



Developmental Test & Evaluation

Presented to 2010 DAU Program Manager's Forum

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November 3, 2010

www.acq.osd.mil/dte/





Studies on T&E and Acquisition

Report of the
Defense Science Board Task Force
on
Developmental Test & Evaluation



May 2008

Office of the Under Secretary of Defense
For Acquisition, Technology, and Logistics
Washington, D.C. 20301-3140

“Approximately 50% of programs completing IOT&E since 2000 have been assessed as not operationally effective and/or suitable.”

2008 DSB Report on Developmental Test and Evaluation

GAO

United States Government Accountability Office
Report to Congressional Committees

March 2008

DEFENSE
ACQUISITIONS
Assessments of
Selected Weapon
Programs



GAO

Accountability • Integrity • Reliability

GAO-08-467SP

“...beginning production before successfully demonstrating that the weapon system will work as intended increases the potential for discovering costly design changes...and usually requires substantial modification costs at a later time.”

2008 GAO Assessments of Selected Weapon Programs



The Solution

DT&E in Title 10, USC, Section 139d



The DDT&E is the principal advisor to the Secretary of Defense and the Under Secretary of Defense for Acquisition, Technology and Logistics on developmental test and evaluation in the DoD

Responsibilities:

- Program Oversight
- Policy and Guidance
- TES/TEMP approval (with DOT&E)
- Advocacy for Acquisition **DT&E** workforce
- Component T&E Capability
- Annual Report to Congress



DoD Systems *take too long* to field, *cost too much* and *don't perform* as required



Mission of the Director, Developmental Test & Evaluation (DDT&E)



Improve acquisition outcomes by advancing “**state of the practice**”

DDT&E supports:

- *Program Offices and DoD T&E community*
- *Test planning and data analysis*
- *Early discovery of deficiencies*
- *Identification and sharing of best practices*

Improve DT&E practice thru:

- *T&E Policy & Oversight*
- *Advancing DT&E Capability and Service Competencies*

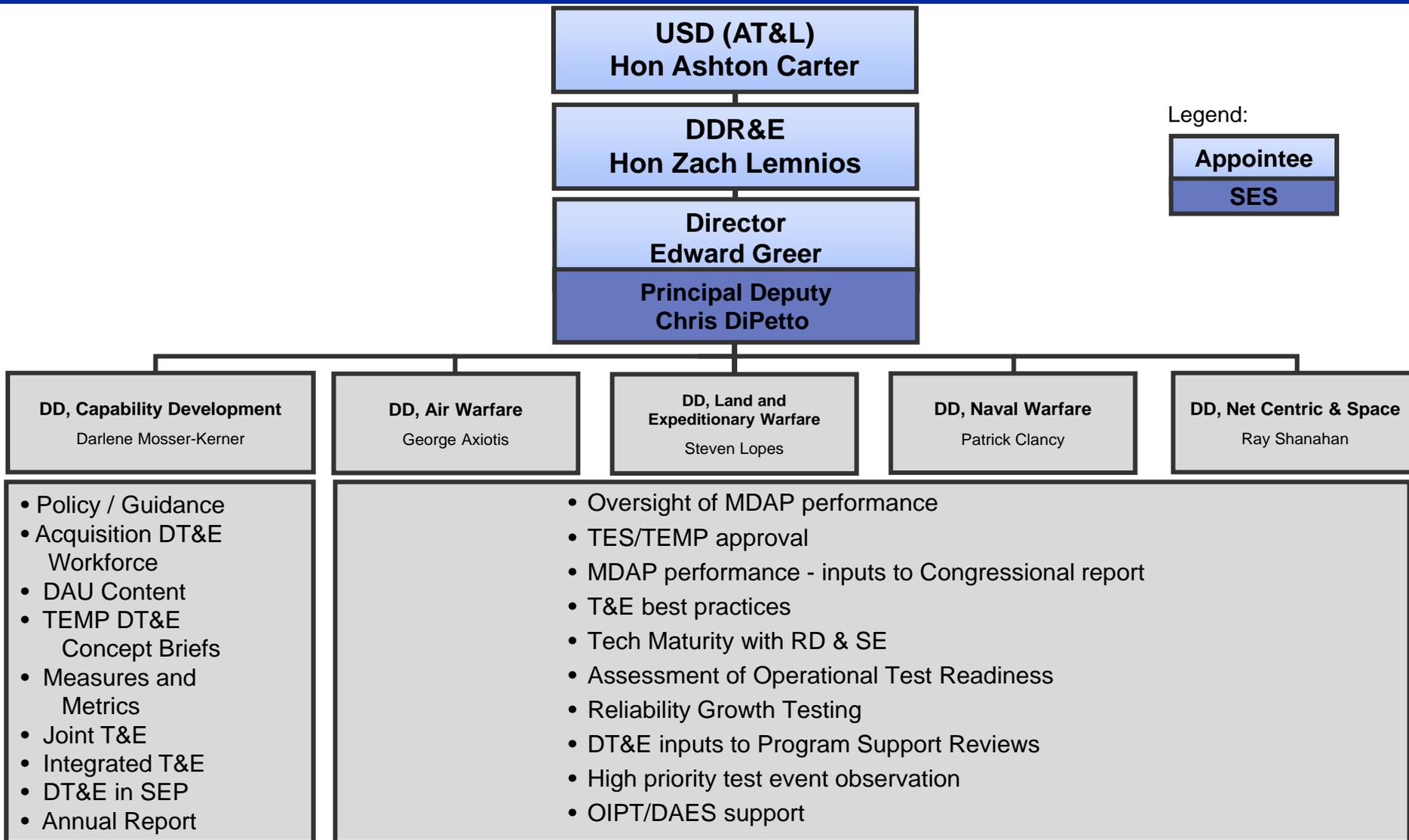
Minimizing Discovery in IOT&E





DT&E Organization

A *DDR&E* and *AT&L* Organization





Early and Continuous Engagement *Helping Programs Succeed!*



- **DDT&E Staff is Experienced and Credentialed**
 - Test Pilots, Flight Test Engineers, Land and Naval Systems experts, PhDs, Experts in C² & IA, Former OTA and RTO Test Directors
 - All with 20+ years experience in T&E
- **We bring the best practices and lessons learned**
- **Experience assisting programs thru each Milestone**
 - Assistance with refining TES & TEMP's prior to MS A, B & C
 - Early recognition/resolution of critical performance issues prior to DAB
- **Expert knowledge of test planning and execution**
- **“Honest Broker”**

DDT&E
Value-Added at each Milestone!



Early and Continuous Engagement

Why we are Value- Added to programs



- **Principal Advisor at each DAB**
- **Daily interaction with PSA, ARA, DOT&E**
- **FY10 to date:**

- 51 DABs / 78 OIPTs
- 33 TEMPAs approved
- 6 AOTRs released

<i>Programs on Oversight List (DT&E)</i>			
	MDAPs	Special Interest	Total
FY10	187	27	214
FY11	233	40	273

- **Lessons Learned / Best practices**

- “Schedule driven” vs Event driven IMS
- Interdependent ACAT 1 Programs
 - EIBCT & GMR
 - CVN-78 & EMALS, Dual Band Radar, etc
 - E-2D AHE & CEC
 - LCS & LCS Mission Packages
- DT Transition report (timeliness, statistical confidence of assessments, etc)

Use us as your early lens into the OSD Process



Early and Continuous Engagement Helping Programs at Milestone A



OPERATIONAL TEST
AND EVALUATION

OFFICE OF THE SECRETARY OF DEFENSE
1700 DEFENSE PENTAGON
WASHINGTON, DC 20301-1700

JUN 01 2010

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY (RESEARCH,
DEVELOPMENT AND ACQUISITION)

SUBJECT: Ohio Replacement Submarine Technology Development Strategy (TDS) and
Test and Evaluation Strategy (TES)

I have reviewed and cannot approve the draft Test and Evaluation Strategy (TES).
The document does not contain adequate information to assess the Navy's planned
strategy to demonstrate technology maturity for the Stealth Performance and the
Coordinated Stern Design development areas. The TES is also missing essential
information regarding the technology development and testing strategy of the propulsion
plant (including the propulsor), electric plant and electric distribution system and
associated submarine support systems located in the submarine's engineering spaces.
Each of these areas substantially contributes to effective, suitable and survivable
submarine operations and affects submarine stealth. These additional development areas
much be included in the TDS and the strategy for testing and assessing their maturity
must be included in the TES.

Additionally, I cannot concur with the TDS for the same reasons. My Point of
Contact is Mr. James M. Willy at 703-681-5531 or mike.willy@osd.mil.

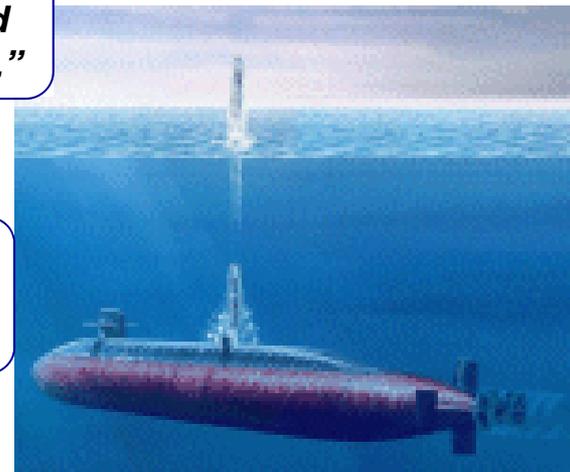
J. M. Gilmore
J. Michael Gilmore
Director

cc:
OUSD (AT&L)
N091
PEO (SUBS)
COMOPTEVFOR
PMS 399



**"I have reviewed and cannot
approve the draft test and
Evaluation Strategy (TES)."**

**"Additionally, I cannot
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the same reasons."**

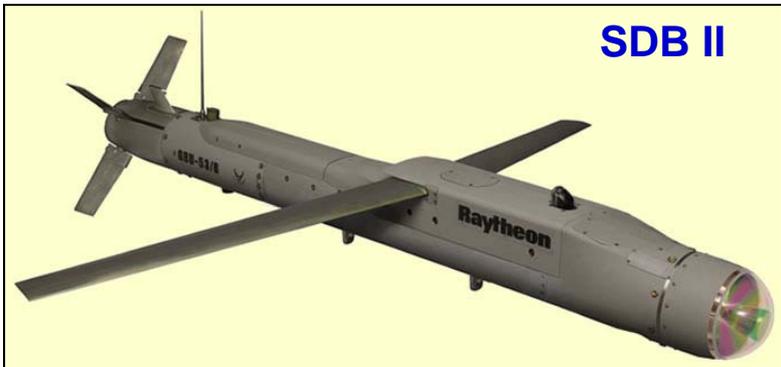


Ohio Class Replacement





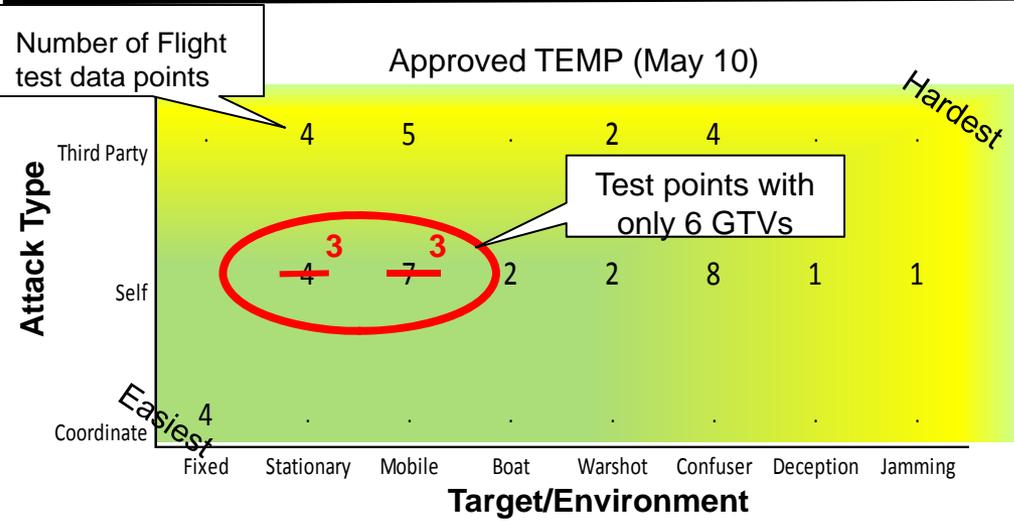
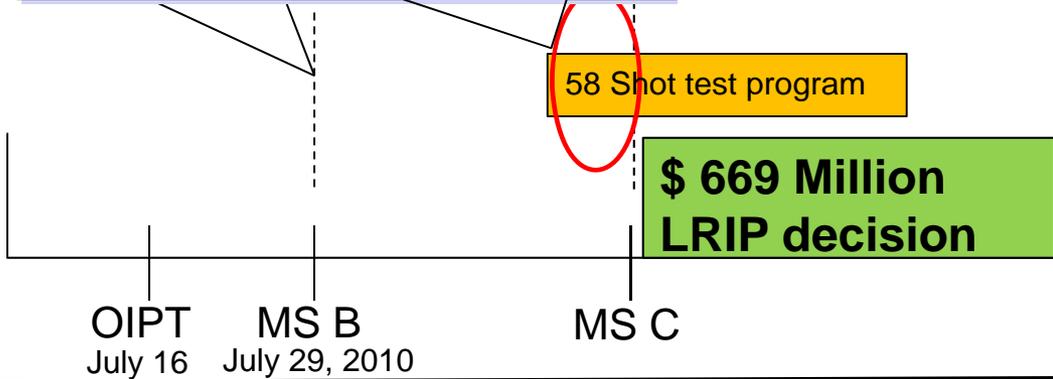
Early and Continuous Engagement Helping Programs at Milestone B



SDB II

DDT&E risk assessment at MS B reduced Program risk at MS C

MS B Entrance Criterion met, however MS C Risk assessed as **HIGH** due to misalignment of test schedule with LRIP decision



Reduction in Guided Test Vehicles focuses testing away from hardest test space. Proceeding to MS C with limited knowledge beyond basic end-to-end performance



Early and Continuous Engagement Helping Programs at Milestone C



Airflow analysis predicts higher than expected horizontal tail buffet loads

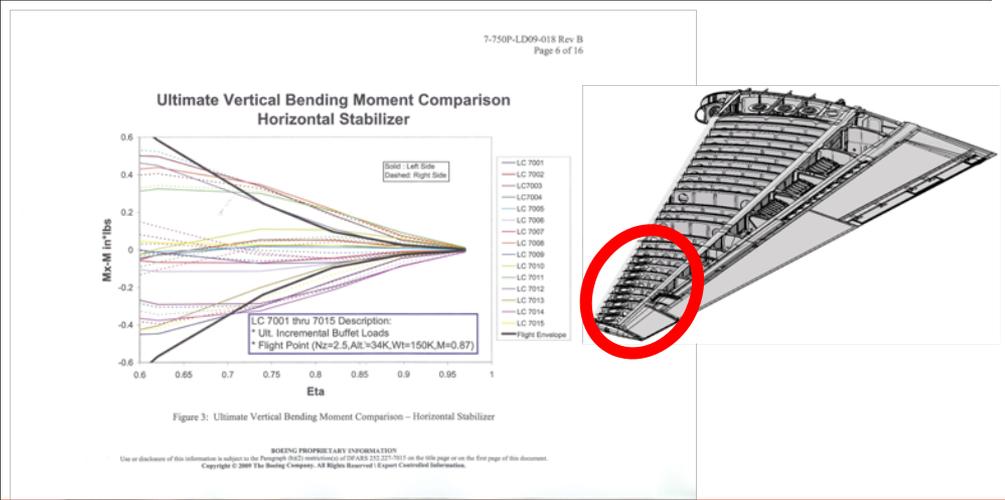
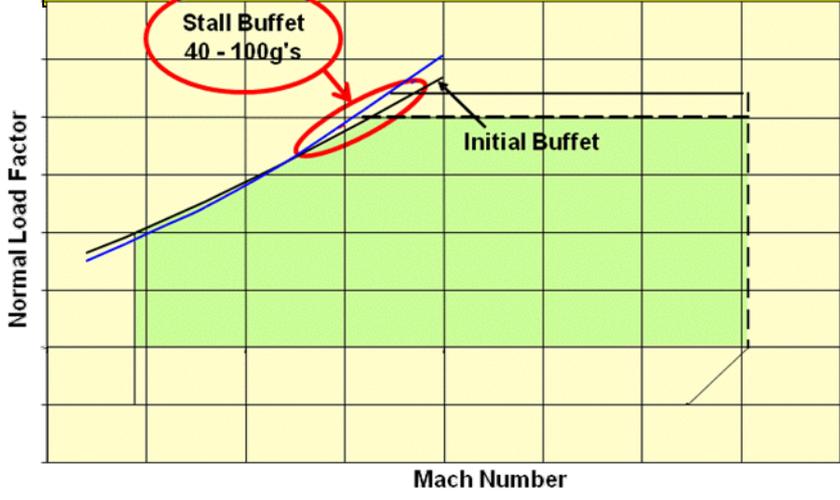
Est Loads (>100g) exceed original 90g-tail design, Internal weapons Sep not flight tested yet

CFD analysis / wind tunnel indicate low risk

Schedule

Aging P-3 require a July 2013 IOC to meet mission

DDT&E: Medium risk (Schedule), Recommended MS C \$1.8B LRIP decision

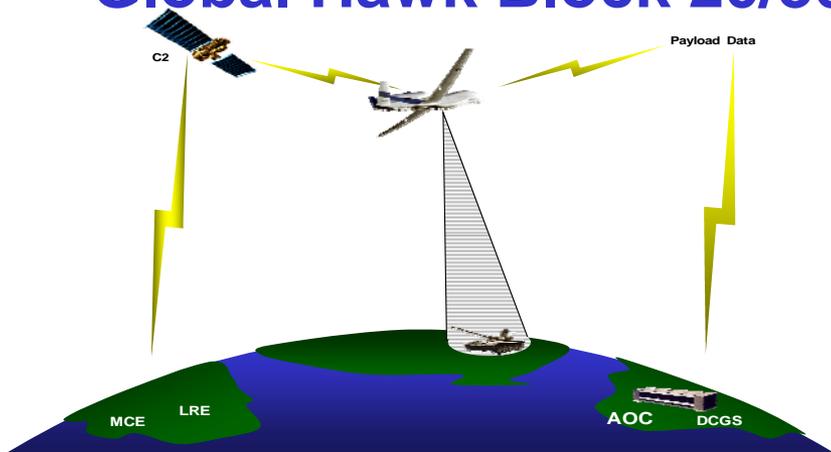




Early and Continuous Engagement Assessing Programs at OTRR



Global Hawk Block 20/30



Assessment of Operational Test Readiness

“Risk to completing planned IOT&E is moderate. Unlikely to receive a favorable IOT&E result.”

Reliability: 2.9 vs 100 hrs MTBCF

Time on Station (ETOS): 37% vs 55%

DDT&E AOTR stated:

“Based on my review of the RQ-4B Global Hawk Block 20/30 system. I do not recommend proceeding to IOT&E. I assess the risk as moderate to completing the IOT&E as planned.”

Operational Requirement	Parameter	CPD T / O	Indicators or Achieved Value	
Endurance	Flight time	28 hours plus fuel reserves	33.1 hours demonstrated	Green
Worldwide Ops	WX capability CNS/ATM	Worldwide employment	No Adv Wx, 8.33 kHz, Sloped rwys	Red
Dynamic Control	A/C re-task Payload Ctrl	NRT mission control, monitor	No re-task Long msn plng	Red
Net Ready	Connectivity ATO certification	100% interfaces; services; policy-enforcement	No CDL cert IA vulnerabilities Ext Tether issues	Yellow
Battlespace Awareness	EO/IR/SAR ASIP	100% of sensor collection performance	EO/IR/SAR – NIIRS, SAR WAS EISS GMTI , ASIP	Yellow



Historical AOTR - IOT&E results

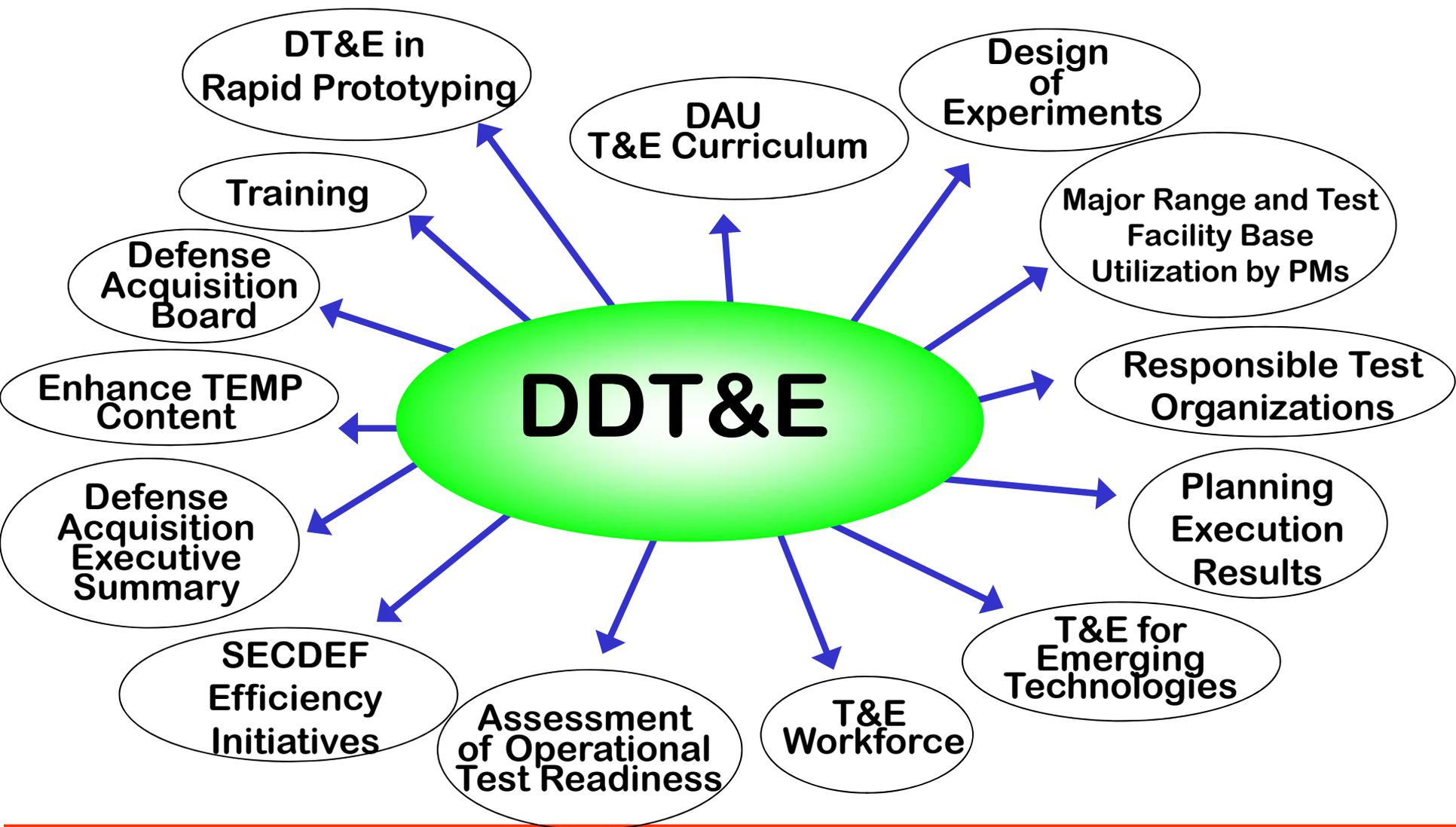
Helping programs achieve better results



Program	Service ACAT	AOTR Recommended:	AOTR Results	IOT&E BLRIP	IOT&E Results		IOT&E Reasons
EA-18G Airborne Electronic Attack Aircraft	Navy 1D	Recommend moderate risk weigh-in	Multiple moderate risks for entering IOT&E in Effectiveness and Suitability (ALQ-99 LBT, Msn Planning, Human Factors)	MAY 2009 SEP2009	Effective	Not Suitable	-Poor maintainability associated with built in test performance and interface with legacy jamming pods
Remote Minehunting System	Navy ACAT 1C	Significant risks exist – conduct OA instead of IOT&E	Deficient in Operational Suitability - SQQ89 (Reliability & Interoperability) and Availability (Reliability)	AOTR SEP 2008	Effective	Not Suitable	-Nunn- McCurdy in Dec 09 due to increases in procurement costs (~52% greater than '06 baseline) and procurement acquisition costs (~86% greater) -Reliability / Availability below threshold requirements
Joint Cargo Aircraft	Army then USAF ACAT 1D	Proceed to IOT&E but probably won't make reliability metric	All KPPs met but already had 5/6 allowed mission aborts before starting IOT&E (not a KPP)	AOTR DEC 2009	Effective	Suitable with limitations	-IOT&E complete, BLRIP pending - Mission reliability rated at less than 90% probability of completing a 5.6 hour mission without a mission abort
H-1 Upgrade (AH-1Z)	USMC 1D	No AOTR in 2008		MAY 2008	Test Terminated		-No IOT&E report
		Risk to proceed to IOT&E - issues & risk in meeting COIs	Multiple risks for entering IOT&E in Effectiveness and Suitability (Feb 10), [AOTR completed too late to effect change]	SEP 2010 SEP 2010	Effective	Suitable	-Made upgrades to critical deficiencies found during May 08 testing, found to be effective, suitable, and survivable with moderate deficiencies remaining to be addressed during 2010 FOT&E
D,DT&E appointed March 15, 2010							
C-5 RERP	USAF ACAT 1D	Do not proceed to IOT&E (QOT&E) Significant deficiencies (over 200 Cat II DRs, DT has assessed 7 of 11 test measures)	Six deficiencies/deferred capabilities - QOT&E high risk. Recommend define path to develop, test, and verify deficient/deferred capabilities prior to QOT&E	OCT 2010	Effective	Not Suitable	-Failed to make its Mission Capability Rate KPP and threshold for Logistics Departure Reliability, False Alarm Rate, Fault Isolation Rate, Critical Fault Detections, Automatic Flight Control System, others -Training Systems not available for OT&E -Support equipment unsuitable for flight line operation
MIDS JTRS	Navy 1 D	Proceed to IOT&E	Met 5/6 KPPs and 1 KPP partially met	AOTR JUN 2010	TBD	TBD	-IOT&E currently ongoing with results expected Dec 10
Global Hawk Blk 20/30	USAF 1D	Do not proceed to IOT&E; conduct an operationally realistic test using operationally representative DGS prior to IOT&E	System Maturity, Reliability, demonstration of E-t-E all raise concerns for IOT&E entrance	AOTR AUG 2010	TBD	TBD	-IOT&E began Oct 10
Stryker NBCRV	Army 1D	Proceed to IOT&E Phase II	Fully met 2/4 KPPs and partially met 2/4 KPPs	AOTR SEP 2010	TBD	TBD	-IOT&E begins 4QFY10
Next ??							



Environmental Scan



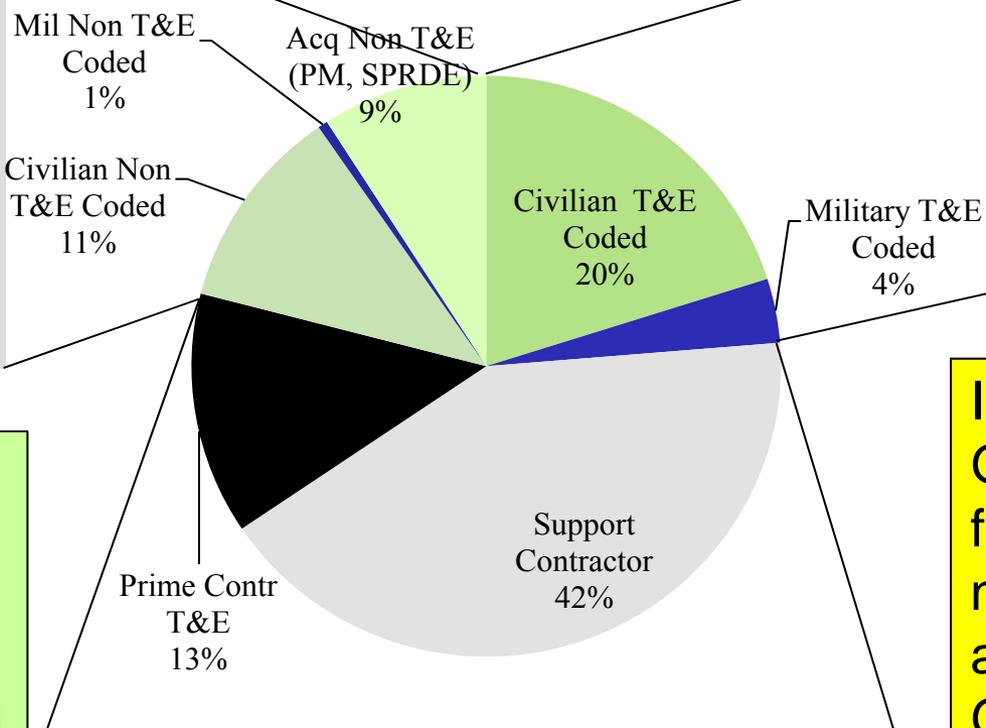


DOD T&E Workforce

Data from Services' 2009 Self Assessment

Non T&E Coded personnel supporting the T&E mission (PM, SPRDE, MRTFB)

Low number of organic T&E resources 24% (Civ + Mil)



Inherently Government T&E functions may not necessarily be accomplished by Government Personnel

Heavy reliance (55%) on Prime Contractors / Developers to support T&E mission



Does not represent all T&E resources



Early and Continuous Engagement

Reducing the *Cost of Doing Business*



FY08 Total \$'s = \$72,573K

FY09 Total \$'s = \$71,237K

Total Workforce = 336

Total Workforce = 334

People

Civilian On boards :	144
Civilian Dollars:	\$16,209K
Military Billets:	-0-
Military Dollars:	\$ -0-
CSS Workyears:	-0-
CSS Dollars:	\$ -0-
CLS Workyears:	190
CLS Dollars:	\$31,078K
Total Workforce :	334
Total \$'s:	\$47,287K

Stuff

Training:	\$ 192K
NMCI Seats:	\$ -0-
Travel:	\$ 736K
HW/Material:	\$ 21,344K
Non-CSS Services:	\$ 221K
Other Reimb/Oper Exp:	\$ 1,456K
Capital Purchases:	\$ -0-
Total \$'s:	\$ 23,949K

**5.2 Ranges Inventory
FY09 Atlantic Test Range Capability**



T&E Workforce:

Government Performance of Critical Acquisition Positions



THE UNDER SECRETARY OF DEFENSE
2010 DEFENSE PENTAGON
WASHINGTON, DC 20301-3010
AUG 25 2010

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Government Performance of Critical Acquisition Functions

References: (a) Section 820, P.L. 109-364, John Warner National Defense Authorization Act for FY 2007, as amended, Section 805, P.L. 111-84, National Defense Authorization Act for FY 2010
(b) DoDI 5000.55, "Reporting Management Information on DoD Military and Civilian Acquisition Personnel and Positions," September 11, 1991

Per reference (a), the Department is to ensure selected positions assigned to Major Defense Acquisition Programs (MDAP) and Major Automated Information System (MAIS) programs are performed by a properly qualified member of the Armed Forces or full-time employee of the Department of Defense by October 16, 2011.

The Department's implementation strategy includes establishment of Key Leadership Positions (KLPs) that have a significant level of responsibility and authority and are key to the success of a program or effort. The Military Departments and Defense Agencies may designate any position which meets the criteria. However, the following have been identified as mandatory KLPs because they are identified in reference (a) or have significant levels of responsibility and authority and are key to the success of a program:

- Program Executive Officer/Deputy Program Executive Officer
- Program Manager (PM) (Acquisition Category 1)
- Deputy Program Manager (DPM) (Acquisition Category 1)
- Senior Contracting Official
- MDAP/MAIS positions (Acquisition Category 1) required based on the phase or type of program:
 - Program Lead Systems Engineer
 - Program Lead Cost Estimating

**Advocate for APEO T&E
De-Certified DAU TE Curriculum
Level II & III Practical Course on T&E
Review T&E Curriculum Changes
Interview new DAU T&E Instructors**

- Program Lead Test and Evaluation
- Program Lead Production, Quality, and Manufacturing
- Program Lead Information Technology

In general, the "program lead" positions are expected to be filled by military members at the lieutenant colonel/colonel or commander/Navy captain levels or by the civilian equivalent. Program leads advise the PM/DPM and may be matrixed to the program office. Although program leads may report to a higher-level functional (i.e., command/center functional lead or his or her direct report), these positions must be designated as KLPs. Program lead KLPs must be designated in the position category



DT&E Challenges/Initiatives



- **Reliability, Availability, and Maintainability**
- **Information Assurance**
- **Increased use of M&S**
- **Emerging technologies**
- **Cyber**
- **Data Fusion**





DDT&E is



- ✓ **Advocate for Program Success!**

- ✓ **Poised to help**
 - **Early and continuous engagement**

✓ **Improving Acquisition Outcomes**



Questions?



OFFICE OF THE SECRETARY OF DEFENSE

OFFICE OF THE UNDER SECRETARY OF
DEFENSE FOR ACQUISITION,
TECHNOLOGY AND LOGISTICS

DEVELOPMENTAL TEST & EVALUATION

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**The right information, to the right decision maker, at the right time, for
better decisions**