



# **Test and Evaluation / Science and Technology (T&E/S&T) Program**

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# Test Technology 2014 Focus

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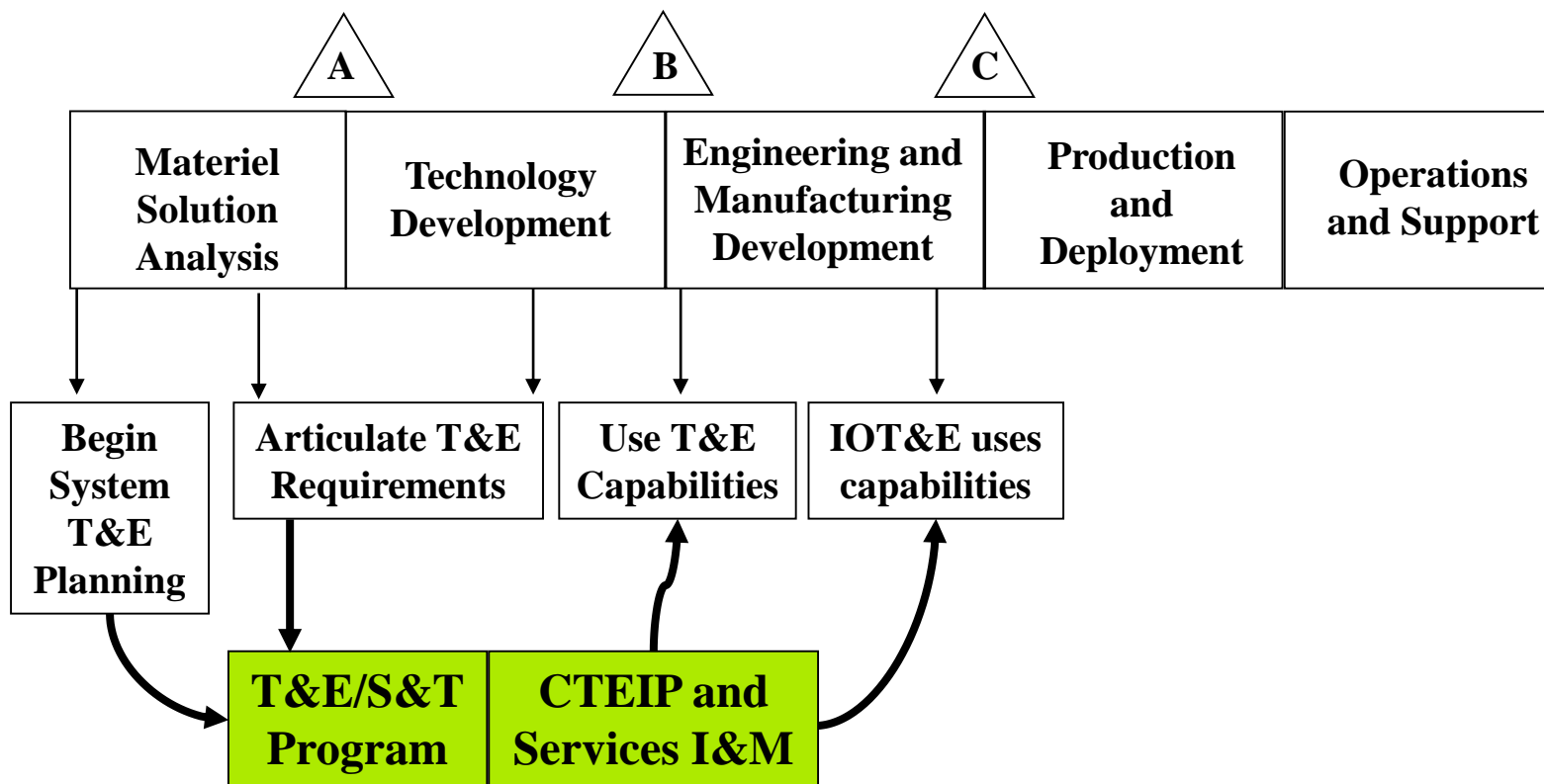


**“...partnerships in Test and Evaluation in Cyberspace with respect to a broad range of technology including *Cloud Computing Services, Software Intensive Systems, Intelligent Systems and Autonomous Systems.*”**



# T&E Capability Development Cycle

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



**Cycle for Test Capability Development Must Begin Early**



# TRMC Investment Programs Overview



## Test *Technology* Development

### T&E/S&T



- Established in FY2002
- Develops technologies required to test future warfighting capabilities
- BA 3 RDT&E funds
- ~\$85M / year
- 8 Test Technology Areas
  - Electronic Warfare
  - Cyberspace
  - High Speed/Hypersonics
  - Autonomous Systems
  - Net-Centric Systems
  - Directed Energy
  - Advanced Instrumentation
  - Spectrum Efficiencies

## Test *Capability* Development

### CTEIP



- Established in FY1991
- Develops or improves test capabilities that have multi-Service utility
- BA 4 RDT&E funds
- ~\$180M / year
- 43 current projects
  - 19 projects developing core Joint capabilities
  - 11 projects improving threat representations used in testing
  - 13 projects addressing near-term OT shortfalls

## Distributed Test *Integration*

### JMETC



- Established in FY2007
- Provides infrastructure for distributed Joint and Cyberspace testing
- BA 5 RDT&E funds
- ~\$30M / year
- 78 current sites
  - Expanding to 93 sites
- Maintains
  - Network connections
  - Security agreements
  - Integration software
  - Interface definitions
  - Distributed test tools
  - Reuse repository



# Test and Evaluation / Science and Technology (T&E/S&T) Program



**Mission: Develop Technologies Required to Test Future Warfighting Capabilities**

- **Respond to S&T Drivers**

Examples include:

- Electromagnetic Rail Gun (EMRG) Innovative Naval Prototype (INP)
- Counter-Electronics High Power Microwave Advanced Missile Project (CHAMP)
- Large Displacement Unmanned Underwater Vehicle (LDUUV)
- Autonomous Mobility Appliqué System (AMAS)
- Hypersonic Strike Weapon (HSSW)

- **Reduce Test Capability Development Risk**

Examples include:

- More realistic stimulation of IRCM systems in ground test facilities
- Over the horizon telemetry relay to test long-range, large footprint weapons
- High precision, high dynamic, GPS-based, time-space-position information (TSPI) of aircraft
- High precision relative tracking of undersea systems for enhanced torpedo testing

- **Leverage S&T Developments to Conduct Better Testing**

Examples include:

- Chip Scale Atomic Clock (CSAC) and Micro IMUs
- Quantum Cascade Laser (QCL)
- Superlattice Light-Emitting Diodes (SLED)



# T&E/S&T Technology Development to Support the AMAS JCTD



## Role of STAA in AMAS Development



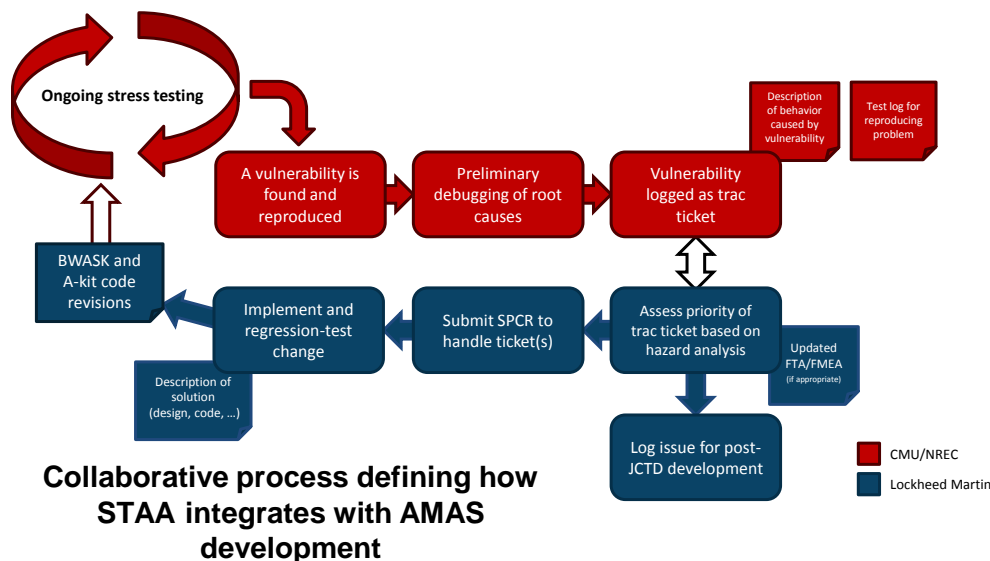
STAA is stress testing software components and systems with hardware in the loop



## Benefits to AMAS JCTD

- Critical functionality and robustness problems can be identified and fixed earlier in development
- Exploratory testing can find gaps in hazard analysis regarding important failure modes before they are encountered in the field

## Other Transition Opportunities

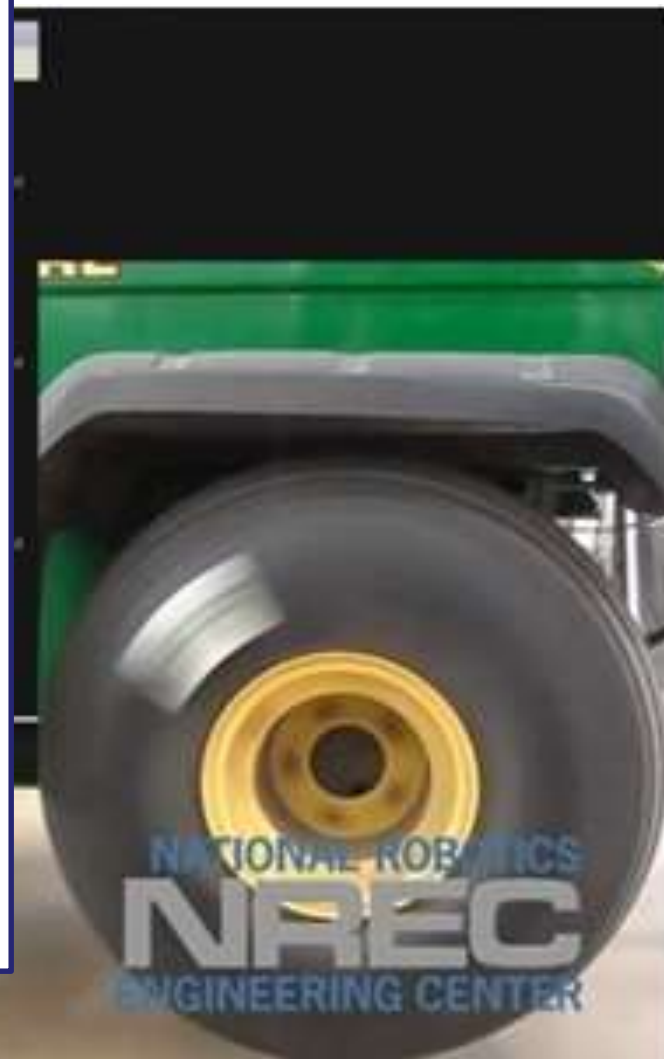
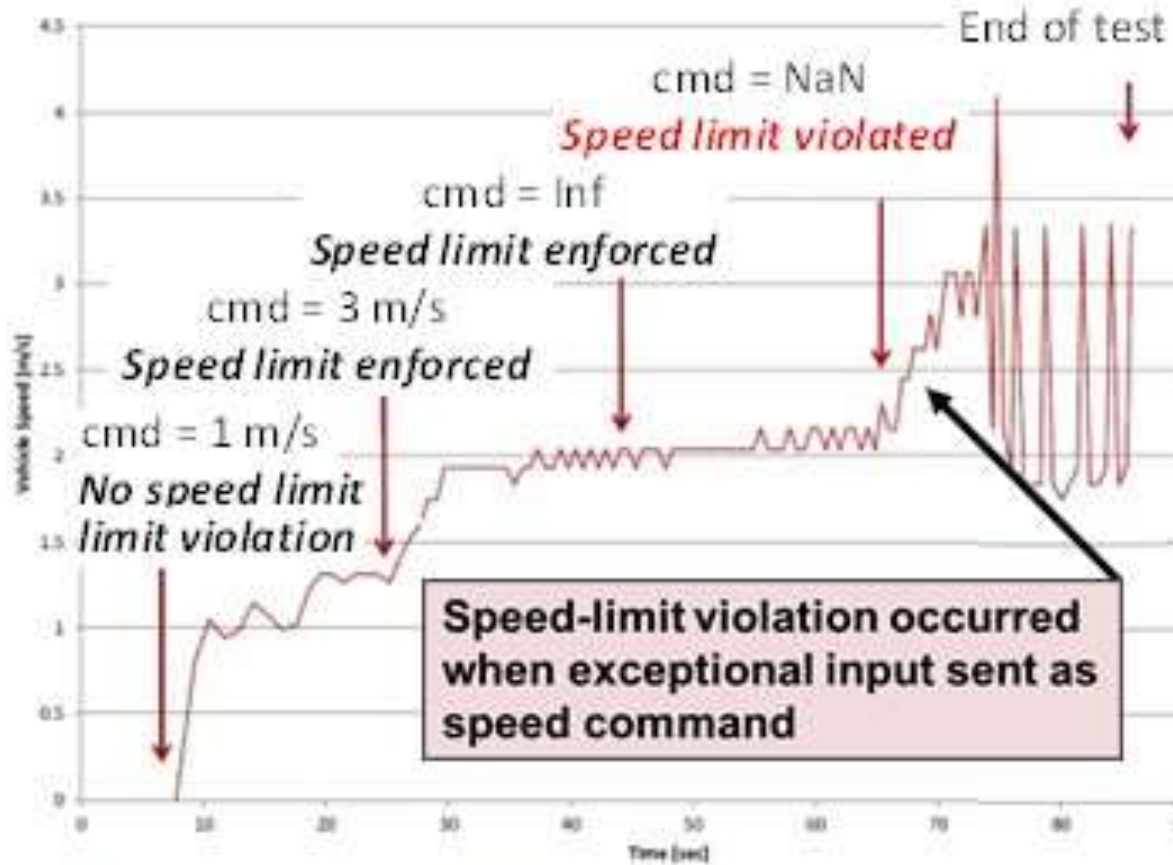




# T&E/S&T Stress Testing of Autonomy Architectures (STAA)



## RECbot Speed Limit Tests





# T&E/S&T Program Overview

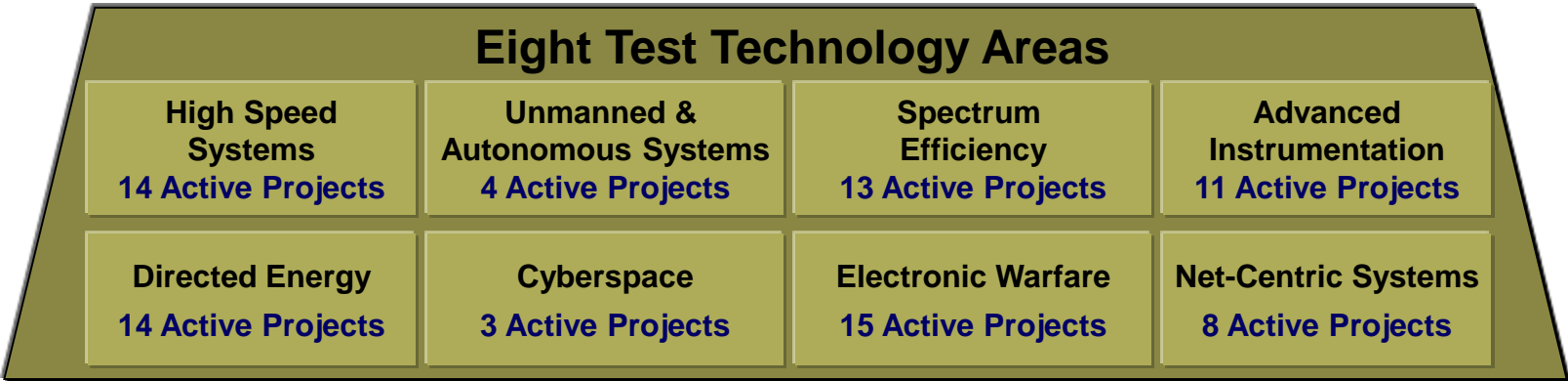


**Mission: Develop Technologies Required to Test Future Warfighting Capabilities**

- 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

**82 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



FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
\$84.1M	\$83.3M	\$81.1M	\$83.1M	\$86.3M	\$91.2M	\$98.8M

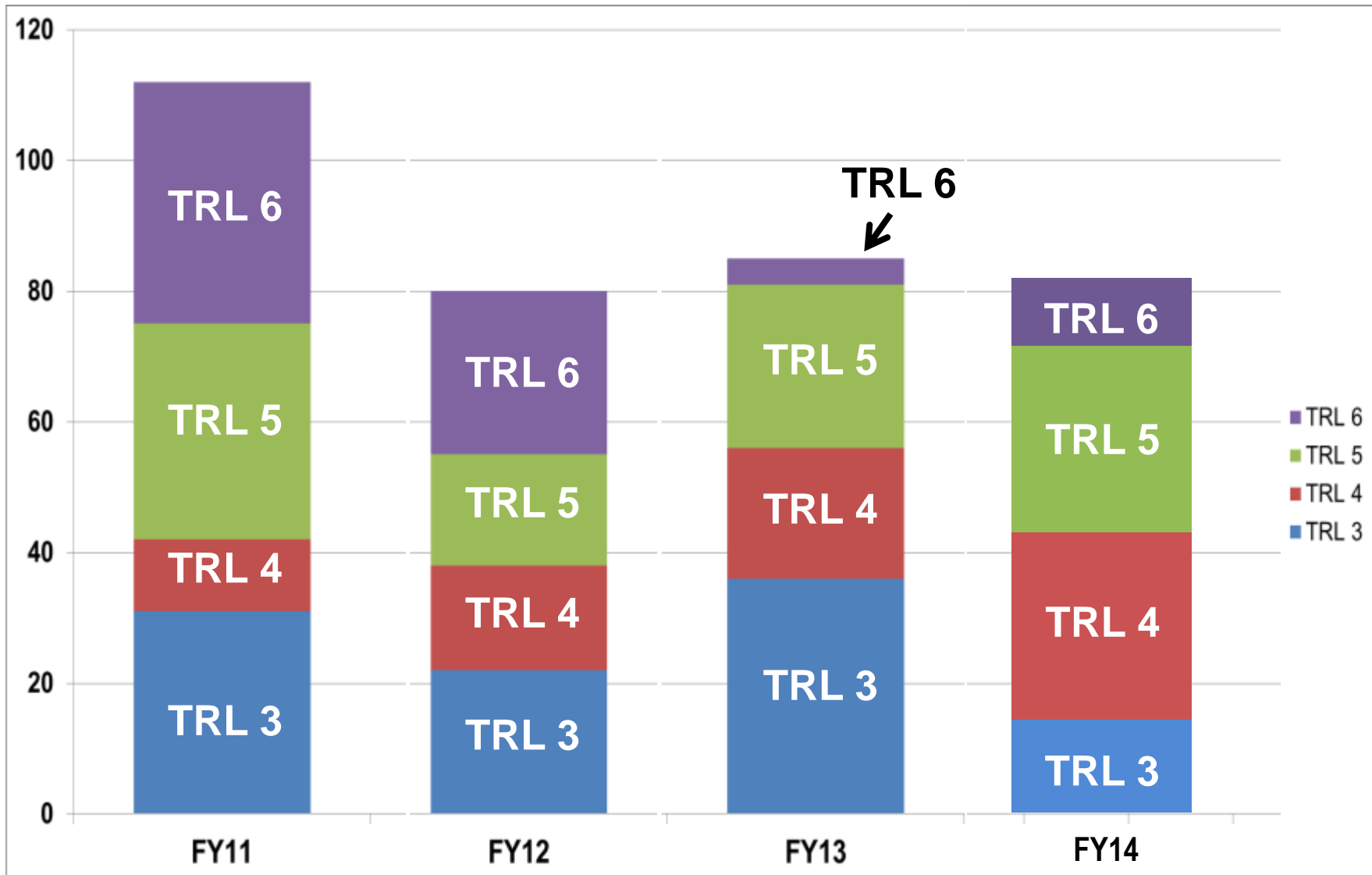
**Shaping Technology into Tomorrow's T&E Capabilities**





# Project Portfolio Snapshot

## Technology Readiness Level by Fiscal Year





# T&E/S&T BAA Upcoming Plans

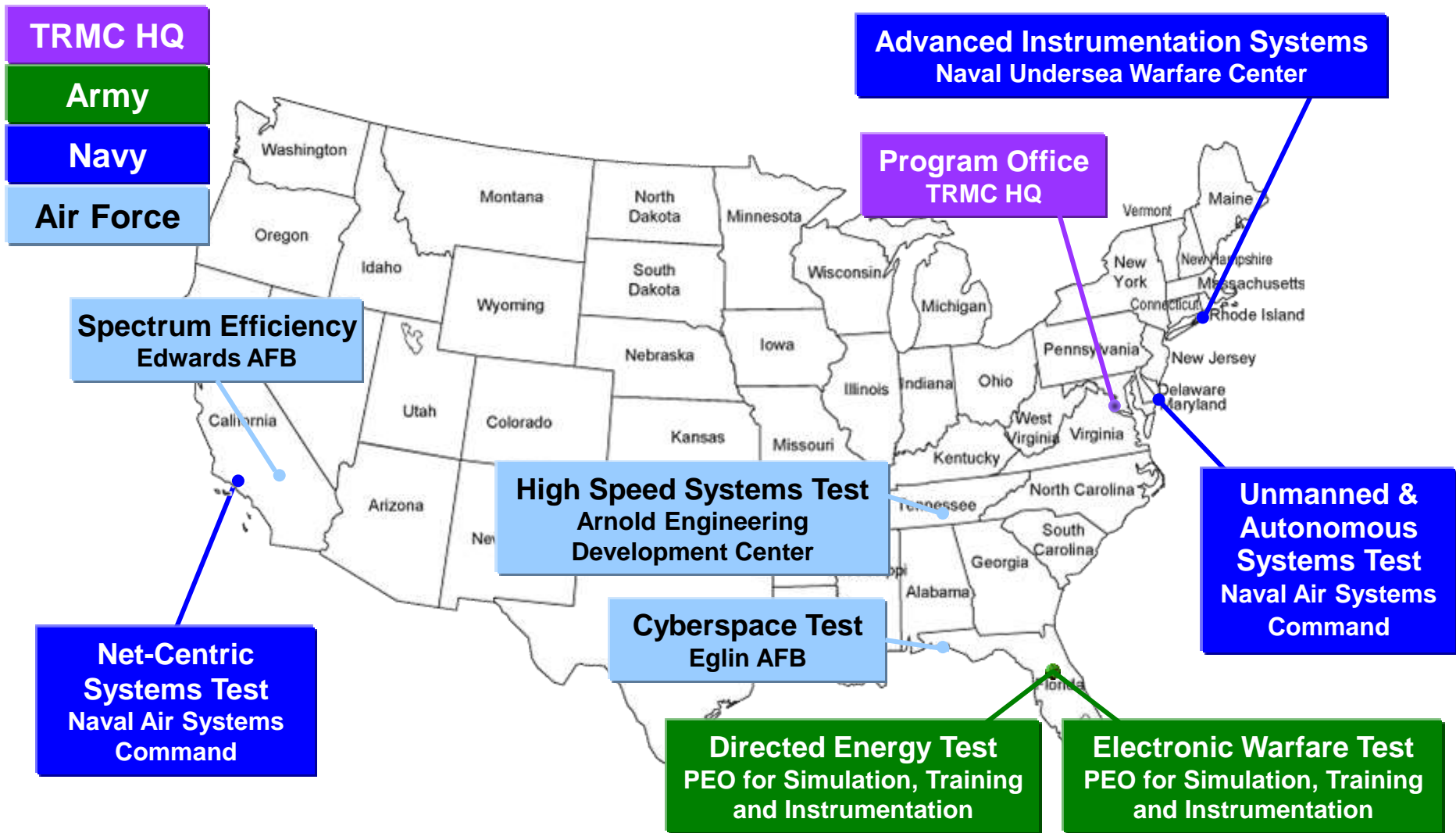


- **For FY15 project proposals**
  - Only accepting out-of-cycle white papers  
*Remember: Contact the Executing Agent prior to submitting white paper*
- **For FY16 project proposals**
  - **December 2014**
    - Updating all BAA test technology topics on [www.fbo.gov](http://www.fbo.gov)
  - **February 2015**
    - **Planning to conduct an Industry Day meeting (Charleston, SC)**
      - Refinement of BAA test technology topics
      - Review of contracting and selection processes
      - Opportunities for 1-on-1 discussions with PM and Executing Agents
      - Will be announced on [www.fbo.gov](http://www.fbo.gov)
  - **March 2015**
    - Update of all BAA test technology topics on [www.fbo.gov](http://www.fbo.gov)
    - Initiate In-Cycle Selection Process
    - White Papers due in May (exact date to be determined)



# T&E/S&T Test Technology Area

## Executing Agent Organizations



**Central Oversight – Distributed Execution**



# T&E/S&T Program

## Broad Agency Announcements



- Topics for Industry, Academia, and Government Laboratories to propose test technology solutions
- **In-cycle Process**
  - Declared schedule for white paper submissions (deadline)
  - Requires an allocation of available funding
  - Priority over out-cycle white papers (must be processed first)
- **Out-of-cycle Process**
  - White papers submitted anytime after "in-cycle" deadline
  - Offerors "highly encouraged" to contact Executing Agent before submitting white paper
    - Ensures interest
    - Can address whether a 'chance' exists for funding
- All BAAs include an **"Other Test Technologies"** topic to enable offerors to propose test technology developments that were not previously identified by the Government

**All T&E/S&T BAAs are always open for new white papers**



# The Proposal — Key Criteria

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- **Meets a T&E need**
- **Requires S&T work**
- **High payoff**
- **Broad application**  
(more than one DoD test activity)



# 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**
- **Open BAA 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 into needed test capabilities**

***Looking Ahead, Responsive, and Agile***