Thunderstorm Program

Overview

Updated: SEPT 14, 2020

Background

- **Rapid Reaction Technology Office (RRTO)**

  - Develops prototypes and hosts technology demonstrations and experimentations to counter emerging and anticipated threats in order to accelerate the delivery of resilient solutions leading to affordable Warfighter capabilities.

  - The model for developing and demonstrating less mature, high-reward technologies that produce game-changing capabilities by leveraging non-traditional sources of innovation, interagency partnerships, and rapid prototyping.

- **Thunderstorm Demonstrations and Experimentations**

  - An enduring venue sponsored by RRTO for new technologies to be integrated, evaluated and assessed under real world conditions.

  - Focus areas are developed through partnerships with DoD entities to determine current deficiencies and areas of interest.

Why Thunderstorm?

Inform and accelerate DoD modernization through innovation discovery, demonstration and experimentation

– Venue for the Science & Technology, Acquisition, and User communities to identify and transition new Joint mission capabilities that address key modernization gaps

– Enable technology demonstration venues and experiments to explore new and emerging technologies, CONOPS and red team capabilities

– Foster collaboration for addressing shared gaps and challenges across DoD and other communities

– Facilitate the exploration of lower maturity, higher risk/higher reward alternatives and technology collaborations in operationally relevant environments

– Engage and leverage non-traditional, small business and allied technologies to accelerate the transition of innovative solutions

Accelerating the transition of emerging capabilities to the Warfighter

Methodology and Venues

Strategic Steering

- Guidance based on overarching objectives of the Under Secretary of Defense (Research and Engineering), Director of Defense Research and Engineering, Deputy Director, Developmental Test, Evaluation, & Prototyping

Analytical Gaming Workshop

- Think Tank Forum for SME's to develop future Thunderstorm Concepts
- Creates a joint working group environment to share technologies and ideas
- Forum for analyzing new and emerging threats

Tabletop Experiment (TTX)

- Scenarios are used to focus on process, procedures and potential capabilities
- SMEs attend from various DoD agencies and operational partners from across the government
- Capability gaps are selected and prioritized in order to be considered for technology demonstrations

Technology Innovation Discovery Event (TIDE)

- Introduces end users to a wide breadth of new cutting edge technologies
- Interactive hands-on experience that allows end users to provide instant feedback to the vendor
- End user feedback will aid in the technology selection for the follow-on Field Demonstration and Experimentation

Technology Field Demonstration and Experimentation

- Platform for pairing technologies with potential end users
- Minimal cost to vendor, attractive to startup companies with minimum financial backing
- Uses operational environment to assess prototype technology capabilities with operational partners being readily available for feedback

Benefits the Government Stakeholders

- **Collaboration for addressing operational environment challenges**

- **Opportunity to brainstorm and war-game in a controlled setting**

- **Venue to observe new and emerging technologies**

- **Opportunity to pair technologies for improving overall effectiveness**

Benefits the Demonstrators

- **Kicking the tires**

- **Scenario driven event (Red, Blue, White cells)**

- **Feedback that improves outcomes**

- **Accelerated development and fielding**

- **Creation of new opportunities**

- **Exploring tech across the TRL continuum**

- **Non-traditional and small business exposure**

A Safe Space for Technological Exploration

Previous Events

Focus Area	Operational Partners	Event	Location	Technologies Demonstrated
FY-09: Maritime Domain Awareness	JIATF-S	Field Demonstration	JIATF-S AOR; US SOUTHCOM AOR	10
FY-10: Maritime Domain Awareness	JIATF-S	Field Demonstration	JIATF-S AOR; US SOUTHCOM AOR	10
FY-11: Border Security	CBP, JIATF-S	Field Demonstration	Southern AZ; CBP, Tucson Sector	4
FY-12: Border Security	CBP, USCG, JIATF-S	Field Demonstration	Southern TX; CBP, RGV Sector	6
FY-13: Border Security	10 Operational Partners	Two Field Demonstrations	Southern TX; CBP, RGV Sector	29
FY-14: Identifying Future Focusses	25 Organizations Participated	Analytical Panel	Reston, VA	N/A
C/B WMD via US SE Maritime Pathways	18 Operational Partners	Tabletop Experiment and Two Field Demonstrations	Florida USCG AOR; and Edgewood, MD	36
FY-15: Arctic Challenges	20 Operational Partners	Tabletop Experiment and Field Demonstration	US NORTHCOM; and Army CRREL, Hanover, NH	17
C/B Sensor UAS & C-UAS (WMD)	35 Operational Partners	Field Demonstration	Camp Shelby, MS	11
Ground Area Denial	12 Operational Partners	Tabletop Experiment	Fort Leonard Wood, MO	N/A
FY-16: Arctic Challenges	7 Organizations Participated	Field Demonstration	Fort Wainwright ; USCG Cutter Hickory, Homer, AK	16
Dense Urban and Subterranean	23 Operational Partners	Field Demonstration	Fort A.P. Hill, VA, Joint Base Anacostia-Bolling, DC	22
Protection of Key Assets and Facility Security	22 Operational Partners	Field Demonstration	Kings Bay, GA	29

Previous Events

Focus Area	Key Operational Partners	Event	Location	Technologies Demonstrated
FY-17: Dense Urban/ Subterranean	55 Operational Partners (Organizations Represented)	Field Demonstration	New York City, NY	20
Protection of Government Infrastructure and Facility Security	36 Operational Partners (Organizations Represented)	Field Demonstration	Blossom Point, MD	22
FY-18: Small Unit Operations	60 Operational Partners (Organizations Represented)	Technology Discovery and Demonstration	Adjacent to Fort Bragg, NC	54
Dense Urban & Subterranean Challenges	73 Operational Partners (Organizations Represented)	Field Demonstration	New York, NY	28
Sense Through the Wall and Color Night Vision	27 Operational Partners (Organizations Represented)	Limited Objective Field Demonstration	Adjacent to Fort Bragg, NC	10
FY-19: Port & Harbor Security Swimmer/Diver Detection, Tracking and Identification	30 Operational Partners (Organizations Represented)	Field Demonstration and Experiment	Truman Annex Key West, FL	9
Multi-Domain Operations	62 Operational Partners (Organizations Represented)	Field Demonstration and Experiment	New York, NY	27
Sense Through the Wall	23 Operational Partners (Organizations Represented)	Field Demonstration and Experiment	Maryland Fire and Rescue Institute, MD	9
FY-20: OUSD R&E Technology Focus Areas	100+ Operational Partners (Organizations Represented)	Technology Discovery and Demonstration	Chantilly, VA	76

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Summary

- **Since FY16, Thunderstorm has introduced 330 new and emerging technologies to over 1,132 DoD, IC, and other government representatives.**

- **Results have included:**

  - Vendors:
    - **Invited for additional testing at a government site**
    - **Invited to participate in future field events**
    - **Transitioned to the end-user**

  - Government:
    - **Introduced to new & emerging technologies**
    - **Introduced to non-traditional vendors**
    - **Discover DoD applicability of existing commercial products**
    - **Informed investment decisions**
    - **Formation of official Working Groups**

Upcoming Events

- **Thunderstorm 20-2: AI/ML Enabled Sensor Technologies and Autonomous Operations**

  – Thunderstorm 20-2 is a technology field demonstration and experimentation event focused on autonomous operations of unmanned vehicles and equipment supported by artificial intelligence/machine learning (AI/ML) capabilities.

  – Event is scheduled for 26 Oct – 06 Nov 2020 at the Crucible training facilities located in Fredericksburg, VA

  – Please email Thunderstorm@arl.psu.edu for more details

- **Thunderstorm 21-1: Virtual Reality (VR) Tools in Support of Enhancing Small Unit Lethality**

 – This virtual event will focus on Virtual Reality (VR) Tools in Support of Enhancing Small Unit Lethality leveraging autonomy and Artificial Intelligence/Machine Learning (AI/ML) technologies capable of providing   the operator with ways to improve planning, decision making and efficiency; reduce cost, workload, and risk; improve safety of the operator and operating equipment, and enhance situational awareness in both the rapid response planning and execution of small unit operations.

 – Event scheduled for the week of Oct. 5th 2020

 – To RSVP please visit:

https://einvitations.afit.edu/inv/anim.cfm?i=564784&k=0767460E7353

****<u>RSVP to receive the event link and additional demonstrator information</u>****

Vendors with relevant technologies and capabilities are encouraged to respond to the Thunderstorm beta.SAM.gov postings.

For more information on the program and how to engage, please contact the:

Rapid Reaction Technology Office

osd.pentagon.ousd-atl.list.rrto-poc@mail.mil