



The DoD T&E/S&T Program

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Program Manager

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

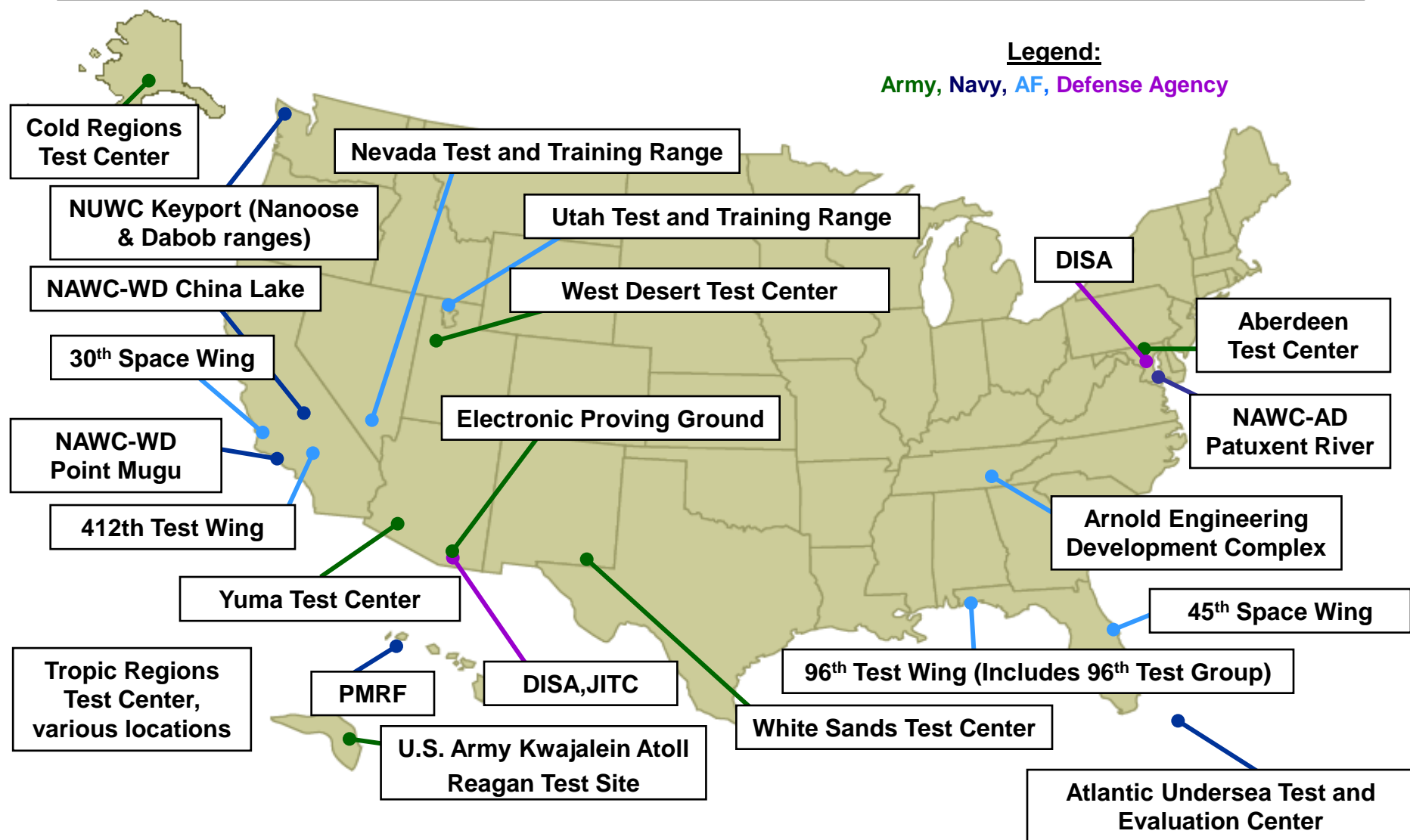
NDIA 16TH Annual Science & Engineering Technology Conference



The STEWARD of the DoD Test Infrastructure

Major Range and Test Facility Base (MRTFB): The “Critical Core”

23 Sites: Army-8; Navy-6; Air Force-7; Defense Agency-2





TRMC Investment Programs Overview



Test *Technology* Development

T&E/S&T



- Established in FY2002
- Develops technologies required to test future warfighting capabilities
- BA 3 S&T for T&E
- ~\$81M / year
- 8 Test Technology Areas
 - Electronic Warfare
 - Cyberspace
 - High Speed/Hypersonics
 - Autonomous Systems
 - C4I & Software Intensive
 - Directed Energy
 - Advanced Instrumentation
 - Spectrum Efficiencies

Test *Capability* Development

CTEIP



- Established in FY1991
- Develops or improves test capabilities that have multi-Service utility
- Range Modernization
- ~\$250M / year
- 4 program components
 - Core Joint test capability improvement
 - Joint EW test capability improvement
 - Threat systems & threat representations
 - Near-term, emergent OT shortfalls

Distributed Test *Integration*

JMETC

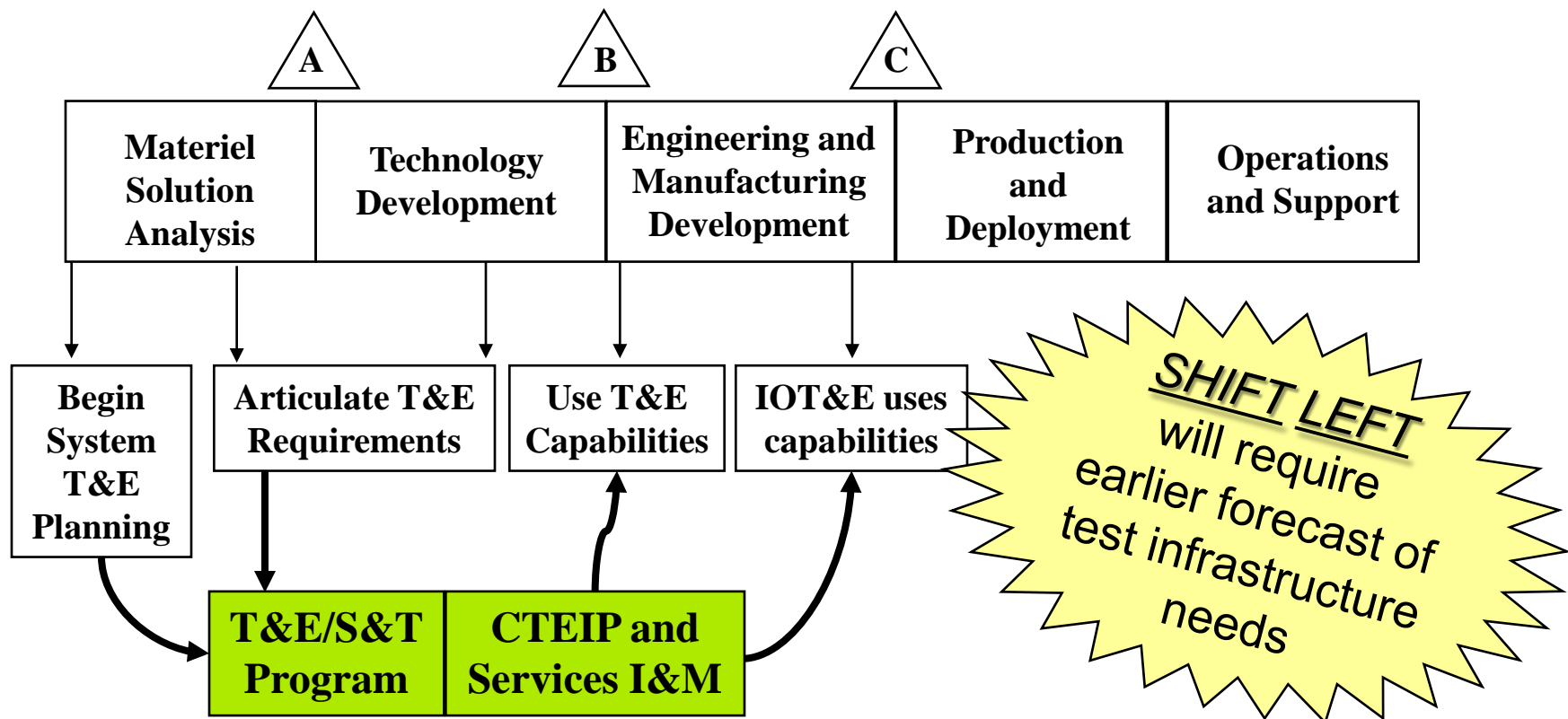


- Established in FY2007
- Provides infrastructure for distributed Joint and Cyberspace testing
- Range Integration
- ~\$27M / year
- 78 current sites
 - Expanding to 93 sites
- Maintains
 - Network connections
 - Security agreements
 - Integration software
 - Interface definitions
 - Distributed test tools
 - Reuse repository



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



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

Current Test Technology Areas

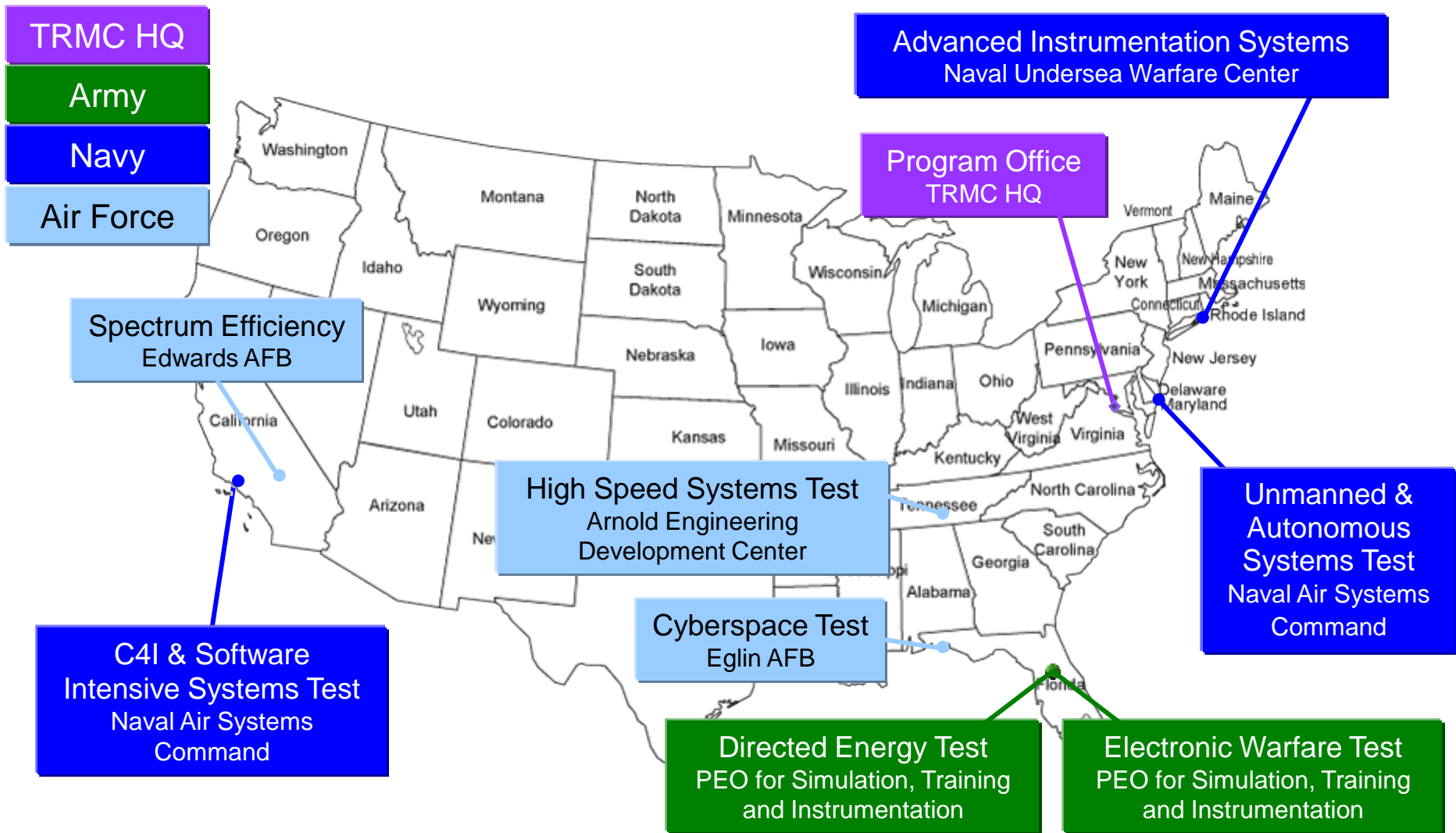
High Speed Systems 14 Active Projects	Unmanned & Autonomous Systems 4 Active Projects	Spectrum Efficiency 13 Active Projects	Advanced Instrumentation 11 Active Projects
Directed Energy 14 Active Projects	Cyberspace 3 Active Projects	Electronic Warfare 15 Active Projects	C4I & Software Intensive Systems 8 Active Projects

Shaping Technology into Tomorrow's T&E Capabilities



T&E/S&T Test Technology Area

Executing Agent Organizations



Central Oversight – Distributed Execution



T&E/S&T Program

Significant Test Technology Needs (1 of 2)



High Speed Systems Test

- Propulsion Scaling Test Techniques
- Combined Cycle Propulsion Test Methods
- Hypersonic Flight Erosion Test Methods
- Thermal Protection System Ablation Testing
- Improved Computational Tools

Electronic Warfare Test

- High-Speed EO/IR Scene Generation
- Missile Body & Plume Attitude Measurement
- Real-time, High-Fidelity, High-Density RF Signal Generation
- Multi-Beam Characterization
- Radar Clutter Simulation

Directed Energy Test

- Neutron Environment Simulator to replicate required nuclear effects test environments
- In Chamber HPM Source
- HPM Electronic Failure Analysis
- Characterizing beam propagation through atmosphere & maximizing laser test windows

C4I & Software Intensive Systems Test

- Flexible Test Harness Generator
- Automated, Rapid, Agile Test Planning
- Removing biases in Distributed Testing
- Rapid Analysis of Voluminous Unstructured Data (“Test Data to Decision”)
- Determining Required M&S Fidelity in Tests



T&E/S&T Program

Significant Test Technology Needs (2 of 2)



Unmanned & Autonomous Systems Test

- Predicting autonomous behavior for testing scenarios
- Enhancing safety of autonomous testing
- Testing of autonomy components
- Measure autonomous system reliability and performance
- Controlling swarming target systems

Cyberspace Test

- Cyberspace test visualization
- Defining cyberspace test measurements
- Improved, scalable cyberspace threat representations
- Improved cyberspace range turn-around
- Advanced cyberspace instrumentation
- Improved cyberspace analysis

Spectrum Efficiency Technology

- Multiple Access Schemes for Serial Streaming Telemetry
- Modulation Agile Radio for Test Applications
- Channel Estimation and Equalization
- Steerable Multiband Antenna (L-band, S-band, & C-band) for Airborne Test Articles

Adv. Instrumentation Sys. Technology

- TSPI without GPS (or with limited GPS)
- Measuring body armor / helmet effectiveness
- Measuring cognitive workload
- Improved weapon characterization and scoring
- Mitigating test range impacts from alternative energy solutions



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



Location of T&E/S&T BAAs



www.fbo.gov

Keyword: TRMC

**Note: Change search criteria for “Posted Date”
from “Last 90 Days” to “<blank>”**

**Updated Topics
Being Posted
by End of May**

**Out-of-Cycle Only
Must Discuss Concept
with Executing Agent
Prior to Submittal**



T&E/S&T New Project In-Cycle Selection Schedule



Activity	T&E/S&T New Project Selection Schedule											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Draft BAA Topic Areas	▶											
Industry/Academia Days		◆	Announced through www.fbo.gov									
Refine BAA Topics		▶										
BAA Topics Finalized				▶								
BAA Topics Announced				◆	Call for White Papers							
White Paper Submissions					▶		White Papers due in March					
White Paper Reviews						▶						
Proposals Requested from Selected Offerors								◆				
Proposal Submissions								▶				
Proposal Review & Clarifications									▶			◆
Executing Agents Recommendations to PM									▶			◆
PM New Start Decisions												▶
Contract Awards Initiated												◆

Program Manager Action

Executing Agent Action

Contracting Officer Action

Offeror Action



The Proposal — Key Criteria



- **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**
- **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 into needed test capabilities**

Looking Ahead, Responsive, and Agile



Questions?



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