The DoD T&E/S&T Program

George Rumford
Program Manager

Test Resource Management Center
Test & Evaluation / Science & Technology Program
(TRMC, T&E/S&T)

NDIA 11TH Annual Science & Engineering Technology Conference
Test Resource Management Center (TRMC)

- DoD Field Activity
- Direct Report to USD(AT&L)
  ⭐⭐⭐⭐ SES Director

Oversee Test Infrastructure
Major Range & Test Facility Base (MRTFB)
Other T&E Facilities
Within & Outside DoD

Develop T&E Strategic Plan
Biennial 10-Year Strategic Plan for DoD T&E Resources

Administer Corporate T&E Investment Programs
Centrally-Funded T&E Investment Programs (T&E/S&T, CTEIP, JMETC)

Certify T&E Budgets
Annual Certification of Military Departments & Defense Agencies T&E Budgets

The STEWARD of the DoD Test Infrastructure
Major Range and Test Facility Base (MRTFB): The “Critical Core”

24 Sites: Army-9; Navy-6; Air Force-7; Defense Agency-2

30,000 personnel
Military, Gov, Contractor

18,000 sq. mi. of land
180,000 sq. mi. of air space
(> ½ of all DoD land)

Replacement Value = $25B

DoD Directive 3200.11
Synergy through Aligned Investment

Quadrennial Defense Review Strategic Planning Guidance

Annual T&E Budget Certification*

DoD Strategic Plan for T&E Resources

Service T&E Needs and Solutions Process

TRMC Joint Investment Programs (FY10: $254M)

(6.3 Funding)

Risk mitigation needs Technology shortfalls

Risk mitigation solutions Advanced development

(6.4 Funding)

Requirements Capabilities

(6.5 Funding)

Transition

Service Modernization and Improvement Programs

Acquisition Programs and Advanced Concept Technology Demonstrations

T&E Multi-Service/Agency Capabilities

DoD Corporate Distributed Test Capability

T&E Capability Development Cycle

Challenge: T&E Capabilities are available in time to provide useful insight to decision-makers and warfighters

A
Materiel Solution Analysis

B
Technology Development

C
Engineering and Manufacturing Development

Production and Deployment

Operations and Support

Begin System T&E Planning

Articulate T&E Requirements

Use T&E Capabilities

IOT&E uses capabilities

T&E/S&T Program

CTEIP and Services I&M

Cycle for Test Capability Development Must Begin Early

Mission: Develop Technologies Required to Test Future Warfighting Capabilities

- Established in FY02
  - Joint DDR&E / DOT&E Initiative
  - Transitioned to TRMC in FY05
- RDT&E Budget Activity 3 funds
- Purpose
  - High Risk / High Payoff R&D for Testing
  - Foster technology transition to major DoD test ranges
  - Risk reduction for test capabilities developments
- 103 Active Projects
- Annual Broad Agency Announcements (BAAs)
  - Academia
  - Industry
  - Government Laboratories
- Tri-Service working groups
  - Validate requirements
  - Evaluate proposals
  - Facilitate technology transition
- Central Oversight – Distributed Execution

Seven Test Technology Areas

- Advanced Propulsion
  - 19 Active Projects
- Unmanned & Autonomous Systems
  - 6 Active Projects
- Advanced Instrumentation
  - 8 Active Projects
- Directed Energy
  - 25 Active Projects
- Spectrum Efficiencies
  - 14 Active Projects
- Multi-Spectral Sensors
  - 16 Active Projects
- Netcentric Systems
  - 15 Active Projects

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$92.5M  | $95.7M  | $97.6M  | $99.7M  | $102.4M | $103.9M | $105.6M

Shaping Technology into Tomorrow’s T&E Capabilities
FY 2010 T&E/S&T Program Distribution

**Projects Leads**
- Industry: 62 Projects
- University: 12 Projects
- Gov Org/Labs: 29 Projects

**Funding**
- Industry: 75%
- University: 8%
- Gov Org/Labs: 17%
T&E/S&T Program
Test Technology Areas

Test Technologies for:

• Emerging Warfighting Capabilities
  – Directed Energy Weapons (DET)
  – Hypersonic Vehicles (APTT)
  – Multi-Spectral/Hyperspectral Sensors (MST)
  – Netcentric Warfare Systems (NST)
  – Unmanned and Autonomous Systems (UAST)

• Enhanced Test Capabilities
  – Non-Intrusive Instrumentation (AIST)
  – Spectrum Efficient Technology (SET)

103 Active Projects
T&E/S&T Program Management

TRMC HQ

Army

Navy

Air Force

SET: Edwards AFB

Lancaster, CA

APTT: Arnold Engineering and Development Center

Tullahoma, TN

AIST: Naval Undersea Warfare Center

Newport, RI

MST: Aberdeen Test Center

Aberdeen Proving Ground, MD

PM: TRMC HQ

Arlington, VA

DET: PEO for Simulation, Training and Instrumentation

Orlando, FL

NST: Naval Air Warfare Center

Pt. Mugu, CA

UAST: White Sands Missile Range

Las Cruces, NM

Central Oversight – Distributed Execution
Improving Testing of Advanced Propulsion Systems

Demonstrate Advanced Technologies Developed by T&E/S&T Program

Advanced High Pressure/High Temperature Air Supply

Advanced Survivable, Variable Mach Number Nozzles

Advanced Clean Air Heat Addition

Air Storage

Mixer

Valve

Stilling Chamber

Variable Mach Nozzle

Test Cabin

Diffuser

Ejector Or Vacuum Sphere

Alumina Storage Heater (3500 R)

Zirconia Storage Heater (4700 R)

Improving the Precision of TSPI and Range Tracking

- >20x TSPI Accuracy Improvement Level III
- 20x TSPI Accuracy Improvement Level II
- 3x TSPI Accuracy Improvement Level I
- Data Throughput 4x Improvement, Software Communication Architecture
- Miniaturization
- Updated Encryption Technology
- Training (RIW) Waveform with Training Level TSPI
- Standardized Protocols and Interfaces
- Improved Reliability
- Test Ground Subsystem (TENA)
Next Generation TSPI (NG-TSPI) Study

- NG-TSPI is needed to face emerging challenges for TSPI instrumentation
  - Test operations in GPS-denied environments (urban, caves, dense foliage, undersea)
  - Large-scale System-of-Systems environments
  - Hypersonic vehicles in a plasma field
  - Low Observable (LO) Systems that can not mount external instrumentation
  - Micro autonomous systems
Improving Testing of Undersea Systems in a Realistic Operational Environment

Needs: Provide submarine undersea tracking during test events - without sub needing to ping!

DARPA-developed chip scale atomic clock

Key issues: Maintain clock accuracy, operate week+ without update

Insertion into undersea pingers

Highly accurate track is displayed in real-time on board the tracked submarine

T&E/S&T – CTEIP transfer: Providing critical test needs, validate crucial warfighting systems

OT for Common Broadband Advanced Sonar System (CBASS) Torpedo
Improving Testing of IRCM Systems

JMITS “paints” UV & IR signatures on IRCM systems and characterizes laser and flare countermeasures.

Both Units Delivered Directly to Test
- Eglin AFB (DoN LAIRCM Testing on Navy CH-46)
- China Lake (LAIRCM Testing on AFSOC CV-22)

Included in Navy TEMPs
- DoN LAIRCM, JATAS, Assault & Strike DIRCM
  (for MH-60, MV-22, JSF, F/A-18E/F, CH-53)

Included in Air Force TEMP
- LAIRCM NexGen
  (For C-17, C-130J, C-5, CV-22)

Required T&E/S&T Development for Higher Power Continuous Wave Infrared Sources
- To simulate long range shots within MANPAD operational envelopes
- To simulate longer range RF SAMs during multi-spectral testing (RF & IR)
- Two Colors (IR-Red & IR-Blue)
Improving Real-time Data Throughput Across the Test Environment

- Space Networks
- Aeronautical Networks
- Surface Networks
- Land Networks

ISTF
HITL

Test & Training Ranges

Land Mobile
Surface Mobile
T&E/S&T Program
Project Selection Process

Drivers

http://www.fedbizopps.gov/ ➔ Search for “TRMC”

Solicitations are issued through http://www.fedbizopps.gov

Tri-Service Test Technology Area Working Groups

• Executing Agent
• T&E Community Reps
• S&T Community Reps
• Subject Matter Experts

Needs/Requirements

Solicitations
April – May

White Papers
May – June

Proposals
July – August

Final Selections

Executive Agent

Program Manager

Funding Decision

Source Selection Evaluation Team

• Working Group
• Subject Matter Expert
• Contracting Reps

The Proposal — Key Criteria

• Meets a T&E Need
• Requires S&T work
• High Payoff
• Broad application (more than one DoD test activity)
• High potential for transition to development of a test capability
T&E/S&T Program Summary

• T&E/S&T Program initiated to address critical T&E needs tied to S&T drivers
  – Advancing the state of the art in T&E technologies

• The only DoD S&T program dedicated to T&E

• Annual Call to Industry, Academia, and Government Laboratories to address test capability needs

• Competitive technology developments to get the best technologies possible to the test community

• Focused on transition

Looking Ahead, Responsive, and Agile
Questions?

Please stop by our booth in the exhibit hall

Contact Information:

Mr. George Rumford

Test Resource Management Center
T&E / S&T Program

George.Rumford@osd.mil