

# IEEE AUTOTESTCON 2022

August 29-September 1, 2022 • National Harbor, Maryland

Gaylord National Convention Center



## AUTOTESTCON 2022 CONFERENCE PROGRAM

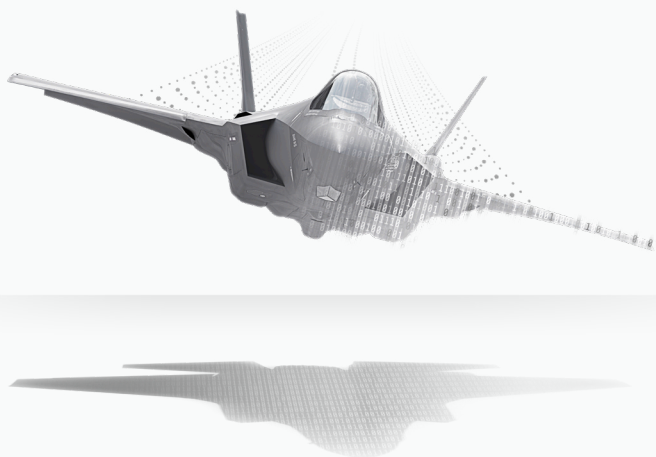
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[2022.autotestcon.com](https://2022.autotestcon.com)

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## TABLE OF CONTENTS

IEEE AUTOTESTCON 2022 COMMITTEE.....	2
IEEE AUTOTESTCON BOARD OF DIRECTORS.....	3
IEEE AUTOTESTCON 2022 SPONSORS .....	3
GENERAL CHAIR'S MESSAGE .....	4
AWARDS.....	5
TERADYNE WINE AND CHEESE WELCOME RECEPTION .....	7
TUESDAY NETWORKING RECEPTION.....	7
FROM THE TECHNICAL CHAIR .....	8
TUESDAY KEYNOTE SPEAKER .....	9
WEDNESDAY KEYNOTE SPEAKER .....	10
TECHNICAL PROGRAM TRACKS .....	11
NETWORKING EVENTS.....	11
DRESS CODE.....	11
ATTENDEE BADGE .....	11
ANCILLARY MEETINGS .....	12
WIRELESS INTERNET .....	12
FREE NIGHT ON WEDNESDAY.....	12
HOTEL LAYOUT .....	13
TUTORIAL PROGRAM.....	18
TECHNICAL SESSIONS SCHEDULE .....	22
TUESDAY TECHNICAL SESSIONS.....	24
WEDNESDAY TECHNICAL SESSIONS.....	30
THURSDAY TECHNICAL SESSIONS .....	36
EXHIBITORS.....	38

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## GENERAL CHAIR'S MESSAGE



It is hard to believe that this is the 65th edition of IEEE AUTOTESTCON, but here we are for the 4<sup>th</sup> time at the beautiful Gaylord resort and convention center near Washington DC. And we are also pleased to be back after an unfortunate 2-year hiatus caused by the virus pandemic, but health and safety is paramount and postponing the conference was the only viable option. Our exhibit hall is hosting top companies and military exhibitors involved in military

ATE/ATS, and our attendance is also about the same as our 2019 pre-pandemic numbers which clearly demonstrates that this is a very important topic in the military environment.

Our outstanding technical program chair, Mike Seavey who just retired from Northrop Grumman corporation, has prepared an excellent technical program for us, comprising five tracks over three days. Dr. John Sheppard of Montana State University has prepared another excellent round of tutorials, and quite a few of you have already signed up for these offerings.

Be certain to visit the exhibit booths in the exhibit hall, where our excellent exhibits chair, Jeff Rubin, has created a pleasing and practical layout. All of these exhibitors are displaying their capability in the automatic test equipment environment, which provides the most critical support structure for our military systems and our warfighters. Our military capability has grown so complex over the last few decades that only competent and effective automatic test equipment is able to detect the faults and isolate to the failure of these systems, and the exhibitors in our exhibit hall are at the top of the list for that capability. The presence of the U. S. Army's new NGATS (Next Generation Automatic Test System) in the exhibit hall will surely be a major attraction.

These exhibitors and our overall technical program that addresses the latest capability and accomplishments in ATE cover the gamut of military support for our revered warfighters so please take advantage of every opportunity to listen to the technical presentations and visit our exhibitors. And in your free Wednesday evening, don't forget that the new MGM grand casino and restaurants is literally a short distance away, along with the extensive Tanger retail outlets. A shuttle from the Gaylord makes getting there quite easy.

If you need assistance with anything at any time, please see any of the committee members who will be wearing a red logo polo shirt with a logo name tag.

Bob Rassa,  
Raytheon Technologies (retired)  
IEEE AUTOTESTCON 2022 General Chair

# AWARDS

## **Awards Luncheon**

Wednesday, 31 August  
12:00 PM - 1:30 PM  
Woodrow Wilson A

### **Walter E. Peterson Best Technical Paper Award**

The IEEE AUTOTESTCON Walter E. Peterson Award is presented each year to the best paper on technical topics at AUTOTESTCON. It is awarded in honor of Mr. Peterson and perpetuates his technical leadership, interest and inspiration in the introduction and utilization of new and advanced technology in the design and manufacture of automated test systems. The award includes a plaque and a cash prize of \$1,000.

### **David M. Goodman Best Management Paper Award**

The IEEE AUTOTESTCON David M. Goodman Best Paper Award for Management Topics recognizes the many contributions made by the late Dr. David Goodman for his encouragement of management concepts and theory in the ATE environment. The award includes a plaque and a cash prize of \$1,000. Dr. Goodman is also the creator of the Government-Industry Data Exchange Program (GIDEP) in 1959 that exists today and serves as a cooperative activity between government and industry participants seeking to reduce or eliminate expenditures of resources by sharing technical information.

### **Oscar W. Sepp Best Student Paper Award**

The Best Student Paper Award has been designated the Oscar W. Sepp Award in memory of long-time AUTOTESTCON contributor Oscar W. Sepp. Oscar chaired AUTOTESTCON in 1982 and as Conference chairman was responsible for formalizing the Exhibits Program. In addition to his contributions to AUTOTESTCON Oscar held numerous patents ranging from the flip-top toothpaste cap to aircraft escape systems and parachutes for many applications including nuclear weapons. In 1981 he was appointed USAF SPO Director for Support Equipment. He also later served in executive positions in industry including running his own consulting company for many years. His many industry and military awards included the McGinnis Memorial Award conferred by the AUTOTESTCON Board in 1984 and the American Institute of Aeronautics and Astronautics Support Systems Award presented at AUTOTESTCON 1985. The Oscar W. Sepp Best Student Paper award is sponsored by IEEE Instrumentation and Measurement Society, who also provide travel grants to selected AUTOTESTCON student contributors. Best Student Paper Award winners are expected to be present at the Awards Ceremony, otherwise they may forfeit the award.

## **Recognition for Technical Innovation**

The AUTOTESTCON Recognition for Technical Innovation is awarded for a technical paper presented at the conference and published in the conference record that demonstrates outstanding innovation in a field-of-interest related to automatic test technology or system readiness. For the purpose of this recognition, "innovation" is broadly defined to include significant advances in hardware, software, processes, services, or other technologies or methodologies. It recognizes novel ideas that are practical and have been implemented with successful results.

### **Frank McGinnis Professional Achievement Award**

*To be presented at IEEE AUTOTESTCON 2023*

The IEEE AUTOTESTCON Frank McGinnis Professional Achievement Award recognizes outstanding leadership, individual initiative and technical contributions in the field of automatic test engineering, either for a specific accomplishment or for a body of activities during a career. The award honors the memory of Frank McGinnis, who headed an Industry/Joint Services Automatic Test Task Force instrumental in initiating new thrusts in military R&D in ATE, an effort that evolved into the National Defense Industrial Association (NDIA) Automatic Test Subcommittee. Normally presented at the IEEE AUTOTESTCON Awards Luncheon, the award carries a plaque and a US\$2,000 honorarium. The Frank McGinnis Award has been presented annually since 1985. In the years 1979 through 1984, four individuals were honored as "Man of the Year" and the AUTOTESTCON Board of Directors recognizes this predecessor award by including the recipients with McGinnis honorees.

### **John Slattery Professional Achievement Award**

*To be presented at IEEE AUTOTESTCON 2023*

The John Slattery Professional Achievement Award is sponsored by the Automatic Test Committee of the Systems Engineering Division of the National Defense Industrial Association (NDIA) and honors the memory of John Slattery for his professional contributions to the advancement of automated testing. It is presented to an individual who has made major contributions to improving the state of automatic testing in support of the national security posture of the United States, including: Outstanding Technical Achievements; Demonstrated Technical Innovation; Contributions to ATE technology; Participation in ATE Industry Peer Groups, Enthusiasm/eagerness to provide mentoring; Uncompromised ethics and professionalism; Industry contributions that reflect technical zeal, competence, and integrity; and an unswerving desire to achieve technical excellence, regardless of political or management considerations



## TERADYNE WINE AND CHEESE WELCOME RECEPTION

**Monday, 29 August**

6:00 PM - 8:00 PM

Potomac Terrace

Rain Location: Town Park Area in The Atrium

The 2022 IEEE AUTOTESTCON Committee heartily thanks **Teradyne Corporation** for sponsoring the Conference-wide Wine and Cheese Welcome Reception on Monday evening, 29 August, from 6:00 PM to 8:00 PM. The bar will close at 7:45 PM, but Teradyne welcomes guests through 8:00 PM.

Open to all Attendees, Authors, and Exhibitors, the Welcome Reception is a great opportunity to rekindle old relationships, network with new relationships, and generally set a great start for IEEE AUTOTESTCON -- the premier military automated test systems Conference.

# TERADYNE

## TUESDAY NETWORKING RECEPTION

**Tuesday, 30 August**

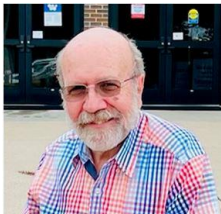
6:00 PM - 8:00 PM

Prince Georges Hall E, lower level

AUTOTESTCON 2022 is bringing together over 50 exhibitors, over 58 authors and over 225 conference attendees to exchange information and build new relationships. On Tuesday evening, the Conference Committee will host a Networking Reception as an opportunity to build on the contacts and opportunities and knowledge acquired during the first two days of the conference. Heavy hors d'oeuvres will be served with complimentary beer and house wines; mixed drinks available for purchase. The Conference Committee looks forward to seeing everyone there. Additional tickets will be available for purchase at the Registration Desk. Contributory sponsorship provided by Lockheed Martin.



## FROM THE TECHNICAL CHAIR



Welcome to the AUTOTESTCON 2022 technical program in Washington, DC. We have a great technical program prepared for you this year, our first AUTOTESTCON since 2019 due to the pandemic. We have assembled high quality papers, presentations, and panels. We hope you are inspired by

something you hear or see at the show and that you take the time to meet with colleagues in the industry and share your ideas and ask questions.

The technical program is a great opportunity to explore new ideas, experience the views of the authors and panelists from government, industry, and academia. We encourage you to experience these sessions and interact with the participants. The authors come from countries across the globe, hailing from Canada, China, Columbia, Egypt, Germany, India, Turkey, U.K., and the U.S.

The technical program kicks off on Monday with a full day of tutorials. Please take advantage of these opportunities to increase your ATS and Cyber knowledge by learning from the experience of recognized experts. My thanks to John Sheppard for putting the tutorial program together again this year.

Tuesday through Thursday consists of a full slate of paper presentations and panels. In addition to the DoD ATS Executive Plenary Panel, this year we have two additional panels; one panel will address Cyber Security, and one will address Test and Diagnostics in the Digital Thread. My personal thanks to Jessica Trombley-Owens and Ion Neag for organizing and moderating these two panels. There are 58 paper presentations (there were 66 in 2019 when we last held the conference) scheduled in 22 sessions. I encourage everyone to stop by and participate.

My personal thanks and gratitude go to Kerstin Bonicard from Conference Catalysts for her assistance in developing this technical program.

I would also like to personally thank the Cyber Security Association of Maryland (CAMI) and Plex LLC for their participation and support of the Conference.

I would be remiss if I omitted thanking John Sheppard, Teresa Lopes, Dave Kaushansky, and Jeff Murrill for their reviews of the submitted abstracts and papers. I also want to thank all the Autotestcon 2022 Committee Members, without their guidance and participation this technical program would not be possible.

Finally, the authors and session chairs, you are truly the front line of the Conference. Thanks to you all.

I look forward to seeing you again in Washington DC for AUTOTESTCON 2023.

**Mike Seavey**

Technical Program Chair, Autotestcon 2022

### Major General Stephen "Steve" Sargeant, The Marvin Group

**Tuesday, August 30**

8:15 AM - 9:30 AM

Woodrow Wilson BCD



Major General Steve Sargeant, USAF (Ret.) is the CEO of Marvin Test Solutions having joined the company in June of 2012 after retiring from the USAF with the rank of Major General. Steve also serves as the Vice President of Strategic Development for The Marvin Group. With over 20 years of senior executive experience in all aspects of aerospace operations and testing in organizations ranging in size from 200 to 160,000 personnel, Steve is leading Marvin Test Solutions' growth and expansion as a world leader in the global mil-aero and commercial test and measurement industries.

General Sargeant's focus is to position MTS, a vertically integrated aerospace test and measurement company, as the preferred provider delivering domain expertise and a customer-centric approach with long-term, unrivaled support. He is growing the company's customer base, ranging from the U.S. Armed Forces and their Allies to global aerospace and manufacturing firms, ensuring the company's customized test solutions meet customers' mission-critical requirements.

Previously, he served as commandant of the US Air Force Weapons School, Nellis AFB, Nevada, and commanded the 8th Fighter Wing at Kunsan Air Base, South Korea, and the 56th Fighter Wing at Luke AFB, Arizona. He served in numerous joint and coalition assignments including deputy chief of staff of Strategy for Combined Joint Task Force 7 and deputy chief of staff, Strategy, Plans, and Assessment for Multi-National Force – Iraq in Baghdad.

A command pilot with over 3,100 flying hours primarily in the A-10A and F-16A/B/C/D, Sargeant has received dozens of awards and decorations including the Air Force Distinguished Service and Bronze Star Medals, 2006 People to People-Korea Outstanding Service Award, and 2009 General Thomas D. White Air Force Space Trophy. He is an experienced public speaker as well as a command pilot with more than 3,100 flying hours. He is a member of BENS, CFR, NDIA, AME, AFA, AUSA, AAAA, ITEA, and the Harvard Alumni Assoc. Steve is passionate about assisting Veterans in their transition back to the private sector and previously served the interim Chairman of the Board for the USO West Region and Chairman of the Board for the Greater Los Angeles (Bob Hope) USO from 2016 until 2020. Today, he serves as a board member for the Military and Veterans Appreciation Trust Foundation.

Official Air Force bio available at:

<http://www.af.mil/AboutUs/Biographies/Display/tabid/225/Article/104655/major-general-stephen-t-sargeant.aspx>

## WEDNESDAY KEYNOTE SPEAKER

### Stanley L. Nolen, PLEX Solutions

**Wednesday, August 31**

8:15 AM - 9:30 AM

Woodrow Wilson BCD



Lieutenant Colonel Stan Nolen, USAF (Ret.) is the Executive Vice President and Co-Founder of PLEX Solutions. He began his career in the USAF as an enlisted Intelligence Analyst and was subsequently commissioned as a Cyber Warfare Officer. He served in various roles protecting and serving our country, including cyber, intelligence, ISR, electronic warfare, and Information

Operations mission areas. Lt Col Nolen deployed to the Persian Gulf region after 9/11 to provide critical cyber and vulnerability network security support to USCENTCOM. He then did a tour at the White House Communications Agency (WHCA) supporting a premier military unit dedicated to providing worldwide, vital information services and communications to the President, Vice President, and the National Security Staff. Additionally, he led the joint NSA/DISA Blue-Team cyber vulnerability assessments in Baghdad, Iraq. His last assignment was with the 175th USAF Network Warfare Squadron, at Fort Meade MD, where he served as the Director of Operations for an elite offensive cyber warfare unit. His civilian career experiences include cyber security engineering support to numerous UAV weapons, ISR and Special Operations platforms.

Lt Col Nolen was technical leader and cyber operational planner in a highly specialized group providing direct support to the Joint Functional Component Command for Network Warfare (JFCC NW) and was part of the Command when USCYBERCOM was created.

Lt Col Nolen has served as the Chairman of the Air National Guard's national-level Cyber/IO Weapons and Tactics (WEPTAC) council. He has been a military advisor and Subject Matter Expert providing network defense training and cyber familiarization to NATO partners.

Stan holds an M.S. in Information and Telecommunications from Johns Hopkins University and a B.A. in Business Management from National-Louis University. Stan was previously a member of the AFCEA International Cyber Committee.

## TECHNICAL PROGRAM TRACKS

IEEE AUTOTESTCON 2022 features technical paper presentation tracks that explore topics in the following areas:

- AI, MOSA, IoT
- ATE Design
- ATE & TPS Solutions
- Cyber Implementation
- Digital Twin
- Factory ATE
- Hardware in the Loop
- Instrumentation
- Instrument Systems
- Instruments and the Cloud
- I & D-Level ATE
- Machine Learning
- Modeling
- O-Level ATE
- Prognostics
- Repeatability
- Sustainment
- Test Solutions 1
- Test Solutions 2
- The View of Cyber & Training

## NETWORKING EVENTS

**Teradyne Wine & Cheese Welcome Reception** - Monday, 29 August 6:00 PM - 8:00 PM; Bar closes at 7:45 PM, Potomac Terrace (Rain location: Atrium, Town Park area) (all attendees and exhibitors)

**Monday Lunch** - Monday, 9 August 12:00 PM - 1:00 PM, Woodrow Wilson B (NOTE: this is for paid tutorial attendees only)

**Tuesday Lunch** - Tuesday, 30 August 12:00 PM - 1:30 PM, Prince George's Ballroom E (all attendees and exhibitors; guest tickets available for purchase)

**Tuesday Evening Networking Reception** - Tuesday, 30 August, 6:00 PM - 8:00 PM, Prince George's AB (all attendees and exhibitors, additional guest tickets available for purchase)

**Wednesday Awards Luncheon** - Wednesday, 31 August 12:00 PM - 1:30 PM, Woodrow Wilson A (paid attendees only; additional guest tickets available for purchase)

## DRESS CODE

Dress code for attendance at all daytime IEEE AUTOTESTCON 2022 functions, including Tutorials, Technical Program, and Lunches, is Business (coat/tie), Business Casual, or Military Uniform of the Day. Shorts, jeans, "flip-flops," T-shirts and similar apparel are not permitted.

Dress code for the Tuesday Evening Networking event is Business Casual or Military Uniform of the Day. Flip-flops are not permitted.

## ATTENDEE BADGE

Attendee Badges must be worn at all times. Access to IEEE AUTOTESTCON 2022 functions and the exhibit hall will not be permitted without a valid badge.

## **ANCILLARY MEETINGS**

Ancillary meetings are a part of IEEE AUTOTESTCON 2022. A complete listing is provided as a separate handout in your attendee bag for information only. Such meetings are open to those specifically invited. Please check with the meeting host on status, such as date, time and location, which are subject to change.

## **WIRELESS INTERNET**

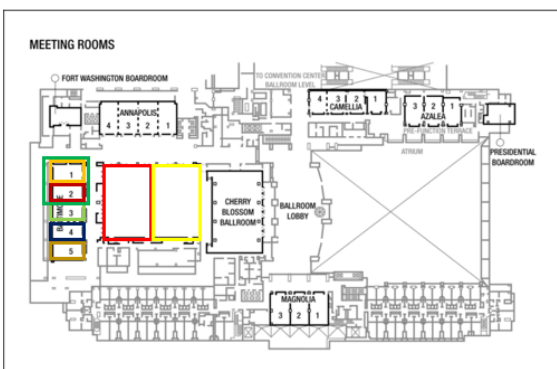
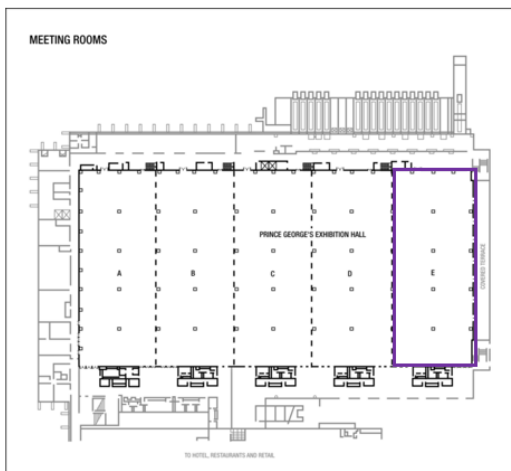
Attendees and exhibitors who are staying at the Gaylord get free internet both in their hotel room and throughout the meeting and exhibit space. For attendees and exhibitors who are not staying at the Gaylord, internet access may be purchased at the registration desk.

## **FREE NIGHT ON WEDNESDAY**

Wednesday night, August 31, is a free night starting at 5:00 PM for attendees and exhibitors to take advantage of the MGM Grand Hotel and Casino just 1/2 mile away, along with the Tanger Outlet Mall.

Shuttles run from the Gaylord Hotel to the Casino and Outlet Mall on a regular basis. Check hotel concierge for specifics. There are several nice restaurants in the MGM Grand, as well as in the National Harbor area near the hotel.

# HOTEL LAYOUT



- Keynotes & Panels – Woodrow Wilson BCD
- Tutorials – Baltimore 1 & 2
- Exhibit Hall & Networking Reception – Prince George's Exhibit Hall E
- Teradyne Wine & Cheese Welcome Reception – Potomac Terrace
- Wednesday Awards Luncheon – Woodrow Wilson A
- Track 1 – Baltimore 1
- Track 2 – Baltimore 2
- Track 3 – Baltimore 3
- Track 4 – Baltimore 4
- Track 5 – Baltimore 5

## NOTES

[illegible]





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# TERADYNE



## NOTES

[illegible]

## TUTORIAL PROGRAM

*8:00 AM - 12:00 PM (Monday, 29 August)*

**Room:** Baltimore 1

**Title:** Introduction to Automatic Test Systems

**Instructors:** Dr. David Carey, TEVET  
Michael Seavey, Northrop Grumman (Retired)

**Description:** In this tutorial, the design process for Automated Test Systems is presented using standard systems engineering principles. No prior knowledge of ATE, ATS, or TPS development is assumed. A general familiarity with electronic testing techniques is a prerequisite for a full understanding of the material presented. This class will present a series of reference designs as a starting point for ATS and TPS development. Proposed design stages are explained in view of the typical division between hardware and software for the ATS. The process, in which design recommendations are made, can make easier the development of future systems. Thus, central in this tutorial is helping the design team to consider important aspects in decisions taken along the development process and keeping these decisions linked to the requirements defined in initial development stages.

## TUTORIAL PROGRAM

*8:00 AM - 12:00 PM (Monday, 29 August)*

**Room:** Baltimore 2

**Title:** ATS and TPS Management

**Instructors:** Dan Christenson, US Air Force

Tony Conard, US Navy

Richard Foyt, US Marine Corps

Scott Kautzmann, US Army

**Description:** This four-part Tutorial is designed to cover the controversial and challenging issues of managing ATE and TPS development. This session is a must for all industry and government ATE/TPS managers. As with the morning ATE session, it focuses on real world situations and explores areas of frequent problems. Organizational and process/method differences between services will be highlighted. Four major topics are covered, including: 1) TPS Acquisition, 2) TPS Management Development Requirements and Challenges, 3) Managing in a Dynamic Environment, and 4) Depot TPS and ATE Management.

## TUTORIAL PROGRAM

*1:00 PM - 5:00 PM (Monday, 29 August)*

**Room:** Baltimore 1

**Title:** Diagnostics and Design for Built-In Test

**Instructors:** Dr. John W. Sheppard, Montana State University  
Dr. David Carey, TEVET

**Description:** With advancing technology and increasingly complex electronic systems, almost every test approach has had to settle for lower fault coverage, more difficulty in diagnoses, and all at greater costs. Today's Production and Maintenance Test Engineers need to get involved with embedded test, diagnostics, and Design for Testability (DFT) enabled designs. However, the details of these test methodologies often remain a mystery. This tutorial provides a comprehensive overview of the Built-In-Test & Diagnostics challenges and solutions. The Design for Built-In Test section of the tutorial introduces terminology and concepts. Various implementation issues are addressed as the tutorial moves through test strategies, circuit implementation, and test methodologies. The diagnostics section of this Tutorial provides an overview of traditional and recent approaches to system-level diagnosis and prognosis. The emphasis is placed on different system modeling approaches and the algorithms that can be applied using resulting models.

## TUTORIAL PROGRAM

*1:00 PM - 5:00 PM (Monday, 29 August)*

**Room:** Baltimore 2

**Title:** Cybersecurity for ATS

**Instructors:** James Orlet, The Boeing Company  
Steve Schink, LXI Consortium

**Description:** This tutorial session will consist of four complementary sections covering the definitions and relationships between various cybersecurity guidelines as they concern test and test equipment. The first section will discuss cybersecurity terminology and definitions. The second will focus on the relationships between the various steps of the National Institute of Standards and Technology (NIST) Risk Management Framework (RMF) used by many programs to guide cybersecurity approaches and includes a discussion on the NIST Special Publication 800-series General Information items that affect Automatic Test Systems (ATS). The final section provides an initial set of best practices for Cybersecurity on ATS.

	Baltimore 1	Baltimore 2	Baltimore 3	Baltimore 4	Baltimore 5
<b>Tuesday, 30 August</b>					
8:15 AM – 9:30 AM	1A1: ATS Business Area Keynote Speaker				
10:15 AM – Noon	1B1: DoD Automatic Test Systems Executive Panel				
Noon – 1:30 PM	Lunch				
1:30 PM – 3:00 PM	Networking with Vendor on Exhibit Floor				
3:00 PM – 4:30 PM	1C1: Prognostics	1C2: I&D-Level ATE	1C3: Test Solutions 1	1C4: See Note Below	
4:30 PM – 5:30 PM	1D1: Digital Twin	1D2: O-Level ATE	1D3: Hardware in the Loop	1D4: AI, MOSA, IoT	1D5: Repeatability
<b>Wednesday, 31 August</b>					
8:15 AM – 9:00 AM	2A1: Cyber Business Area Keynote Speaker				
10:15 AM – Noon	2B1: Cyber Security Panel				
Noon – 1:30 PM	Lunch				
1:30 PM – 3:00 PM	2C1: Cyber View & Training	2C2: ATE Design	2C3: Test Solutions 2	2C4: Sustainment	2C5: Instrument Systems
3:00 PM – 5:00 PM	2D1: Cyber Implementation	2D2: Factory ATE	2D3: Instrumentation	2D4: Modeling	2D5: Machine Learning
<b>Thursday, 1 September</b>					
9:00 AM – 10:30 AM	Networking with Vendor on Exhibit Floor & Coffee Break				
10:30 AM – Noon	3A1: Instruments & the Cloud	3A2: ATE & TPS Solutions			
Note: Test Diagnostics in the Digital Thread Panel will take place in Woodrow Wilson BCD					



## NOTES

[illegible]

## **TUESDAY TECHNICAL SESSIONS**

**Tuesday, 30 August**

**Keynote**

8:15 AM - 9:30 AM

Woodrow Wilson BCD

**Speaker:** Major General Steven Sergeant USAF (Ret)  
Chief Executive Officer of Marvin Test Solutions

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### **1B1: DoD Automatic Test Systems Executive Panel**

10:15 AM - 12:00 noon

Woodrow Wilson BCD

This year's DoD Automatic Test Systems Executive Plenary Session will be a Panel of senior military Service representatives from the major DoD ATS acquisition programs as well as a test industry representative. The Panel members will summarize Service's on-going and future ATS acquisition and sustainment initiatives, program strategies, and current and future ATS challenges. A National Defense Industrial Association's Automatic Test Committee representative will summarize what the Committee sees as emerging or future test technology requirements that the DoD ATS managers may need to consider. The Panel will include the following members:

#### **Panel Moderator:**

Mr. Bill Ross – Moderator, Eagle Systems

#### **Panelists:**

Mr. Pat Curry – U.S. Army

Mr. Jim Deffler – U.S. Naval Aviation

Mr. Terry Richie – U.S. Ground Marine Corps

Mr. Kevin Simpson – U.S. Air Force

Mr. Scott Kearny – F-35 JPO

Ms. Pat Griffin – NDIA ATC

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### **Lunch and Exhibits**

12:00 PM - 3:00 PM

Prince George's Ballroom E Exhibit Hall

Immediately following the DoD ATE Executive Plenary we have a walk-around buffet lunch in the Prince George's Ballroom E Exhibit Hall, where attendees may explore the numerous ATE exhibits that IEEE AUTOTESTCON is proud to present. The complete list of Exhibitors is found in the rear of this Program along with a map of their location.

Lunch is served between 12:00 PM and 1:30 PM, with the remaining time allotted for attendees to continue their participation with exhibitors.

Technical sessions commence at 3:00 PM, as follows:

**1C1: Prognostics  
Tuesday, August 30**

3:00 PM - 4:30 PM

Baltimore 1

*Session Chair: John Sheppard (Montana State University, USA)*

**Establishing a Paradigm for Prognostication**

*Larry V. Kirkland (WesTest Engineering, USA)*

*Dave Jenson (WesTest Engineering, USA)*

*Calvin Carlson (WesTest Engineering, USA)*

**Benchmarking Continuous Time Bayesian Networks for Prognostic Modeling**

*Jordan Schpbacch (Montana State University, USA)*

*Elliott Pryor (Montana State University, USA)*

*Kyle Webster (Montana State University, USA)*

*John Sheppard (Montana State University, USA)*

**Automated Test Equipment Data Analytics in a PBL Environment**

*Matthew J. Smith (Lockheed Martin Corporation, USA)*

*Joe Headrick (Lockheed Martin Corporation, USA)*

**Combining Dynamic Bayesian Networks and Continuous Time Bayesian Networks for Diagnostic and Prognostic Modeling**

*Jordan Schpbacch (Montana State University, USA)*

*Elliott Pryor (Montana State University, USA)*

*Kyle Webster (Montana State University, USA)*

*John Sheppard (Montana State University, USA)*

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**1C2: I & D-Level ATE  
Tuesday, 30 August**

3:00 PM - 4:30 PM

Baltimore 2

*Session Chair: Elliott Lytle (US Navy, USA)*

**A Holistic Approach to Hardware Abstraction Layers**

*Josselyn Webb (USMC, USA)*

**GPATS PXIe Insert Kit for TETS and VIPER/T**

*Rob Spinner (ATTI, USA)*

*Josselyn Webb (USMC, USA)*

*Wallace Daniel (USMC, USA)*

**Development of Support Equipment for SATCOM Avionics**

*Christopher J. Guerra (Southwest Research Institute, USA)*

*Miles Darnell (Southwest Research Institute, USA)*

*Larry McDaniel (Southwest Research Institute, USA)*

*Martin Wasiewicz (Southwest Research Institute, USA)*

*Patrick Saenz (Southwest Research Institute, USA)*

*Josh Anderson (Kitware, USA)*

**Integrating JTAG into DoD CASS for Avionics Testing**

*David A. Leake (NAVAIR & FRC East, USA)*

### **1C3: Test Solutions 1**

**Tuesday, 30 August**

3:00 PM - 4:30 PM

Baltimore 3

*Session Chair: Tom Gauntner (US Army, USA)*

#### **Speed control of hydraulic motor using commercial on/off solenoid valve**

*Abdelfatah Nader Aborobaa (MTC, Egypt)*

#### **Compressive Antenna Pattern Measurement: A Case Study in Practical Compressive Sensing**

*Michael Don (US Army Research Laboratory, USA)*

#### **A Modular Approach to the Automated Testing of Common Data Link Terminals**

*Sunil Ramlall (Naval Information Warfare Center Pacific, USA)*

*Lucerito Gutierrez (Naval Information Warfare Center Pacific, USA)*

*Miguel Cayetano (Naval Information Warfare Center Pacific, USA)*

*Sally McGehee (Naval Information Warfare Center Pacific, USA)*

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### **1C4: Test and Diagnostics in the Digital Thread Panel**

**Tuesday, 30 August**

3:00 PM - 4:30 PM

Woodrow Wilson BCD

**Purpose:** Digital Thread is a data-driven architecture that links together information generated from across the product lifecycle. Industry standards play a central role in developing open systems architectures that integrate software applications supporting all the lifecycle phases.

The focus of this panel is on current and future use of test and diagnostics standards in supporting the product lifecycle, in modern Model-Based Systems Engineering (MBSE) environments. Panelists from government and industry will bring extensive experience in developing relevant standards, products, applications, processes, and policies.

The panelists will give short presentations of existing applications and studies, as well as future concepts and plans for integrating test and diagnostics in Digital Thread solutions. These presentations will showcase the diversity of Digital Thread / MBSE use cases, addressing the following issues:

- Use of existing industry standards and open formats. Are new standards needed?
- Measured / expected benefits and cost of MBSE and standardization.
- Organizational boundaries, processes, and policies that impact adoption of Digital Thread / MBSE solutions in test and diagnostics.

The presentations will be followed by discussions and questions from the audience.

## **Panel Moderator:**

Ion Neag – Reston Software

## **Panelists:**

Larry Adams – USAF  
Raymond Beshears – Raytheon Technologies  
Benjamin Bossa – Spherea France  
Tony Erwin – Teradyne  
Eric Gould – DSI International  
Joe Headrick – Lockheed Martin  
Jean-Christophe Hertzog – MBDA Systems  
Anand Jain – NI  
Mike Malesich – NAVAIR

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### **1D1: Digital Twin Tuesday, 30 August 4:45 PM- 5:30 PM**

Baltimore 1

*Session Chair: Teresa Lopes (Teradyne, USA)*

#### **Implementing a Digital Twin, Design and Test, Test and Measurement Strategy**

*Duane Lowenstein (Keysight Technologies, USA)*

*Chris Mueth (Keysight Technologies, USA)*

#### **Shift Right into the Metaverse with Digital Twin Testing**

*Jonathon Wright (Keysight Technologies, U.K.)*

*Toby Marsden (Keysight Technologies, U.K.)*

*Kelly Cauke (Keysight Technologies, U.K.)*

---

### **1D2: O-Level ATE Tuesday, 30 August 4:45 PM- 5:30 PM**

Baltimore 2

*Session Chair: Dave Carey (Wilkes University, USA)*

#### **Organizational Level Armament Test Reimagined**

*Steve Sargeant (Marvin Test Solutions, USA)*

*Adam Wells (Marvin Test Solutions, USA)*

*Jon Semancik (Marvin Test Solutions, USA)*

#### **The Dichotomy of Commonality versus Form Factor for O-level ATE**

*Dave Kaushansky (Teradyne, USA)*

*Mike Drolette (Teradyne, USA)*

*Michelle Renda (Teradyne, USA)*

*Eric Murphy (Teradyne, USA)*

---

### **1D3: Hardware in the Loop**

**Tuesday, 30 August**

4:45 PM- 5:30 PM

Baltimore 3

*Session Chair: Dan Tagliente (US Army, USA)*

#### **Reducing Schedules and Costs with a Modular Approach to Hardware-in-the-Loop (HIL) Test**

*Victor B. Chifu (NI, USA)*

#### **An Indigenous Flight Control System Test**

*Sadiye Adkeniz Adgere (Turkish Aerospace, Inc. Turkey)*

*Huseyin Sagirkaya (Turkish Aerospace, Inc. Turkey)*

*Melih Karasubasi (Turkish Aerospace, Inc. Turkey)*

---

### **1D4: AI, MOSA, IoT**

**Tuesday, 30 August**

4:45 PM- 5:30 PM

Baltimore 4

*Session Chair: Anand Jain (NI, USA)*

#### **Solution Approaches from Industry for Flight Line-of-the-Future and Next Generation Test Systems**

*Jason 'Boots' Winn (CACI, USA)*

*Madaline Dziuk (CACI, USA)*

*Lewis Edinburgh (CACI, USA)*

*Shawn Reynolds (Knowledge Based Systems, Inc., USA)*

*Jim Rousseau (ID Technologies, USA)*

#### **Future State of Test and Evaluation of Artificial Intelligence**

*Carol L. Pomales (FFRDC - The MITRE Corporation, USA)*

*Flo Reeder (FFRDC - The MITRE Corporation, USA)*

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### **1D5: Repeatability**

**Tuesday, 30 August**

4:45 PM- 5:30 PM

Baltimore 5

*Session Chair: Tommy Greene (US Navy, USA)*

#### **Viability, Perceivability, Useability, Interaction Ability for an AI based Solution to Could-Not-Duplicate, No-Fault-Found and Intermittents**

*Larry V. Kirkland (WesTest Engineering, USA)*

*Dave Jenson (WesTest Engineering, USA)*

*Calvin Carlson (WesTest Engineering, USA)*

#### **Innovative TPS Development Solutions to Reduce the Time, Cost, and Physical Footprint of Supporting Avionics**

*Laura M. Fox (NAVAIR - FRC East, USA)*

*Usman Anwar (NAVAIR - FRC East, USA)*

*Jesse A. Gora (NAVAIR - FRC East, USA)*

*Timothy Weaver (NAVAIR - FRC East, USA)*

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## NOTES

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## WEDNESDAY TECHNICAL SESSIONS

### **2A1: Cyber Business Area Keynote Speaker**

**Wednesday, 31 August**

8:15 AM - 9:30 AM

Woodrow Wilson BCD

**Speaker:** Stanley L. Nolen, PLEX Solutions

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### **2B1: Cyber Security Panel**

**Wednesday, 31 August**

10:15 AM - 12:00 PM

Woodrow Wilson BCD

**Purpose:** The panel will provide the listening audience with a high-level discussion of Cyber Security, Supply Chain Awareness, and Information Assurance. Topics covered include:

- Cyber Security 101; as it is today
- Cyber Attack Surface; an overview of ATS security control
- The Human Element; users of ATS and their impacts
- Supply Chain; sophisticated threat landscape
- ATS Security Accreditation; what is the future?

AUTOTESTCON Cyber Panel discussions will include how Cyber Security best practices and policies relate to each of the four views, the effects each of the four views have on each other, and realistic Cyber Security implementation challenges ATS face today.

Please note that due to the sensitivity of the Cyber Security subject, these discussions will not delve into any specific details, either during the presentations or the responses to questions.

#### **Panel Moderator:**

Jessica Trombley-Owens – PLEX Solutions, LLC

#### **Panelists:**

- Jim Orlet – The Boeing Company
- David Sapp – U.S. Army Combat Capabilities Development Command - Armaments Center
- Dr. Diane Janosek – Chief of Staff, NSA Technology Directorate
- Steve Schink – Keysight Technologies & LXI Consortium President
- Connor Bruso – Lockheed Martin Corporation



## **2C1: Cyber View & Training**

**Wednesday, 31 August**

1:30 PM - 3:00 PM

Baltimore 1

*Session Chair: Tasha Cornish (Cybersecurity Association of Maryland, USA)*

### **Strategy for strengthening the academic curriculum of the Colombian Air Force, focused from the perspective of cybersecurity and cyber defense**

*Giovanna Estefania Ramirez Ruiz (Columbian Air Force, Columbia)*

### **Interoperability of Cybersecurity Implementations**

*Benjamin Barnhill (Plex LLC, USA)*

---

## **2C2: ATE Design**

**Wednesday, 31 August**

1:30 PM - 3:00 PM

Baltimore 2

*Session Chair: Robert Hoover (Teradyne, USA)*

### **Test Equipment and Product Test Efficiency at the Start of Product Integration**

*Eric Jauregui (Raytheon, USA)*

*Juan Ramos (Raytheon, USA)*

### **The Goldilocks Principle: Finding the Right Fit for Next Generation Test Systems**

*Matt Anderson (NI, USA)*

### **Lockheed Martin ATE's Support Automatic Test-Markup Language (ATML) 1671.1 and 1641**

*Yan C. Rodriguez Ramirez (Lockheed Martin Corporation, USA)*

*Joe Headrick (Lockheed Martin Corporation, USA)*

### **Modernize, then Standardize Legacy Power Conversion ATE Architectures**

*Jerry Hopp (Chroma Systems Solutions, USA)*

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## **2C3: Test Solutions 2**

**Wednesday, 31 August**

1:30 PM - 3:00 PM

Baltimore 3

*Session Chair: Elliott Lytle (US Navy, USA)*

### **Offset Elimination Technique for Small Inductance Measurements Using Two-Wire Connection**

*Michael Obrecht (Siborg Systems Inc. & University of Waterloo, Canada)*

### **Requirement Based Test Automation at Host for Mission Computer Software of Combat Aircraft**

*Maruthi Pagidi (Defence Research, India)*

*Ramadevi T (Aeronautical Defence Agency, India)*

*Satish Shetty Kasargod (Ministry of Defence, India)*

*Padmavathi Padmavathi (Aeronautical Defence Agency, India)*

### **Control Architecture for Autonomous RF Cavity Filter and Multiplexer Tuning**

*Yarkin Yigit (Aselsan Inc., Turkey)*

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**2C4: Sustainment**  
**Wednesday, 31 August**  
1:30 PM - 3:00 PM  
Baltimore 4  
*Session Chair: Anand Jain (NI, USA)*

**Sustainment Challenges and Approaches for Legacy ATE Systems**

*Jon Semancik (Marvin Test Solutions, USA)*

**Moving Toward the Obsolescence of Obsolescence: A Walk in the Clouds**

*Ryan A. Griffin (NI, USA)*

*Nancy Henson (NI, USA)*

**Please Don't Touch My TPS's**

*Mark Kupferberg (Kepko, USA)*

**ATE Life Extension Using Emulated Peripherals**

*David T. Dunn (Arraid LLC, USA)*

---

**2C5: Instrument Systems**  
**Wednesday, 31 August**  
1:30 PM - 3:00 PM  
Baltimore 5  
*Session Chair: Josselyn Webb (USMC, USA)*

**An Instrumentation System for a GPU Based Flight Controller**

*Michael Don (US Army Research Laboratory, USA)*

*Cory Miller (US Army Research Laboratory, USA)*

*Nathan Schomer (US Army Research Laboratory, USA)*

*Mitchell Grabner (US Army Research Laboratory, USA)*

*Johnathan Hallameyer (US Army Research Laboratory, USA)*

**Effective use of Reconfigurable Synthetic Instruments in Automatic Testing**

*Louis Y. Unger (A.T.E. Solutions Inc., USA)*

*Neil Jacobson (A.T.E. Solutions Inc., USA)*

*TM Mak (A.T.E. Solutions Inc., USA)*

**Approaches to Minimize Murphy's Law Impact On "No single point of failure power supply systems"**

*Marian Bulancea (Kepko, USA)*

**Automated Testing for Military Electro-Optical Systems**

*Eric Hahn (Lockheed Martin, USA)*

---

## **2D1: Cyber Implementation**

**Wednesday, 31 August**

3:30 PM - 5:00 PM

Baltimore 1

*Session Chair: Tasha Cornish (Cybersecurity Association of Maryland, USA)*

### **Towards Continuous Cyber Testing with Reinforcement Learning for Whole Campaign Emulation**

*Tyler Cody (Virginia Tech University, USA)*

*Peter Beling (Virginia Tech University, USA)*

*Laura Freeman (Virginia Tech University, USA)*

### **Securing ATE Using the DoD's Risk Management Framework**

*Robert Quinlan (Teradyne, USA)*

*Alex Brinister (Teradyne, USA)*

*Amy White (Teradyne, USA)*

*Ted McDonald (Teradyne, USA)*

### **Cyber Security of the Networked ATS**

*Joe Headrick (Lockheed Martin Corporation, USA)*

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## **2D2: Factory ATE**

**Wednesday, 31 August**

3:30 PM - 5:00 PM

Baltimore 2

*Session Chair: Tarra Marchetti (Teradyne, USA)*

### **Developing, Verifying and Validating Factory Test Equipment Used for Space Based Products**

*Eric Jauregui (Raytheon, USA)*

*James Valfre (Raytheon, USA)*

### **From Design Development to Production, One STE to Test Them All**

*Vi Weaver (Raytheon, USA)*

*Juan Ramos (Raytheon, USA)*

### **Test System for Dynamic Positioning Systems in Marine Platforms**

*Koray Ozdal Ozkan (Aselsan, Turkey)*

### **Digital Transformation for Modular Test Systems**

*Kaleb Romero (Lockheed Martin Corporation, USA)*

*Jared Boyden (Lockheed Martin Corporation, USA)*

*Joe Headrick (Lockheed Martin Corporation, USA)*

*Martin J. Whelan IV (Lockheed Martin Corporation, USA)*

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**2D3: Instrumentation**  
**Wednesday, 31 August**

3:30 PM - 5:00 PM

Baltimore 3

*Session Chair: Tommy Greene (US Navy, USA)*

**Next Generation Streaming Data Test System for High Bandwidth Applications**

*Tony Erwin (Teradyne, USA)*

**RF Switch Considerations for Automatic Test Equipment making Vector Measurements**

*Steven Yates (Raytheon, USA)*

**Test System Constraints with Emerging Avionics Power Requirements**

*Christopher J. Sparr (NAVAIR, USA)*

*Robert Fox (NAVAIR, USA)*

*Ross Myers (NAVAIR, USA)*

*Richard Lawrence (NAVAIR, USA)*

---

**2D4: Modeling**  
**Wednesday, 31 August**

3:30 PM - 5:00 PM

Baltimore 4

*Session Chair: Dave Carey (Wilkes University, USA)*

**An Agile Model-Based Test Strategy for Assured PNT Implementation**

*Joseph Kroclicik (Winifred Associates, USA)*

**Next Generation Hardware and Behavioral Modeler to Build Effective Simulations**

*Larry V. Kirkland (WesTest Engineering, USA)*

*Dave Jenson (WesTest Engineering, USA)*

*Calvin Carlson (WesTest Engineering, USA)*

**Model Based testing of aircraft interfaces**

*Huseyin Sagirkaya (Turkish Aerospace, Turkey)*

*Yunas Koktas (Turkish Aerospace, Turkey)*

*Melih Karasubasi (Turkish Aerospace, Turkey)*

**Recognition of Modern Modulated Waveforms with Applications to ABMS and VDATS Test Program Set Development**

*Sylwester Sobolewski (USAF, USA)*

*William L. Adams Jr. (USAF, USA)*

*Ravi Sankar (University of South Florida, USA)*

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**2D5: Machine Learning**  
**Wednesday, 31 August**

3:30 PM - 5:00 PM

Baltimore 5

*Session Chair: Josselyn Webb (USMC, USA)*

**Test and Evaluation Harnesses for Learning Systems**

*Tyler Cody (Virginia Tech University, USA)*

*Peter Beling (Virginia Tech University, USA)*

*Laura Freeman (Virginia Tech University, USA)*

NOTES

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## THURSDAY TECHNICAL SESSIONS

### **Networking with Vendors on the Exhibit Floor & Coffee Break**

**Thursday, 1 September**

9:00 AM - 10:30 AM

Prince George's E Exhibit Hall

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### **3A1: Instruments & the Cloud**

**Thursday, 1 September**

10:30 AM - 12:00 PM

Baltimore 1

*Session Chair: Tommy Greene (US Navy, USA)*

### **Design of An All-Pass Phase Compensation Filter Based on Modified Genetic algorithm in FI-DAC**

*Wenhui Zhao (University of Electronic Science and Technology, P.R. China)*

*Shulin Tian (University of Electronic Science and Technology, P.R. China)*

*Hongliang Chen (University of Electronic Science and Technology, P.R. China)*

*Yindong Xiao (University of Electronic Science and Technology, P.R. China)*

*Qiong Wu (University of Electronic Science and Technology, P.R. China)*

*Ke Liu (University of Electronic Science and Technology, P.R. China)*

### **Logarithmic Distribution Reference Points Based Multi-Objective Genetic Algorithm for Analog Circuit Faulty Parameter Identification**

*Yu Tian (University of Electronic Science and Technology, P.R. China)*

*Chenglin Yang (University of Electronic Science and Technology, P.R. China)*

*Hang Xian (University of Electronic Science and Technology, P.R. China)*

### **Key Technologies and Applications of Instrument Cloud**

*Liu Hui (Ceyear Technologies Co. Ltd., P.R. China)*

*Li Wenbo (China Electronics Technology Instruments Co. Ltd., P.R. China)*

*Chen KaiRen (Ceyear Technologies Co. Ltd., P.R. China)*

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### **3A2: ATE & TPS Solutions**

**Thursday, 1 September**

10:30 AM - 12:00 PM

Baltimore 2

*Session Chair: James Lytle (US Navy, USA)*

#### **Design and implementation of a ultra-high timing resolution pulse generator based on real-time computation**

*Hanglin Liu (University of Electronic Science and Technology, P.R. China)*

*Hongliang Chen (University of Electronic Science and Technology, P.R. China)*

*Zaiming Fu (University of Electronic Science and Technology, P.R. China)*

*Shirui Qi (University of Electronic Science and Technology, P.R. China)*

*Yindong Xiao (University of Electronic Science and Technology, P.R. China)*

*Houjun Wang (University of Electronic Science and Technology, P.R. China)*

#### **Software Security Testing Model Based on Data Mining**

*Xinyu Zhang (Hohai University, P.R. China)*

## EXHIBITORS

The Exhibit Hall is located in The Prince George's E

### Gold Promotional Partners

LOCKHEED MARTIN .....	105
TERADYNE.....	117

### Silver Promotional Partners

ASTRONICS .....	215
CUSTOM SYSTEMS INTEGRATION (CSI).....	255

Company .....	Booth #
ATE SOLUTIONS.....	106
ADVANCED TEST EQUIPMENT RENTALS .....	340
AMETEK .....	323
ASFC SOFTWARE ENTERPRISE .....	230
ASSET INTERTECH .....	122
ASTRONICS .....	215
ATTI .....	134
CACI .....	243
CHROMA SYSTEMS .....	339
CUSTOM SYSTEMS INTEGRATION (CSI).....	255
DIT-MCO.....	244
DSI .....	313
FLUKE .....	143
HUNTRON .....	104
IEEE AUTOTESTCON 2023.....	101
IN-PHASE TECHNOLOGIES .....	335
JTAG TECHNOLOGIES .....	114
KEPCO .....	112
KEYSIGHT TECHNOLOGIES .....	237
KITCO FIBER OPTICS.....	241
LEONARDO DRS.....	331
LOCKHEED MARTIN .....	105
MAC PANEL.....	108
MARVIN TEST SYSTEMS .....	111
MTE CORPORATION .....	222
NI .....	309
NAVAIR PMA260 TMDE .....	124
NEW WAVE DESIGN.....	348
PICKERING .....	303
PIDESO .....	100
RADX TECHNOLOGIES .....	242
SIBORG SYSTEMS .....	132
SOUTHWEST RESEARCH.....	329
TDK-LAMDA .....	226
TEGAM .....	116
TEMPOCOM .....	228
TERADYNE.....	117
TEST LLC .....	334
TESTFORCE USA .....	228
TESTMART .....	136
TEVET .....	129
TREND NETWORKS .....	235
US ARMY - PICATINNY .....	140
USAF VDATS.....	315
USMC PROGRAM MANAGER.....	151
VERIFIDE.....	120
VERSATILE POWER .....	249
VIAVI SOLUTIONS.....	123
WESTTEST ENGINEERING .....	136
W-IE-NE-R & HARTMANN ELEC.....	327



## EXHIBITORS

### ATE SOLUTIONS

Booth: 106



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### ADVANCED TEST EQUIPMENT RENTALS

Booth: 340



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### AMETEK

Booth: 323



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### ASFC SOFTWARE ENTERPRISE

Booth: 707



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### ASSET INTERTECH

Booth: 122



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### ASTRONICS

Booth: 215



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### ATTI

Booth: 134



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**CACI**  
**Booth: 243**



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**CHROMA SYSTEMS**  
**Booth : 339**



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**CUSTOM SYSTEMS INTEGRATION (CSI)**  
**Booth: 225**



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**DIT-MCO**  
**Booth: 244**



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**DSI**  
**Booth: 313**



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**FLUKE**  
**Booth: 143**



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**HUNTRON**  
**Booth: 104**



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**IEEE AUTOTESTCON 2023**

**Booth: 101**



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**INPHASE TECHNOLOGIES**

**Booth: 335**



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**JTAG TECHNOLOGIES**

**Booth: 114**



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**KEPCO**

**Booth: 112**



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**KEYSIGHT TECHNOLOGIES**

**Booth: 237**



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**KITCO FIBER OPTICS**

**Booth: 241**



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**LEONARDO DRS**

**Booth: 331**



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**LOCKHEED MARTIN**  
**Booth: 105**



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**MAC PANEL**  
**Booth: 108**



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**MARVIN TEST SYSTEMS**  
**Booth: 111**



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**MTE CORPORATION**  
**Booth: 222**



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**NI**  
**Booth: 309**



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**NAVAIR PMA260 TMDE**  
**Booth: 124**



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**NEW WAVE DESIGN**  
**Booth: 348**



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**PICKERING**  
Booth: 303



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**PIDESO**  
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**RADX TECHNOLOGIES**  
Booth: 242



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**SIBORG SYSTEMS**  
Booth: 132



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**SOUTHWEST RESEARCH**  
Booth: 329



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**TDK-LAMDA**  
Booth: 226



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**TEGAM**  
Booth: 116



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**TEMPOCOM**  
Booth: 228



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**TERADYNE**  
Booth: 117

**TERADYNE**

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**TEST LLC**  
Booth: 334



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**TESTFORCE USA**  
Booth: 228

**testforce**

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**TESTMART**  
Booth: 136



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**TEVET**  
Booth: 129



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**TREND NETWORKS**  
Booth: 235



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**US ARMY - PICATINNY**  
**Booth: 140**



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**USAF VDATS**  
**Booth: 315**



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**USMC PROGRAM MANAGER**  
**Booth: 151**



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**VERIFIDE**  
**Booth: 120**



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**VERSATILE POWER**  
**Booth: 249**



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**VIAVI SOLUTIONS**  
**Booth: 123**



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**WESTTEST ENGINEERING**  
**Booth: 136**



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**W-IE-NE-R & HARTMANN ELEC**  
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