during IOT&E

  ➢ Suitability failures are as high as 80% for some commodities

  ➢ Reliability, Availability and Maintainability (RAM) deficiencies comprise the primary shortfall areas

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Tasking: Terms of Reference

Review, assess and recommend changes to improve:

- ➤ OSD T&E organization, roles, and responsibilities

- ➤ DT&E oversight and facilitate integrated T&E

- ➤ DT&E Title 10 authority

- ➤ DT&E process improvements to discover suitability problems earlier

Additional Task Force Objectives:

- ➤ Conduct root cause analysis of suitability problems
- ➤ Recommend changes to correct systemic problems

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Summary of Major DSB Findings

- RAM shortfalls are identified during DT, but program constraints (schedule and funding) often preclude incorporating fixes and delaying IOT&E

  ➢ Recent studies have reconfirmed that improving RAM lowers Life Cycle Costs (LCCs)

- Service acquisition programs are incorporating Integrated Testing to a limited degree through varying approaches

  ➢ Additional emphasis on Integrated Testing will result in greater T&E process efficiency and program cost reductions

- Large government acquisition personnel reductions combined with industry/government retirements have had a severe adverse impact on acquisition program support

Selected Findings and Recommendations

RAM Findings

- Acquisition Reform implementation detrimental to RAM

  - With some exceptions, reliability growth discontinued during SDD and deferred until production
  - Relevant military specs and standards cancelled and not, in all cases, replaced with industry standards
  - Gvmt Technical/managerial workforce reduced in most PMs and test organizations

- RAM shortfalls are frequently identified during DT
  - Program constraints (schedule and funding) often preclude incorporating fixes and delaying IOT&E

- Examples of programs with such serious RAM concerns that they were precluded from proceeding to production until the problems could be corrected.

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RAM Recommendations

The single most important step necessary to correct high suitability failure rates is to ensure programs are formulated to execute a viable systems engineering strategy from the beginning, including a robust RAM program, as an integral part of design and development. No amount of testing will compensate for deficiencies in RAM program formulation.

To this end, the following RAM-related actions are required as a minimum:

- Develop a military standard for consistent RAM development and testing that can be readily referenced in future DoD contracts

- Identify and define RAM requirements in JCIDS and incorporate into RFP

- Make RAM, to include a robust reliability growth program, a mandatory contractual requirement and document progress as a part of every major program review
    - Flow-down RAM requirements to subcontractors

- Ensure an adequate cadre of experienced RAM personnel are part of the Service acquisition and engineering office staffs

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Integrated Test and Evaluation Findings

- Service acquisition programs are incorporating integrated testing to a limited degree through varying approaches
  - ➢ Army has integrated DT and OT organizations into one command
  - ➢ Navy utilizes a full-spectrum RDT&E approach to conducting Test & Evaluation
  - ➢ Air Force employs Combined Test Force concept which consolidates test execution

- Additional emphasis on integrated testing can result in greater T&E process efficiency and program cost reductions

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Integrated Test and Evaluation Recommendations

- Mandate integrated DT and OT planning and execution throughout the program
  - ➢ Require sharing and access to all appropriate system-level and selected component-level test and model data by government DT and OT organizations as well as the prime contractor, where appropriate
  - ➢ Incorporate data access requirements in contract
  - ➢ Integrate test events, where practical, to satisfy OT and DT requirements
  - ➢ Define which testing will be accomplished by the prime contractor, government DT lead, and OT as the lead agency prior to award of contract
  - ➢ Require an operational evaluation framework as a part of the Milestone B TEMP
- Make available a cadre of operational personnel to support DT for ACAT I and special interest programs, as a minimum
- Better integrate OTAs into the DR process to include participation on Joint Reliability Maintainability Evaluation Team (JRMET) or Corrective Action Review Board throughout DT

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Implementing Actions

RIWG Chartered Feb 2008

- DUSD(A&T) and DOT&E February memo established working group to implement recommendations to improve RAM

- Specific Tasks:
  - Ensure execution of a viable SE strategy as an integral part of design and development
  - Ensure government orgs reconstitute cadre of experienced T&E and RAM personnel
  - Integrated DT and OT
    - ensure data access
    - conduct T&E in an operationally representative environment as early as possible

- Report issued September 5, 2008
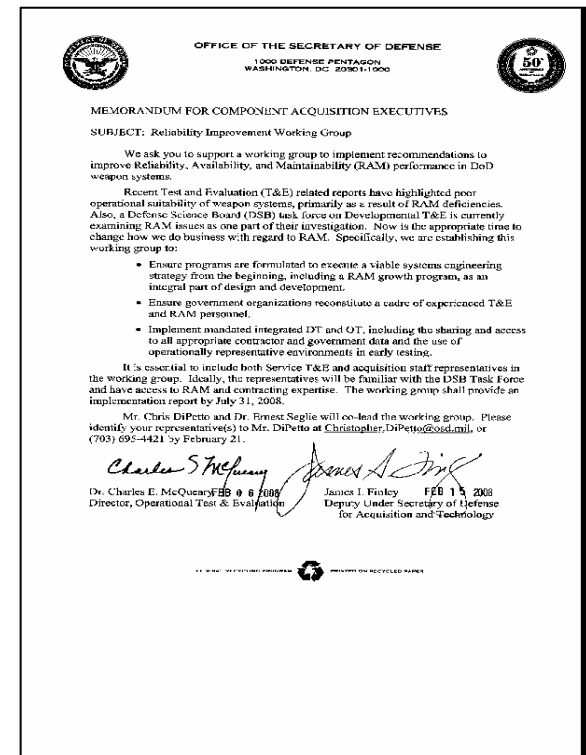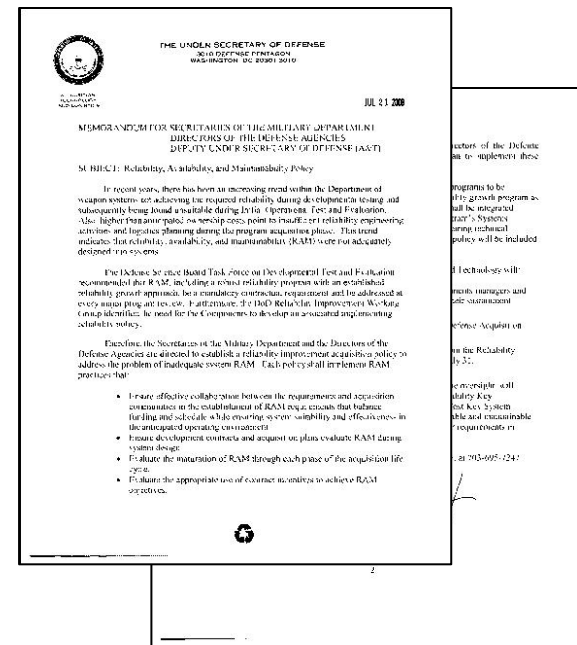
RIWG Accomplishments/Recommendations

1. SE strategy as an integral part of design and development

   ➢ Developed contract reliability guidance; RFP language

      ✓ Based on GEIA-STD-0009 – On DAU ACC website

   ➢ Drafted RAM planning template

      ✓ RIWG Report, Appendix 1.3.2

   ➢ Updated Reliability scorecard in DAG

      ✓ On DAU ACC website

   ➢ AT&L RAM Policy Memo (July 21, 2008)

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AT&L Reliability Policy Memo – July 2008

- Services directed to establish a reliability improvement acquisition policy
  – Report back to AT&L w/in 30 days w/ plan to implement policies

- Effective immediately, it is DoD policy for programs to execute a RAM strategy that includes a reliability growth program as an integral part of design and development
  – RAM shall be integrated w/in SE, documented in SEP and Life Cycle Sustainment Plan
  – Assessed during technical reviews, T&E, and Program Support Reviews

•USD(AT&L) Memo, **Jul 21, 2008**

DEVELOPMENTAL TEST & EVALUATION

2. Reconstitute cadre of experienced T&E and RAM personnel

- ✓ Provided DAU course material recommendations for RAM and T&E
  - ✓ Recommendations provided to DAU O-FIPT
  - ✓ Curriculum/certification recommendations under review by each FIPT
- ✓ Also addressing courses for Requirements Officers

- ✓ OSD/AT&L initiative to recruit RAM and T&E expertise
  - ✓ NDAA SECT 852 Workforce Development fund
  - ✓ Considering competency alignment as an alternative to Centers of Excellence

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RIWG Accomplishments/Recommendations cont.

3. Implement mandated Integrated DT and OT

   ✓ Published DoD-common Integrated Testing definition

   ✓ Revised TEMP format – In DAG update

   ✓ Guide on Incorporating T&E in Acquisition Contract

      ✓ Approval coordination for publication in process

      ✓ Located at: http://www.acq.osd.mil/sse/dte/docs

   ✓ Updated DAG with integrated test implementation guidance

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Integrated Test Implementation

Impediments To Full Implementation:

- Common Understanding - Definition
- Lack Of Guidance - Updating DAG and TEMP Content
- Culture Change - Leadership Needs To Engage

Definition Signed By DUSD(A&T) And DOT&E
Coordinated Across Components and Services

"Integrated testing is the **collaborative planning** and **collaborative execution** of test phases and events to provide **shared data** in support of **independent analysis**, evaluation and reporting by all stakeholders particularly the developmental (both contractor and government) and operational test and evaluation communities."

Revised TEMP Concept

Part I Introduction	Part II Mgmt & Sched	Part III T&E Strategy	Part IV Resources
Brief mission description paragraph	Describe T&E management	The philosophy recognizes a T&E continuum & emphasizes evaluations	Include in para form or table:
System description	Common Data	Evaluation Framework ties T&E knowledge to decisions, requirements, etc	•Test articles needed/event
Brief Threat Assessment	Deficiency Reporting		•Special equip/ instr costs
Program Background	TEMP Updates	Developmental	•Target / expendable costs
Key Capabilities	Overarching integrated schedule that includes sequencing of T&E activities (CT, DT, OT, LFT, M&S)	Live Fire	•Threat representation costs
		IOT&E Readiness Cert	•Manpower needs
		Operational	•M&S costs
		Certifications	
		Reliability Growth	
		Future Testing	

Linkage of decisions to evaluations, requirements, test phases, and resources

What   *Who, When*   *Why, How*   Resources required

Include Joint requirements throughout

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T&E in DoDI 5000.02

- Integrated Testing
  - IOT&E still separate
- Assessment of Operational Test Readiness
  - Independent DUSD(A&T) assessment – informs OTRR
- Capability Comparison
  - Additional perspective for programmatic decisions
- Data Sharing
  - Goal is common data set (contractor, government) for evals
  - Establishing & maintaining data "pedigree" is key
- TES/TDS at MS-A
  - Tailor content to competitive prototyping and preps for PDR (now prior to MS B)
  - Focus on TDS & ICD

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Summary

- 2007 DT&E DSB
  - ➢ Results published June 2008
  - ➢ Beginning to address the systemic issues with DT&E

- RIWG Progress Update
  - ➢ Report available
  - ➢ Follow-up in December

- T&E in 5000.02
  - ➢ In final SD 106 review for approval
  - ➢ Publication expected Fall 2008

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Questions and Discussion

DSB Report: http://www.acq.osd.mil/dsb/reports.htm

OSD/DT&E: http://www.acq.osd.mil/sse/dte/index.html