PLANNING GUIDE

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*

Register now at www.itea.org

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.

PLANNING COMMITTEE

- Charles Garcia, Program Chair, ITEA Ambassador, GreyBeard Group
- Richard Martinez, Technical Chair, GreyBeard Group
- Steve Aragon, White Sands Chapter President & Tutorial Chair
- 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

THANK YOU TO OUR SPONSORS!

Multi-Domain Operations Workshop

Optimizing the Test & Evaluation Process for Multi-Domain Operations

EVENTS	DATE	TIME
Registration	Monday, July 18	3:00pm–5:00pm
	Tuesday, July 19	6:30am–5:00pm
	Wednesday, July 20	6:30am –5:00pm
	Thursday, July 21	7:00am–4:00pm
Tutorials	Tuesday, July 19	8:00am–12:00pm/ 1:00pm–5:00pm
(See next page for descriptions)		
Exhibit Hours	Wednesday, July 20	9:00am–5:00pm
	Thursday, July 21	9:00am–4:00pm
Technical Sessions	Wednesday, July 20	2:45pm–4:45pm
	Thursday, July 21	1:00pm–3:00pm
Special Events		
Opening Ceremony & Blue Ribbon Panel	Wednesday, July 20	7:30am–9:45am
Reception in the Atrium	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. All presentations are cleared for public release unless noted.

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

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

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.

Laser System Propagation T&E Challenges

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

An introduction to the challenges of testing and evaluating the propagation of Laser Systems. An overview of the basic physics and terminology of these systems is included. The unique propagation effects of Laser Systems are also discussed to provide a foundation for test objectives. Test and evaluation needs for propagation of Laser Systems including diagnostic beam propagation and atmospheric measurements are briefly examined.

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 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.

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

Planning for Agile T&E in a Government Framework

Hans Miller, The MITRE Corp.

This course provides a framework and guidance for programs transitioning to an agile construct or new programs established with an agile construct. The intended audience includes requirements managers, program managers and test managers executing DoD programs; however, the overall principles could apply to multiple agencies. This course is not a singular solution for agile testing; it acknowledges the different approaches needed for different programs and is intended to provide students with an understanding of concepts that can be tailored to their specific program. This course will walk through characteristics of agile process and where it does and does not apply to help inform expectations. It will cover US code, OSD and service policy as it applies to agile testing to allow greater flexibility. The core of the course covers upfront planning and strategy considerations for successful testing; requirements, contracting, infrastructure investments, automation and test execution. It concludes with approaches on how to translate that strategy into concise, timely, and relevant documentation from the TEMP, test plan, and test reporting.

Fundamentals of Aeronautical Ground Telemetry Systems

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

This course will present a high-level overview of the fundamental design of a typical range telemetry data ground system. Topics to be discussed will include the major sub-systems and components used, such as auto-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. A section on system calibration and periodic maintenance will be presented. After having completed the course, the student will have a better understanding of concepts related to RF and data processing of flight telemetry on the ground side.

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.

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.

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

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

7:30 a.m. Opening Ceremony:
Presentation of Colors
National Anthem
Mr. Bruce Einfalt – ITEA President

7:40 a.m. Welcoming Remarks by Congressman Tony Gonzales, Texas District 23

7:45 a.m. Workshop Overview:
Mr. Charles Garcia, MDO Program Chair & Steve Aragon, White Sands Chapter President

8:00 a.m. Workshop kickoff by Brigadier General Eric Little, Commanding General, White Sands Missile Range

8:15 a.m. T&E Executive Blue Ribbon Panel moderated by Robert Stone, (SES), Executive Director, White Sands Missile Range

Panelists:

- 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

9:45 a.m. **30-MINUTE BREAK IN THE EXHIBIT HALL**

10:15 a.m. Keynote Speaker: Dr. Raymond O'Toole, Principal Deputy Director, Operational Test and Evaluation, Office of the Secretary of Defense

11:00 a.m. Special Featured Speaker: Christopher Collins, (SES), Director, Developmental Test, Evaluation, and Assessments, Office of the Undersecretary of Defense (R&E)
"Initiatives to Improve T&E in a Digital Environment"

11:45 a.m. Featured Speaker: George Rumford, (SES) Director (acting) and Principal Deputy, Test Resource Management (TRMC)

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

1:45 p.m. Special Presentation: David Elkins, Redstone Test Center, Technical Director/Deputy Commander; Will Harrell, RTC RAPID Lead; Kenton Brazelle, PeopleTec
"Supporting MDO with Distributed Test"

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

2:45 p.m. Technical Track Sessions

Chair	Time	Title	Presenter(s)
Session 1: JETS: EW T&E Capabilities Enabling MDO Distro C *			
Geoff Wilson, T&E/S&T PM, Test Resource Management Center (TRMC)	2:45	*Geoff Wilson, T&E/S&T PM, TRMC*	Joint Electronic Warfare T&E Strategy
	3:15	*Scott Weed & Rick Shelley, TRMC*	Open-Air Battle Shaping
	3:45	*Billy Williams & Gene Hudgins, KBR*	Knowledge Management/Big Data Analysis
	4:15	*Kenny Sanchez, TRMC; Tony Triolo, Perspecta Labs; Kathy Smith & Bill Wolfe, GBL Systems; Kent Pickett, MITRE*	Advanced Multi-Variate Time Series Analytic Techniques using AI and ML
Session 2: Mission Based Cyber Risk Assessment and Data Acquisition for MDO T&E			
Kenny Hill, Business Development & Program Manager, Trideum	2:45	*Jason Martin, Senior Solutions Architect, Trideum*	Data Acquisition System (DAS)
	3:15	*Jason Martin, Senior Solutions Architect, Trideum*	Leopard
	3:45	*Aaron Gould, Senior Solutions Architect, Trideum*	Cybersecurity Vulnerability and Assessment Test Environment (CVATE)
	4:15	*Ken LeSueur, Trideum*	MDO Sensor to Shooter T&E
Session 3: Cyberspace Test Technology			
Min Kim, Deputy Executing Agent, TRMC T&E/S&T Cyberspace Test Technology (CTT)	2:45	*Measure and Share*	Dr. Michael Shields, TRMC T&E/S&T CTT Chief Scientist, & Pete Firey, MITRE
	3:15	*Vader Modular Fuzzer: What, Why and How*	Arch Owen, Program Manager, Draper
	3:45	*Automated Machine Learning for Cybersecurity*	Dr. Himanshu Upadhyay, Florida International University, Principal Scientist
	4:15	*Automated Attack Framework for Test & Evaluation (AAFT)*	Andrew Shaffer & Bruce Einfalt, The Applied Research Laboratory, The Pennsylvania State University Research and Development Engineer

Session 4: T&E Methodologies and Approaches to Advance MDO			
Gina Sigler, Scientific Test and Analysis Techniques (STAT) Center of Excellence (COE)	2:45	*A Novel Concept for T&E of Autonomous Systems in Multi-Domain Operations*	Charlie Middleton & Dr. Lenny Truett, Scientific Test and Analysis Techniques Center of Excellence
	3:15	*Applying STAT Concepts of Model Validation with Multiple Sources*	Nick Jones & Kyle Provost, Scientific Test and Analysis Techniques Center of Excellence
	3:45	*Applying Design of Experiments (DOE) to Testing and Evaluating Performance Across the Cyber Domain*	Dr. John Hong, Institute for Defense Analyses, Assistant Director
	4:15	*Digital Engineering Enabling T&E Planning Through the Integrated Decision Support Key (IDSK)*	Jean Petty & Suzanne Beers, PhD, MITRE

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

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 Speakers*:* Air Force Advanced Battle Management Systems (ABMS) Program Office, Lt Col Todd Myers, Materiel Leader, ABMS, Department of the Air Force, Rapid Capabilities Office and Lt Col Christopher Jerome, Director of Operations, 46th Test Squadron, ABMS Test Team Lead

9:00 a.m. Featured Speaker: Michael W. Roberts (SES), Deputy Director, Project Overmatch, US Navy

9:45 a.m. Featured Speaker: Col. Joseph E. Escandon, Commander, U.S. Army Joint Modernization Command

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

11:00 a.m. Panel: ***"MRTFB Support of MDO – A Case Study"*** moderated by Colonel Shawanta Smart, Commander, White Sands Test Center

Panelists:

- Jerry Tyree, Deputy Commander and Technical Director, White Sands Test Center, Army Test and Evaluation Command, White Sands Missile Range
- Dan Osburn, Technical Director, 412 Test Wing, Edwards AFB
- Andy Corzine, NAWCWD Chief Technology Officer *(invited)*

12:00 p.m. Lunch in the Exhibit Hall

1:00 p.m. Technical Track Sessions

Chair	Time	Title	Presenter(s)
Session 5: Multi-Domain Initiative			
Hans Miller, Project Leader, OSD Programs, The MITRE Corporation	1:00	*The All-Domain Test Range and the Family of Options*	Michael Hesse, Principal, Systems Engineering, MITRE
	1:30	*M&S as a Service: A Multi-fidelity On-Demand Hybrid Cloud-Enabled M&S Infrastructure to Exercise Family of Options*	Dr. Saurabh Mittal, Principal Scientist and Project Leader AFLCMC/XA, MITRE
	2:00	*DARPA Stitches and its Application to T&E*	Dr. Jimmy "Rev" Jones
	2:30	*Live Range Multi Domain T&E - Orange and Emerald Flag*	Major Brandon "Siphon" Burfeind, 412th TW Director of Orange Flag and F-22 Test Pilot
Session 6: Leading to T&E Excellence			
Richard Martinez, GreyBeards Group	1:00	*Leading to T&E Excellence*	Jason Farley, UTEP
	1:30	*RTC Approach to Persistent Integrated Developmental (RAPID) Testing*	TBD, Peopletec
	2:00	*TSA System-of-Systems Study to Support Integrated Test and Evaluation*	Erick Rekstad, Transportation Security Administration (TSA)
	2:30	*TBD*	TBD

Multi-Domain Operations Workshop

Optimizing the Test & Evaluation Process for Multi-Domain Operations

Session 7: Supporting and Enabling all the Domains for Operational Effect			
Cedric Baca, C4ISR Division Chief, Army Futures Command (AFC), DEVCOM Analysis Center	1:00	*Electromagnetic Warfare (EW) Threat Environments for Lab Based Risk Reduction (LBRR), Experimentation, and Testing*	Cedric Baca, C4ISR Division Chief, Army Futures Command (AFC), DEVCOM Analysis Center
	1:30	*Cyber Experimentation, Analysis & Assessment in Support of Army Modernization Enterprise*	Humberto Mendoza, Army Futures Command (AFC), DEVCOM Analysis Center (DAC)
	2:00	*DevOps to DevSecOps: Making Security Part of Your Development Operations*	Steve Seiden, President, Acquired Data Solutions
	2:30	*Supporting and Enabling all the Domains for Operational Effect*	Colonel (USA, Ret) Joel Babbitt, Vice President for Army Programs, Viasat Government Systems

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

3:30 p.m. Interactive Discussion on Hypersonics **(CUI Distro C)** : Geoff Wilson, T&E/S&T PM, Test Resource Management Center

4:15 p.m. Featured Speaker: Hans Miller, Project Leader, OSD Programs, The MITRE Corporation
"Supporting T&E for Multi-Domain Integration"

5:00 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"

5:30 p.m. Workshop Concludes

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.

Multi-Domain Operations Workshop

Optimizing the Test & Evaluation Process for Multi-Domain Operations

Registration Information

Regular Registration includes two lunches, breaks, & Networking Reception.

**Join as a member and receive $150 discount on your registration. Only $45 for govt/military and $95 for industry.

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

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

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 10th
$195 – Registration June 11th -30th
$295 – Late Registration after June 30th
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
- $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.