



# Optimizing the Test & Evaluation Process for Multi-Domain Operations

**July 19 - 21, 2022**  
**Radisson Hotel | El Paso, TX**

## ***The Premier Global Association for Test and Evaluation Professionals***

- Full-day and Half-day Pre-Workshop Tutorials: *Earn Continuing Professional Education Credits (CPEs)*
- Keynote Speaker & Panel Discussions: *A panel of Test and Evaluation Executives (SeS) from the services addressing the challenges of supporting MDO concepts; The three major MDO Navy, Airforce and Army MDO programs presented by the respective Program Offices, OSD SeS level executives addressing Developmental and Operational Testing and the resources needed to support both.*
- Technical Sessions: *Sessions addressing Cyber, Distributive Testing, use of Live, Virtual and Constructive tools, and other enabling tools and concepts, both current and developing, required to support MDO.*
- Exhibits: *Increase your visibility, network with key players, and show your support and commitment to the industry and community!*
- Networking: *Make professional connections to grow your business network and seek out partnerships*

# **Multi-Domain Operations Workshop**

## *Optimizing the Test & Evaluation Process for Multi-Domain Operations*

### **WORKSHOP DESCRIPTION**

As the DoD embarks on developing its capabilities to support a multi-domain operational environment (also known as the Joint All Domain C2), execution of the identified initiatives will require application of system of systems principles to assure a robust and effective solution. These principles and their application to adapting to multiservice, multinational, multi-platform players, will facilitate the creation of a flexible infrastructure capable of conducting more operationally realistic test and training. The resultant distributed and integrated test and training environment will enhance readiness.

This workshop will discuss selected tenets of this support and address how to apply these tenants to test planning, test support and will include test capability modernization current and future needs. Considerations such as cyber, C4I , distributed testing, modeling and simulations, autonomous systems, hypersonic systems, directed energy, spectrum, advanced instrumentation systems, and certainly Big Data will lead to a thorough and relevant discourse at this workshop. Keynote speakers, town halls and technical sessions will be part of a program to identify challenges, solutions, innovations and a future state; all contributing to moving us closer to creation of an infrastructure and principles, conducive to testing and training in support of multi-domain operations.

Please join us in El Paso, TX as members of the T&E community from academia, industry, and government come together to address the challenges associated with MDO and stive for solutions that will assure a robust address of this important initiative. Come share your thoughts, connect with others, and learn from some of the leading experts at this Workshop.

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### **PLANNING COMMITTEE**

- Charles Garcia, Program Chair, ITEA Ambassador, GreyBeard Group
- Richard Martinez, Technical Chair, GreyBeard Group
- Steve Aragon, White Sands Chapter President & Tutorial Chair
- Chuy Benitez, Photographer/Workshop Support, GreyBeard Group
- Lisa Benitez, Registration Support
- David Fierro, Registration Support, GreyBeard Group
- Mike Gonzales, Workshop Support, 3 Towers Consulting
- Mando Juarez, IT/AV Co-Chair, GreyBeard Group
- Danny Medina, Workshop Support, GreyBeard Group
- Carlos Maez, IT/AV Chair, SRS
- Anahi Mancha, Security
- Gloria Martinez, Registration Support

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*Optimizing the Test & Evaluation Process for Multi-Domain Operations*

**THANK YOU TO OUR SPONSORS!**



# Multi-Domain Operations Workshop

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EVENTS	DATE	TIME
<b>Registration</b>	Monday, July 18	3:00pm–5:30pm
	Tuesday, July 19	6:30am–5:30pm
	Wednesday, July 20	6:30am –5:30pm
	Thursday, July 21	7:00am–4:00pm
<b>Tutorials</b>	Tuesday, July 19	8:00am–12:00pm/ 1:00pm–5:00pm
<i>(See next page for descriptions)</i>		
<b>Exhibit Hours</b>	Wednesday, July 20	9:00am–5:00pm
	Thursday, July 21	9:00am–4:00pm
<b>Technical Sessions</b>	Wednesday, July 20	2:45pm–4:45pm
	Thursday, July 21	3:30pm–5:30pm
<b>Special Events</b>		
Opening Ceremony & Blue Ribbon Panel	Wednesday, July 20	7:30am–9:45am
Reception in the Exhibit Halls	Wednesday, July 20	5:00pm–7:00pm

Some presentations at the Workshop will be Limited Distribution C and D, which restricts participation in those sessions to U.S. citizens who are employees of the U.S. Federal Government or its contractors (C), or employees of the Department of Defense or its contractors (D). If you do not meet this requirement, you may be unable to attend every session. Attendees without need-to-know may only attend presentations cleared for public release at sessions. Those wishing to attend the Limited Distribution sessions must submit a visit request. **\*\*All visit requests, via JPAS, DISS, or Visit Request letter, must be received by 3 PM MST on or before 15 July 2022.** Instructions for submitting visit requests can be found at [www.itea.org](http://www.itea.org). All presentations are cleared for public release unless noted.

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Pre-Workshop Tutorials are a separate fee from the Workshop.

Single Tutorial - \$205, Two Tutorials - \$385

**19-July      Tutorials**

**8:00 a.m. – 12:00 p.m.      Morning Tutorials**

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### **Introduction to Cybersecurity Test and Evaluation**

*Jean Petty, The MITRE Corporation*

This tutorial will familiarize attendees with Cybersecurity and Test and Evaluation as it applies to US Federal Government Programs and the U.S DOD. Note that the ideas and concepts presented also apply in principal to any acquisition program. Topics that will be addressed include Cyberspace as an operational domain, Cybersecurity threats, malware, DHS and DOD systems acquisition and associated Cyber T&E policy and process including “Cloud” Programs, requirements analysis, evaluation frameworks, cyber tabletop exercises, cooperative vulnerability assessments, adversarial assessments, cyber ranges and lessons learned.

### **Laser System Propagation T&E Challenges**

*Douglas Nelson, PhD, Teknicare, Inc., Senior Combat Engineer and Mark Stevens, P.E., Naval Postgraduate School, Senior Lecturer*

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### **Statistical Test and Analysis Techniques (STAT) for T&E**

*Mark Kiemele, Ph.D., Air Academy Associates*

Statistical test design optimization is the offspring of Design of Experiments (DOE) and is a method that can and should be used not only in the design and development of systems, but also in the modeling and validation of system of systems. Building useful prediction models and then validating them can ease the burden of making tough decisions. This tutorial will focus on the use of DOE and regression analysis in a wide variety of applications, from screening to modeling and on to validation testing. This presentation will start by addressing the basics of DOE and why it is different from other data analytic techniques, following it with examples that span the gamut, from flight test to cyber testing. It will also cover the necessary statistical tools and techniques that should be applied in consonance with

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DOE. There are no pre-requisites for this tutorial, as the analysis will be demonstrated via computer.

### **T&E as a Part of Agile Development**

*Robin Poston, PhD - System Testing Excellence Program, University of Memphis, and  
Wayne Dumais - Deputy T&E, Department of Homeland Security (DHS)*

To discuss T&E in support of agile development, we need to explore the sequence of the evolution of the agile methods, rationale for the application of different methods, compare traditional and agile software development approaches, discuss research conclusions regarding the agile method's impact on software performance, review benefits and challenges of agile, and appreciate the fit of agile methods with Systems Acquisition Life Cycle. Furthermore, in this tutorial we will also discuss when to use agile, the role of the tester on agile projects, and various kinds of testing applicable to agile software developments.

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## **1:00 p.m. – 5:00 p.m.      Afternoon Tutorials**

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### **Cybersecurity for Telemetry Systems**

*Brian L. Simonin, Southwest Range Services*

Cybersecurity is now a complete requirement for all Telemetry sensors on our test ranges. This Short Course will cover what is Cybersecurity and RMF and how does this impact deploying Telemetry software and instrumentation on the range. It will also cover the process of integrating equipment on a Test Support IP Network and the requirements that you must undergo to ensure your systems are secure, compliant, and operational for a myriad of mission activities. Class slides have been approved by the WSMR Cybersecurity Office for Telemetry vendor dissemination. However, the slides may be adapted for other enclaves such as Optics, Radar, GPS, and Real-Time operations.

### **Fundamentals of Telemetry Ground Stations**

*Mark McWhorter, V.P. of Sales & Marketing, Lumistar Inc.*

This course is designed to present to the student the fundamental design features of a typical range telemetry ground system. Topics to be discussed will be the major sub-systems and components used, such as track antenna, multicoupler, receiver/combiner, demodulation, bit synchronization, data recording and playback, time, decommutation and simulation, and real time displays of telemetered parameters. The student will be exposed to a few mathematical exercises, such as "link analysis" calculations to help determine the "sensitivity" of the ground station and resultant system tradeoffs. After having completed the course, the student will have a better understanding of concepts related to RF and data processing of flight telemetry.

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### **T&E in a Digital Engineering Environment**

*Hans Miller & Jean Petty, The MITRE Corporation*

This tutorial will review digital engineering concepts in general and then deep dive into specifics for test and evaluation (T&E) in a digital engineering environment. The course will review concepts, methods, tools, and best practices for five Digital Engineering topic areas including models, an authoritative source of truth, technological innovation, innovative infrastructure, and workforce. Each topic area will be addressed in general, followed by discussion of specific issues and challenges for T&E. Discussion areas will include:

- How planning and the evaluation components of T&E need to evolve in the DE environment, given Model Based Systems Engineering, Mission Engineering, and automated testing.
- The characteristics of T&E tools within the DE environment and considerations and methods for automated tools selection.
- Data access, data sharing, and hurdles for building an authoritative source of truth.
- Special concerns for Cyber T&E in a Digital Engineering environment.
- Digital Engineering infrastructure and infrastructure providers.
- T&E workforce within a Digital Engineering ecosystem.
- Gaps in current infrastructure, capabilities, workforce, etc.

This course is intended for T&E professionals who are new to Digital Engineering or are beginning to implement Digital Engineering in their T&E practices. The course will include lecture, discussion, and interactive exercises.

### **TRMC Solutions for MDO and Distributed Testing**

*Gene Hudgins, JMETC/TENA Team, Test Resource Management Center*

The Test and Training Enabling Architecture (TENA) was developed as a DoD CTEIP project to enable interoperability among ranges, facilities, and simulations in a timely and cost-efficient manner, as well as to foster reuse of range assets and future software systems. TENA provides for real-time software system interoperability, as well as interfaces to existing range assets, C4ISR systems, and simulations. TENA, selected for use in JMETC events, is well-designed for its role in prototyping demonstrations and distributed testing.

Established in 2006 under the TRMC, JMETC provides readily-available connectivity to the Services' distributed test capabilities and simulations. JMETC also provides connectivity for testing resources in the Defense industry and incorporation of distributed testing and leveraging of JMETC-provided capabilities by programs and users has repeatedly proven to reduce risk, cost, and schedule. JMETC is a distributed LVC testing capability developed to support the acquisition community during program development, developmental testing, operational testing, and interoperability certification, and to demonstrate Net-Ready Key Performance Parameters (KPP) requirements in a customer-specific Joint Mission Environment.

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JMETC is the T&E enterprise network solution for secret testing, and uses a hybrid network architecture – the JMETC Secret Network (JSN), based on the SDREN. The JMETC MILS Network (JMN) is the T&E enterprise network solution for all classifications and cyber testing. JMETC provides readily available connectivity to the Services' distributed test capabilities and simulations, as well as industry test resources. JMETC is also aligned with JNTC integration solutions to foster test, training, and experimental collaboration.

TRMC Enterprise Big Data Analytics (BDA) and Knowledge Management (BDKM) has the capacity to improve acquisition efficiency, keep up with the rapid pace of acquisition technological advancement, ensure that effective weapon systems are delivered to warfighters at the speed of relevance, and enable T&E analysts across the acquisition lifecycle to make better and faster decisions using data that was previously inaccessible, or unusable. BDA is the application of advanced tools and techniques to help quickly process, visualize, understand, and report on data. JMETC has demonstrated that applying enterprise-distributed BDA tools and techniques to T&E leads to faster and more informed decision-making that reduces overall program cost and risk.

TRMC has been working with Joint Staff and Air Force JADC2 Cross-Functional Teams (CFTs) regarding JADC2 and Multi-Domain Operations (MDO), to inform them on TENA/JMETC and other TRMC capabilities that could be leveraged to support the emerging Joint Staff Joint Domain Environment (JDE). Additionally, TRMC has been engaged with Army Futures Command (AFC) throughout the year in a number of areas including assessing TENA/JMETC Support coupled with Big Data Analytics (BDA), expanding OSD TRMC collaboration and cooperation to other mission areas including, but not limited to, Cyber, BDA, Knowledge Management (KM), Machine Learning (ML), and Artificial Intelligence (AI).

This tutorial will inform the audience as to the current impact of TENA, JMETC, and BDA on the T&E community; as well as their expected future benefits to the range community and the warfighter.

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### **20-July Plenary Sessions, Technical Sessions, & Exhibits**

- 7:30 a.m. Opening Ceremony:  
Presentation of Colors  
National Anthem  
Mr. Bruce Einfalt – ITEA President
- 7:45 a.m. Welcome:  
Mr. Charles Garcia, MDO Program Chair & Steve Aragon, White Sands Chapter President
- 8:00 a.m. Welcome by Brigadier General Eric Little, Commanding General, White Sands Missile Range
- 8:15 a.m. T&E Executive Blue Ribbon Panel:  
Panelists:  
➤ Robert Stone, (SES), Executive Director, White Sands Missile Range  
➤ Carroll “Rick” Quade, (SES), Test & Evaluation Executive, Department of Navy and Director for Innovation, Technology Requirements and T&E (N94)  
➤ Chris Wilcox, (SES), Deputy Director, Air Force T&E  
➤ James Amato, (SES), Technical Director, U.S. Army Test and Evaluation Command (ATEC)  
➤ COL Mike Hopkins, Director, Space Force T&E
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- 9:45 a.m. 30-MINUTE BREAK IN THE EXHIBIT HALL**
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- 10:15 a.m. Keynote Speaker: George Rumford, (SES) Director (acting) and Principal Deputy, Test Resource Management (TRMC)
- 11:00 a.m. Featured Speaker: Christopher Collins, (SES), Director, Developmental Test, Evaluation, and Assessments, Office of the Undersecretary of Defense (R&E)
- 11:30 a.m. Featured Speaker: Dr. Sandra Hobson, (SES), Deputy Director for Strategic Initiatives, Policy and Emerging Technologies, Office of the Director, Operational Test and Evaluation, Office of the Secretary of Defense
- 12:30 p.m. Lunch in the Exhibit Hall**
- 1:45 p.m. Featured Speakers: Cedric Baca, C4ISR Division Chief, Army Futures Command (AFC), DEVCOM Analysis Center; Daniel Landin, Cyber Experimentation & Analysis Division Chief, Army Futures Command, DEVCOM Analysis Center

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**2:30 p.m. BREAK IN THE EXHIBIT HALL**

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2:45 p.m. Technical Track Sessions

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**5:00 p.m. RECEPTION IN THE EXHIBIT HALL**

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### **21-July Plenary Session, Technical Sessions, & Exhibits**

8:00 a.m. Welcome and overview of the day's events by Mr. Charles Garcia – MDO Program Chair

8:15 a.m. Featured Speaker: Air Force Advanced Battle Management Systems (ABMS) Program Office

9:00 a.m. Featured Speaker: Navy Overmatch Program Office

9:45 a.m. Featured Speaker: Army Project Convergence – Joint Modernization Command

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**10:30 a.m. 30-MINUTE BREAK IN THE EXHIBIT HALL**

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11:00 a.m. Featured Speaker: Jerry Tyree, Deputy Commander and Technical Director, White Sands Test Center, Army Test and Evaluation Command, White Sands Missile Range  
*“MRTFB Support of MDO – A Case Study”*

**12:30 p.m. Lunch in the Exhibit Hall**

1:30 p.m. Featured Speaker: Hans Miller, Project Leader, OSD Programs, The MITRE Corporation  
*“Supporting T&E for Multi-Domain Integration”*

2:20 p.m. Featured Speaker: Paul Mann, (SES) Department of the Navy Chief Engineer, Office of the Deputy Assistant Secretary of the Navy (RDT&E)  
*“Unmanned Task Force/Digital Overmatch”*

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**3:00 p.m. 30-MINUTE BREAK IN THE EXHIBIT HALL**

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3:30 p.m. Technical Track Sessions

5:30 p.m. Workshop Concludes

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### Radisson Hotel El Paso Airport

#### *Event Location*

All events including tutorials, technical sessions, and exhibits, will occur on the hotel property. All events, including the opening ceremony and reception, will be clearly marked with signs. The Radisson is located at 1770 Airway Blvd., El Paso, TX 79923. Tel. 951-772-333

#### *Hotel Reservations*

ITEA is pleased to offer a special below government per diem rate of \$98 per night. *Please specify that you will be attending the ITEA workshop when booking your reservation.* **Group code ITEA22.**

**Room Block Cut-Off:** June 27, 2022

**Reservations via Web:** [Radisson Reservation Link](#)

**Cancellations:** The hotel requires a 48-hour cancellation notice prior to the reservation date. Late cancellations will result in the first night's stay being billed to your credit card.

**Check-In/Check-Out:** Check-In time is 3:00pm and Check-out time is 12:00pm.

**Internet:** Free WiFi throughout the hotel (includes convention space and sleeping rooms).

**Parking:** Free

**Extras:** Free To-Go Breakfast Burrito and free shuttle to/from the airport. Contact the hotel for more information.



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### Registration Information

#### Early Registration prior to June 10

\$645 - Regular Registration\*\*

\$495 - ITEA Member / Government Employee / Active Duty Military

#### Regular Registration June 11-30

\$745 - Regular Registration\*\*

\$595 - ITEA Member / Government Employee / Active Duty Military

#### Late Registration after June 30

\$845 - Regular Registration\*\*

\$695 - ITEA Member / Government Employee / Active Duty Military

Registration includes two lunches, breaks, & Networking Reception.

\*\*One-year ITEA membership (if paying non-member fee).

NOTE: Pre-Workshop Tutorials require a separate fee from the Workshop.

**Early T&E Career Professional (less than 5 years of T&E experience) VERIFICATION REQUIRED** – Includes two Lunches, two breaks, and the Networking Reception.

\$ 95 – Early registration prior to June 10<sup>th</sup>

\$195 – Registration June 11<sup>th</sup> -30<sup>th</sup>

\$295 – Late Registration after June 30<sup>th</sup>

[Download verification form here](#)

#### **Pre-Workshop Tutorials (requires a separate fee from the Workshop)**

Single Tutorial - \$205, Two Tutorials - \$385

#### **Special Registrations**

- \$150 - Plenary Speaker, Panel Chair, Session Chair, Tutorial Secondary Instructor
- \$395 - Panelist, Technical Session Presenter (**Includes membership**)
- \$150 - EXHIBIT HALL ONLY (Includes meals and Networking Reception/No access to Plenary or technical sessions)
- \$50 - FULL-TIME STUDENT (ID Required)
- \$400 One day only

*SUBSTITUTION AND CANCELLATION POLICY: Substitutions are permitted. Refunds are not available within ten (10) days prior to the start of the event. Requests for cancellation submitted between ten (10) to 45 days prior to start date of the event will be subject to a \$250 cancellation fee. Requests for cancellation greater than 45 days prior to the start date of the event will be subject to a \$100 cancellation fee.*