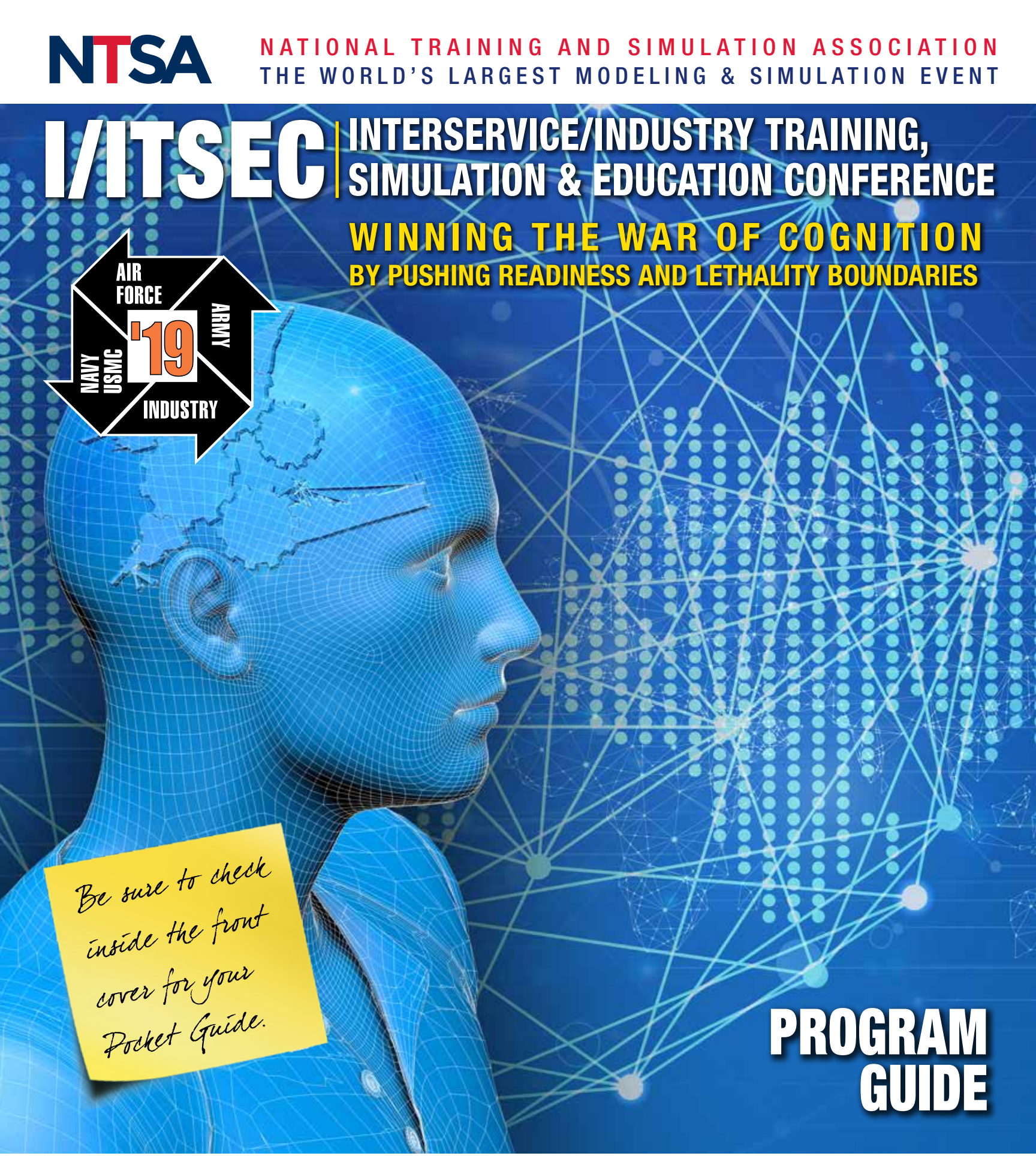
NTSA

NATIONAL TRAINING AND SIMULATION ASSOCIATION
THE WORLD'S LARGEST MODELING & SIMULATION EVENT

I/ITSEC | INTERSERVICE/INDUSTRY TRAINING, SIMULATION & EDUCATION CONFERENCE

WINNING THE WAR OF COGNITION
BY PUSHING READINESS AND LETHALITY BOUNDARIES

AIR FORCE
ARMY
NAVY USMC
'19
INDUSTRY



PROGRAM GUIDE

WWW.IITSEC.ORG ▶ DECEMBER 2 – 6, 2019 ▶ ORLANDO, FLORIDA

NDIA

TABLE OF CONTENTS

WELCOME ATTENDEES OF I/ITSEC 2019

On behalf of the United States Air Force, this year's Lead Service; our sponsoring organization, the National Training and Simulation Association; the Service Executives and their Principals; and the 200+ military, government, industry, and academia volunteers, it is my distinct honor and great pleasure to welcome you to the 2019 Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC)!

This year's theme, Winning the War of Cognition by Pushing Readiness and Lethality Boundaries, emphasizes the need to improve, enable, and quickly acquire technological advancements to better protect our Armed Forces, better prepare our warfighters, and save the lives of our military and first responders in an increasingly complex threat environment. In order to reap the readiness and performance benefits of a technological transformation of unprecedented magnitude, we must embrace new technology, overcome stagnation, deploy assets quickly, and address the ethical implications of our new resources. The I/ITSEC community has answered the call as evidenced by the innovative and diverse venues in this year's program and on the tradeshow exhibit floor, facilitating information and idea sharing to enable attendees to explore, discuss, interact and acquire technologies across industries like cyber, medical, transportation, energy, and more. The new Air Force Pitch Day, a first for I/ITSEC, is a novel approach to award small businesses with contracts to rapidly develop innovative solutions to evolving training needs, through the application of emerging technologies.

I/ITSEC 2019 features content-rich professional development and educational activities including tutorials, paper presentations, and workshops in which attendees will have the opportunity to learn about the latest training and simulation trends, practices, and technologies. The volunteer members of our six Subcommittees, Tutorial Board, and Conference Committee spent this past year assembling a great program consisting of 125 technical papers, 41 special events, and 18 tutorials. I/ITSEC also provides fantastic opportunities to engage with our future leaders via the many STEM activities, the Future Leaders Pavilion, Student Tours, and the Serious Games Showcase and Challenge. Interaction with these young leaders will not only help expose them to future possible careers, but also enhance your personal engagement with our community. The Black Swan event, which explores challenging issues and their consequences, will focus on Artificial Intelligence (AI) in a conversation called "Deep Fake Videos and the Insider Threat." Black Swan attendees will observe AI from perspectives which are guaranteed to test their perception of what is real and what is not. All Monday tutorials, Friday workshops, and paper sessions are available for continuing education and continuous learning credits. Additional information regarding registration for these credits is available at www.iitsec.org.

Make time to explore the I/ITSEC exhibit hall, which hosts the largest display of training systems capabilities in the world. Over 500 exhibitors will present leading-edge technology and innovative concepts. With continued growth in the number of international attendees, over 1,800 attendees from over 50 countries are expected, providing an audience with diverse ideas and perspectives. Be sure to take advantage of the many opportunities to network and exchange ideas.

This conference is a reality because of our many volunteers and sponsors. I want to express my sincere appreciation to the I/ITSEC family, as their commitment and support ensures I/ITSEC remains the world's premier professional development event for the training, simulation, and education professional.

With the theme, Winning the War of Cognition by Pushing Readiness and Lethality Boundaries, I/ITSEC is the premier venue to observe, learn, and discuss the application of innovative technologies in training and learning environments. Whether you are an engineer, educator, trainer, system developer, or business developer, I know you will enjoy experiencing the most advanced, cutting-edge technologies and best practices in the field and leave with the inspiration to transform the world.

Sincerely,

Jennifer Arnold

Jennifer Arnold

General Stephen W. Wilson
Vice Chief of Staff of the United States Air Force

Service Keynote

GENERAL STEPHEN W. "SEVE" WILSON is Vice Chief of Staff of the U.S. Air Force, Arlington, Virginia. As Vice Chief, he presides over the Air Staff and serves as a member of the Joint Chiefs of Staff Requirements Oversight Council and Deputy Advisory Working Group. He assists the Chief of Staff with organizing, training and equipping of 685,000 active-duty, Guard, Reserve and civilian forces serving in the United States and overseas.

Gen. Wilson received his commission from Texas A&M University in 1981. He's had multiple flying tours and led bomber, intelligence, surveillance and reconnaissance, mobility, aeromedical evacuation and airborne command and control operations supporting operations Iraqi Freedom, Enduring Freedom and Combined Joint Task Force-Horn of Africa. General Wilson has also held numerous command positions, including the Joint Functional Component Commander for Global Strike and Air Force Global Strike Command.

General Wilson is a command pilot with more than 4,500 flying hours and 680 combat hours. Prior to his current assignment, the General was Deputy Commander, U.S. Strategic Command, Offutt Air Force Base, Nebraska.

Mark Matthews
President, Quantum3D Government Systems

Industry Keynote

MARK MATTHEWS is the President of Quantum3D Government Systems (GS), responsible for leading the military-focused business area to define and implement new strategies to grow the U.S. Government and International business. Quantum3D Government Systems, together with its sister company Quantum3D Inc., has built a reputation of providing training and simulation technologies, integrated solutions, systems engineering services, specialized R&D, system integration and custom solutions to meet the rigorous demands for both government and commercial customers worldwide. Both business areas bring the "Power of Prepared" thru Quantum3D's MANTIS training simulation software and Image Generator (IG) products, which have been distributed worldwide for over 20 years.

Prior to his current role, Mr. Matthews had program management and business area responsibility for Boeing's P-8 Acoustics Programs from 2009 – 2018, where he led a large multi-functional team to design, manufacture, test and deliver an acoustic processing system to the U.S. Navy for the new P-8 submarine hunting platform. In addition, he managed a large portfolio of both domestic and international programs using acoustic detection capabilities.

From 2004 to 2009, Mark was the Deputy Director for International Programs at BAE Systems, where he was responsible for development, manufacturing, test, training and technical support for various avionics, control sticks, mission computers, flight displays and test equipment as well as all aspects of program management including strategy, customer relationships, cost, schedule, policies and procedures.

Mr. Matthews has also held program management and operations management roles with Space Vector, Rockwell International and Ford Aerospace. In these leadership roles, he was responsible for design, development, manufacturing, test and field tests for major platforms such as ICBM, Rail Garrison, Sidewinder missile systems and the U.S. Army HERA target systems.

Opening Ceremonies

Tuesday • 0830-1000

Call to Order
Presentation of Colors
National Anthem
Invocation
Opening Remarks
Brian Holmes, 2019 Conference Chair
Service and Industry Keynotes

Senior Leader Panel

Tuesday • 1030-1200

Fred Drummond, SES
Vice Admiral DeWolfe Miller, III, USN
Major General James A. Jacobson, USAF
Major General William F. Mullen, USMC
Brigadier General Stephen Michael, USA
Brigadier General Ilamrs Lejins, NATO

Conference Chairs

Brian Holmes
I/ITSEC 2019
Conference Chair

BRIAN J. HOLMES is Quantum3D Government Systems' Vice President of Business Development, where he leverages his extensive experience in a wide range of disciplines to develop innovative solutions for both his military and commercial clients. Brian's experience includes working with entire departments, teams, small groups and individuals, at every level in an organization, from Boards of Directors and upper management to support staff. Brian has held positions as Project Engineer, Systems Engineer, Lead Engineer, Project/Program Manager, Capture Manager, Proposal Manager, Director of Operations and Vice President during his 31+ years in the Modeling, Simulation and Training (MS&T) Industry. Brian's journey in MS&T began at the University of Central Florida where he graduated with a Bachelor of Science degree in Electrical Engineering in 1988 and accepted a position with the Naval Training Systems Center (NTSC, now NAWCTSD). After 5 years at NTSC, Brian accepted a position as a Lead Systems Engineer at the former Simulation and Instrumentation Command (now the Program Executive Office for Simulation, Training and Instrumentation). During his time within the government acquisition commands, he also pursued and completed a Master of Science degree in Industrial Engineering from the University of Central Florida, with an emphasis in simulation and training. Brian has been an active participant on I/ITSEC Subcommittees since 2010, including Chairman of the Simulation Subcommittee in 2014. Brian currently serves as the Treasurer and member of the Board of Directors of Fairways for Warriors.

Jennifer Arnold
I/ITSEC 2019
Program Chair

JENNIFER ARNOLD is a Principal with Booz Allen Hamilton with over 25 years of experience in the Simulation and Training industry and has been recognized for her award-winning contributions to Defense, Intelligence, Federal, and Commercial clients. She is the business development lead for the Firm's Strategic Innovation Group focused on driving Immersive, Data Science and Machine Intelligence (DS&MI), Cyber, and Digital technologies to support strategic planning, pipeline/portfolio development, and strategic level captures. Prior to joining the Firm, she built and managed a Performance Improvement organization with specialized expertise in mission-related systems integration, training, education, and strategic organizational transformation. She holds an M.A. in Industrial Organizational Psychology from St. Mary's University and a B.A. in Psychology from Texas Tech University. She currently serves on the Board of Directors for the Camaraderie Foundation, an organization committed to helping our Veterans and First responders battling post-traumatic stress and other "invisible" wounds of war. Jennifer has served as an active member on I/ITSEC Subcommittees and Conference Committee for 15 years.

Conference Sponsor

RADM James Robb, USN (Ret.)
President National Training and Simulation Association

Following graduation from Rensselaer Polytechnic Institute, designation as a Naval Aviator and training in the F-14 Tomcat, Admiral Robb deployed nine times across the globe accumulating over 5,000 hours and 1,000 carrier landings. Following a tour flying Russian fighters in the Nevada desert, he commanded Fighter Squadron Fifty One, Carrier Air Wing Nine, the Navy Fighter Weapons School (TOPGUN) and Carrier Strike Group Seven. As a Flag Officer he managed all Naval Aviation Programs (N980) and was the Director of Navy Readiness (N43). Following 9/11, he joined USCENTCOM as the Director of Plans (J5), deploying to the Middle East in support of combat operations. Retiring in 2006, he built a successful small consulting business before joining the National Training and Simulation Association as President in June 2012.

General Herbert J. Carlisle, USAF (Ret.)
President and Chief Executive Officer
National Defense Industrial Association

Herbert J. "Hawk" Carlisle became president and chief executive officer of the National Defense Industrial Association (NDIA) June 15, 2017. Gen. Carlisle came to NDIA after a 39-year career in the Air Force, from which he retired as a four-star General in March 2017. His last assignment was as Commander, Air Combat Command at Langley Air Force Base in Virginia. Before that, Gen. Carlisle was the commander of Pacific Air Forces; the air component commander for U.S. Pacific Command; and executive director of Pacific Air Combat Operations staff, Joint Base Pearl Harbor in Hawaii. Gen. Carlisle has served in various operational and staff assignments throughout the Air Force and commanded a fighter squadron, an operations group, two wings and a Numbered Air Force. He was a joint service officer and served as Chief of Air Operations, U.S. Central Command Forward in Riyadh, Saudi Arabia. During that time, he participated in Operation Restore Hope in Somalia.

Air Force Service Executive (Lead Service)

COL. PHILIP E. CARPENTER, USAF, is the Senior Materiel Leader, Simulators Program Office. He leads a 500+ member team, executes a $5.8B portfolio and is responsible for developing and maintaining 60+ training systems for ACC, AMC, AETC, AFSOC, AFGSC and multiple FMS partner nations. He enlisted in the Air Force in 1986 and served as an avionics technician on the SR-71 and a communications systems operator on EC-130 and EC-135 aircraft. He was commissioned in 1995 through Air Force Officer Training School and has held a variety of program management positions in space, intelligence, command and control, cyber and weapons. As a company grade officer, he served as a C-5 and KC-10 aircraft maintenance officer. He deployed in support of Operation Iraqi Freedom and was named the 60th Air Mobility Wing Maintenance Support Officer of the Year. Col. Carpenter served as the Chief of Acquisition Officer Assignments at the Air Force Personnel Center and completed a joint tour with U.S. Forces, Japan. During this assignment, he served as an Operations Officer, Combat Ops and Exercises; Chief, Integrated Air and Missile Defense; and Executive Officer to the Commander. He also participated in Operation Tomodachi following the devastating 9.0 earthquake and tsunami. Col. Carpenter was the Materiel Leader for AIM-120 development and, most recently, he was the Chief, F-16 Foreign Military Sales, where he managed a $23B portfolio to produce and modify over 750 aircraft for 10 nations. Col. Carpenter holds an APDP Level III in Program Management and is a Level II Credentialed Space Professional.

Army Service Executive

BG MICHAEL E. SLOANE, USA, is the Program Executive Officer, Simulation, Training and Instrumentation (PEO STRI) in Orlando, Florida. PEO STRI is responsible for a multi-billion dollar program annually. Previously, he served as the Assistant Program Executive Officer Enterprise Information Systems as well as the Chief of Staff to the Acting Assistant Secretary of the Army (Acquisition, Logistics and Technology). His operational assignments include platoon leader and company executive officer in the 24th Infantry Division (Mechanized), deploying for Operations Desert Shield and Desert Storm, as well as to Honduras for Joint Task Force 105 and to support Hurricane Andrew relief operations. After a break in active duty service, he served in the 10th Mountain Division (Light Infantry) as the Division Support Command S4 and as a company commander, deploying to the Balkans with the NATO-led multinational peacekeeping force. His subsequent assignments included Future Readiness and Assignment Officer, Human Resources Command; the Missile Defense Agency's Terminal High Altitude Area Defense (THAAD) System Project Office as the Assistant Product Manager for Missile Development and later as Assistant Product Manager for THAAD System Test and Evaluation; the Office of the Deputy Chief of Staff, G-1 as the lead Personnel Policy Integrator for the Acquisition, Chaplain and Judge Advocate General Corps; PEO Soldier as the Product Manager for Soldier Clothing and Individual Equipment and as the Project Manager for Soldier Sensors and Lasers.

Navy Service Executive

CAPT TIMOTHY M. HILL, USN, is the Commanding Officer, Naval Air Warfare Center Training Systems Division (NAWCTSD) and Naval Support Activity (NSA), Orlando. NAWCTSD is the Navy's principal center for modeling, simulation and training systems technologies. The command provides training solutions and research for a wide spectrum of military programs, including aviation, surface and undersea warfare and other specialized requirements. Captain Hill leads a workforce of 1,200 scientists, evaluators, engineers, technicians, logisticians, contracting specialists and support personnel. Captain Hill was commissioned with the U.S. Naval Academy Class of 1992 after earning a Bachelor of Science degree in Systems Engineering. As a Naval Flight Officer, Captain Hill has logged over 3,200 flight hours and 750 carrier arrested landings in 32 different aircraft models, with operational flying tours in the S-3B Viking and the F/A-18F Super Hornet. He also served various staff and acquisition program management roles. Captain Hill served as the Executive Officer for NAWCTSD for two and a half years prior to assuming command in November 2018. His awards include the Legion of Merit, Bronze Star Medal, 2 Defense Meritorious Service Medals, Meritorious Service Medal, 2 Strike Flight Air Medals, along with other personal awards and numerous campaign medals and unit citations.

Marine Corps Service Executive

COL "LOU" LARA is the Marine Corps Systems Command Program Manager, Training Systems (PM TRASYS). He is responsible for managing a workforce of over 150 personnel in the acquisition and sustainment of training systems used throughout the Marine Corps. Col Lara graduated from Embry Riddle Aeronautical University in 1993 with a B.S. in Aviation Maintenance Management. He also holds M.S. Degrees in Acquisition and Contract Management from the Naval Post-Graduate School and Military Studies from the Marine Corps University. He earned a commission in 1995 and subsequently became a Logistics Officer and a Contracting Officer. In 1999, he deployed on a Western Pacific deployment as a member of the 11th Marine Expeditionary Unit. Additionally, in support of the Global War on Terror, he deployed three times to Kuwait/Iraq, twice as a Contingency Contracting Officer and once as the Regimental Combat Team – 5 Logistics Officer in support of combat operations in Fallujah. Prior to his selection as Program Manager Training Systems, Col Lara served as the Deputy Program Manager for Training Systems, and completed a fellowship as a Secretary of Defense Executive Fellow at Georgia Power Company. Other key Acquisition Officer assignments include, Acquisition Command as Product Manager for Anti-Armor Systems, Deputy Director for the Amphibious Combat Vehicle (ACV), Assistant-Program Manager Logistics for the Expeditionary Fighting Vehicle (EFV), Team Leader for the Body Armor and Load Bearing team and Director of Contracts at Marine Corps Support Facility, Blount Island Command. His personal decorations include the Bronze Star, the Meritorious Service Medal with three gold stars in lieu of fourth award, the Navy and Marine Corps Commendation Medal and the Navy and Marine Corps Achievement Medal. Additionally, he is a recipient of the Combat Action Ribbon.

Senior Advisor for Readiness and Training

GREGORY KNAPP supports the U.S. Army Threat Systems Management Office (TSMO), the Office of the Under Secretary of Defense for Research and Engineering and the Office of the Under Secretary of Defense for Personnel and Readiness performing program management, technology and acquisition functions. He provides leadership and expertise in DoD 5G implementation, spectrum research and EW programs, coalition training programs, training infrastructure, and a wide variety of DoD training and technology issues including the air combat training system (ACTS). He provided critical support for the fielding of the Defense Readiness Reporting System and the conduct of the SecDef Nuclear Review. He served as the Vice Deputy Director for Future Joint Force Development, J7, Joint Staff, overseeing Operational Analysis, Chairman's Wargaming, Doctrine Development, Joint Concepts and Experimentation. He was also the Executive Director of the Joint Warfighting Center supporting USJFCOM and was instrumental in establishing the Joint National Training Capability and the Combatant Command Engagement and Training Transformation Program. Mr. Knapp has been a leader in training and technology for over 30 years, leading the development of numerous combat systems, combat system training systems and Navy test programs and is widely recognized as a leader in distributed simulation training technology implementation. He has managed over 50 programs affecting all Combatant Commands, Services, Interagency and Coalition partners.

Service Principals

Tony DalSasso
Air Force (Lead Service)
Engineering Technical Advisor
Simulators Program Office, Air Force Materiel Command (AFMC)

Diana Teel
Navy
Outreach Director / Chief Evangelist
Naval Air Warfare Center Training Systems Division (NAWCTSD)

Jesse Campos
Army
PM Cyber, Test, and Training, Chief Engineer
U.S. Army Program Executive Office, Simulation, Training and Instrumentation
(PEO STRI)

Koren L. Odermann
Marine Corps
Team Lead for Collective Training, Marine Corps Systems Command (MARCORSYSCOM) Program Manager, Training Systems (PM TRASYS)

OSD Principal

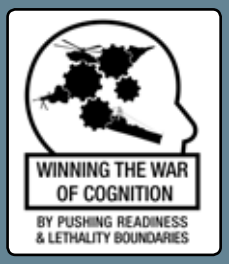
Walter (Shep) Barge, Ph.D.
Director
Joint Integrated Operations and Training, Office of the Deputy Assistant Secretary of Defense for Force Education and Training

Education and Training Advisor

VADM Al Harms, USN (Ret.)
President
Lake Highland Preparatory School

Agenda


AIR FORCE
ARMY
USMC
NAVY
'19
INDUSTRY


WINNING THE WAR OF COGNITION
BY PUSHING READINESS & LETHALITY BOUNDARIES

WEDNESDAY, 27 NOVEMBER 2019

TIME		LOCATION
0800	Exhibitor Registration Open	South Concourse, S220CDE
1700	Exhibitor Registration Close	

THURSDAY, 28 NOVEMBER 2019
CLOSED FOR THANKSGIVING

FRIDAY, 29 NOVEMBER AND SATURDAY, 30 NOVEMBER 2019

TIME		LOCATION
0800	Exhibitor Registration Open	South Concourse, S220CDE
1700	Exhibitor Registration Close	

SUNDAY, 1 DECEMBER 2019

TIME		LOCATION
0800	Exhibitor Registration Open	South Concourse, S220CDE
1200	Conference Registration Open	South Concourse, S220CDE
1200	Satellite Registration Open	Hyatt Regency Main Lobby
1800	All Registrations Close	

Dress Code

BRANCH	CONFERENCE AND GENERAL SESSIONS	BANQUET
Army	ACUs or Duty Uniform	Army Blue *(Army Evening Mess Optional)*
Marine Corps	Service "C"	Evening Dress *(Dress Blue "B" or Service "A" Optional)*
Navy	Service Khaki, Navy Service Uniform	Dinner Dress White *(Service Dress White Optional)*
Air Force	Blues *(Short or Long Sleeve)*	Mess Dress or Semi-Formal
Coast Guard	Tropical Blue Long	Dinner Dress White *(Service Dress White Optional)*
Civilian	Business Attire	Black Tie *(Optional)* or International Traditional Costume

MONDAY, 2 DECEMBER 2019

TIME		LOCATION
0700	**Conference and Exhibit Registration Open**	South Concourse, S220CDE
0730	**Satellite Registration Open**	Hyatt Regency Main Lobby
0830 - 1000	**TUTORIALS** (Synopses begin on page 50)	
	A Comprehensive Introduction to Medical Simulation (1910)	Room S320B
	Live, Virtual and Constructive (LVC) Simulation Interoperability 101 (1931)	Room S320C
	TENA/JMETC: Live-Virtual-Constructive Integration for Test and Training (1928)	Room S320D
	Cybersecurity in LVC (1917)	Room S320E
	Introduction to DoD Modeling and Simulation (M&S) (1923)	Room S320F
	An Introduction to Cognitive Systems for Modeling & Simulation (1914)	Room S320GH
1030 - 1200	**SIGNATURE EVENT 1:** Congressional Modeling and Simulation Event (page 15)	Room S330BCD
1245 - 1415	**TUTORIALS** (Synopses begin on page 53)	
	M&S Case Study Analysis: Design for Additive Manufacturing & 3D Printing (1920)	Room S320B
	Distributed LVC Event Integration and Execution Process (1911)	Room S320C
	Distributed Interactive Simulation (DIS) 101 (1937)	Room S320D
	Risk Management Framework: Cyber Security Compliance for Modeling, Simulation and Training Systems (1939)	Room S320E
	Addressing the Challenges of Rigorous Simulation Validation (1941)	Room S320F
	Artificial Intelligence: Past, Present, Capabilities and Limitations (1919)	Room S320GH
1400	**Exhibits Open**	Exhibit Hall
1430 - 1600	**TUTORIALS** (Synopses begin on page 56)	
	Location, Location, Location: Big Data, Artificial Intelligence and Analytics in the Cloud (1936)	Room S320B
	A Functional Approach to Distributed Network Architectures for LVC (1922)	Room S320C
	Introduction to HLA (1916)	Room S320D
	Simulation Conceptual Modeling Theory and Use Cases (1943)	Room S320E
	Design of Experiments: Applications for the Simulation Profession (1918)	Room S320F
	Superforecasting: Proven Practices for Leveraging Human Ingenuity (1921)	Room S320GH
1600 - 1730	**SIGNATURE EVENT 2:** I/ITSEC Fellow 2019 (page 16)	Room S310C
1800	**Exhibits Close**	
1800	**All Registration Stations Close**	

TUESDAY, 3 DECEMBER 2019

TIME		LOCATION
0700	Conference and Exhibit Registration Open	South Concourse, S220CDE
0700	Satellite Registration Open	Hyatt Regency Main Lobby
0830 - 1000	**OPENING CEREMONIES**	Hyatt Regency Windermere Ballroom
	Call to Order Presentation of Colors National Anthem Invocation OPENING REMARKS Brian Holmes, 2019 Conference Chair KEYNOTE ADDRESSES  **General Stephen W. Wilson** Vice Chief of Staff of the United States Air Force  **Mark Matthews** President Quantum3D Government Systems	
1030 - 1200	**SIGNATURE EVENT 3:** Senior Leader Panel (page 17)	Hyatt Regency Windermere Ballroom
1200	Exhibits Open	Exhibit Hall
1200 - 1330	Lunch (Opening of Exhibits and Lunch will occur at 1200 or upon adjournment of the General/ Flag Officer Panel)	South Hall B
1400 - 1530	**PAPER SESSIONS** (Title/Author list begins on page 63. Session schedules for this timeframe are on page 59.)	Room S320ABCDEF
1400 - 1530	**SIGNATURE EVENT 4:** Air Force A3 Operational Training 0-6 Panel (page 18)	Room S330BCD
1400 - 1530	**FOCUS EVENT 2:** Best from Around the Globe (page 28)	Room S320D
1400 - 1530	**FOCUS EVENT 3:** Acquisition Agility (page 29)	Room S320GH
1400 - 1530	**FOCUS EVENT 4:** Ignite! (page 30)	Room S330EF
1400 - 1530	**COMMUNITY OF INTEREST 1:** Conceptual Modeling of Adaptive Instructional Systems (IEEE Project 2247.1) (page 40)	Room S329
1400	**LAUNCH PAD:** Using Artificial Intelligence Technology and Personalized Services for Optimized Dynamic Language Teaching and Learning	Exhibit Hall – Booth 793
1430	**LAUNCH PAD:** An App-based Approach for Reliably and Efficiently Bringing Users to Fluency in a New Language	Exhibit Hall – Booth 793
1600 - 1730	**PAPER SESSIONS** (Title/Author list begins on page 63. Session schedules for this timeframe are on page 59.)	Room S320ABCDEF
1600 - 1730	**SIGNATURE EVENT 5:** 5G – From Hype to Reality (page 19)	Room S310C
1600 - 1730	**FOCUS EVENT 5:** Big Data in Training (page 31)	Room S320GH
1600 - 1730	**COMMUNITY OF INTEREST 2:** The European Perspective on Battlelabs and the Role of Simulation (page 40)	Room S329
1600 - 1730	**PROGRAM BRIEF 1:** Air Force Acquisition Update (page 44)	Room S330EF
1600	**LAUNCH PAD:** One World SDK for Unity	Exhibit Hall – Booth 793
1600	Satellite Registration Stations at Hyatt Close	
1630	**LAUNCH PAD:** Physically Based Night Vision Goggle Sensor Simulation in Game Engine	Exhibit Hall – Booth 793
1700 - 1830	Exhibitor Networking Event	Exhibit Hall
1800	Convention Center Registration Closes	
1800	Senior Leaders Networking Hour and M&S Awards Dinner *(invitation only)*	Hyatt Regency
1830	Exhibits Close	

WEDNESDAY, 4 DECEMBER 2019

TIME		LOCATION
0630	5K Walk, Run or Roll Charity Race	OCCC
0700	Conference and Exhibit Registration Open	South Concourse, S220CDE
0830 - 1000	**PAPER SESSIONS** (Title/Author list begins on page 63. Session schedules for this timeframe are on page 60.)	Room S320ABCDEF
0830 - 1000	**SIGNATURE EVENT 6:** The Impact of Data and Simulations for 21st Century Warfare (page 20)	Room S310AB
0830 - 1200	**SIGNATURE EVENT 7:** AI Game Theory: Game Changing or Game Over? (USSOCOM) (page 21)	Room S330EF
0830 - 1000	**FOCUS EVENT 6:** Imagine 2030: AI-Empowered Learning (page 32)	Room S320GH
0830 - 1000	**COMMUNITY OF INTEREST 3:** Adaptive Instructional System Interoperability Standards (IEEE Project 2247.2) (page 41)	Room S329
0830 - 1000	**PROGRAM BRIEF 2:** U.S. Army PEO STRI TSIS Update (page 44)	Room S330BCD
0930	Exhibits Open	Exhibit Hall
1030 - 1200	**PAPER SESSIONS** (Title/Author list begins on page 63. Session schedules for this timeframe are on page 60.)	Room S320ABCDEF
1030 - 1200	**SIGNATURE EVENT 8:** Navy Flag Officer Panel – The Navy the Nation Needs Now (page 22)	Room S330BCD
1030 - 1200	**FOCUS EVENT 7:** Perspectives on Competency-Based Learning (page 33)	Room S310C
1030 - 1200	**COMMUNITY OF INTEREST 4:** Learning Engineering: A New Academic Discipline and Engineering Profession (page 41)	Room S329
1200 - 1330	Lunch	South Hall B
1230 - 1400	UCF/FIEA Games in Simulation Panel	Room S329
1400 - 1530	**PAPER SESSIONS** (Title/Author list begins on page 63. Session schedules for this timeframe are on page 61.)	Room S320ABCDEF
1400 - 1530	**SIGNATURE EVENT 9:** Alignment of Army M&S Across the M&S Enterprise and the Army Future Force Modernization Enterprise (page 23)	Room S310AB
1400 - 1530	**SIGNATURE EVENT 10:** Multi-domain Battlespace Training (page 24)	Room S330BCD
1400 - 1530	**FOCUS EVENT 8:** Patient Safety in Healthcare: The Role of Modeling and Simulation (page 34)	Room S310C
1400 - 1530	**FOCUS EVENT 9:** Multinational Perspectives on Live, Virtual and Constructive Implementation in Ops (page 35)	Room S330EF
1400	**LAUNCH PAD:** Omni-Directional Treadmill	Exhibit Hall – Booth 793
1430	**LAUNCH PAD:** The Robot Operating System (ROS) and the Gazebo Simulation Environment	Exhibit Hall – Booth 793
1600 - 1730	**PAPER SESSIONS** (Title/Author list begins on page 63. Session schedules for this timeframe are on page 61.)	Room S320ABCDEF
1600 - 1730	**FOCUS EVENT 10:** Black Swan: To Tell the Truth, I've Got a Secret (page 36)	Room S310AB
1600 - 1730	**COMMUNITY OF INTEREST 5:** Best Practices for the Evaluation of Adaptive Instructional Systems (IEEE Project 2247.3) (page 42)	Room S329
1600 - 1650	**PROGRAM BRIEF 2:** U.S. Army PEO STRI TSIS Update (page 44)	Room S330BCD
1600 - 1730	Future Leaders Presentations (FLP)	Room S320F
1600	**LAUNCH PAD:** Computer Vision on the Edge	Exhibit Hall – Booth 793
1630	**LAUNCH PAD:** Disruptive Training Across the Spectrum of Use Cases Using Virtual Immersive Experiences	Exhibit Hall – Booth 793
1800	All Registration Stations Close	
1800	Exhibits Close	

THURSDAY, 5 DECEMBER 2019

TIME		LOCATION
0800	**Conference and Exhibit Registration Open**	South Concourse, S220CDE
0830 - 1000	**PAPER SESSIONS** (Title/Author list begins on page 63. Session schedules for this timeframe are on page 62.)	Room S320ABCDEF
0830 - 1000	**SIGNATURE EVENT 11:** Improving Joint and Multinational Simulation Interoperability (page 25)	Room S310AB
0830 - 1200	**SIGNATURE EVENT 12:** Air Force Simulators Pitch Day (page 26)	Room S320GH
0830 - 1000	**FOCUS EVENT 11:** Modernizing Learning (page 37)	Room S329
0830 - 1000	**COMMUNITY OF INTEREST 6:** Simulation Standards and SISO (page 43)	Room S310C
0830 - 1000	**PROGRAM BRIEF 3:** Navy Vision from the Training System's Program Offices (page 44)	Room S330EF
0930	**Exhibits Open**	Exhibit Hall
1000 - 1130	**FOCUS EVENT 1:** Iron Dev (page 27)	Exhibit Hall – Booth 793
1030 - 1200	**PAPER SESSIONS** (Title/Author list begins on page 63. Session schedules for this timeframe are on page 62.)	Room S320ABCDEF
1030 - 1200	**FOCUS EVENT 12:** Immersive Environments — Suspending Disbelief (page 38)	Room S330EF
1030 - 1200	**COMMUNITY OF INTEREST 7:** Geospatial Forum (page 43)	Room S310C
1200 - 1330	**Lunch**	South Hall B
1300	**Serious Games Showcase and Challenge Awards Ceremony**	Innovation Showcase Booth 2588
1330 - 1500	**PAPER SESSIONS** (Title/Author list begins on page 63. Session schedules for this timeframe are on page 62.)	Room S320ABCDEF
1330 - 1500	**FOCUS EVENT 13:** New and Emerging Augmentation Technologies for Training and Operations within the NATO Alliance Nations (page 39)	Room S310C
1415	**Future Leaders Awards Ceremony**	Innovation Showcase Booth 2588
1500	**Exhibit Hall and Registration Close**	Exhibit Hall
1800	**Hosted Reception sponsored by Lockheed Martin**	Hyatt Regency Windermere Ballroom
1900	**Conference Awards Banquet** *Reception & Awards* Best Paper Award presentation I/ITSEC 2019 Scholarship Presentations • RADM Fred Lewis Postgraduate Scholarships • Leonard P Gollobin Postgraduate Scholarships • Barbara McDaniel Undergraduate Scholarships Passing of the Flag for I/ITSEC 2020 Post Dinner Entertainment and Networking	Hyatt Regency Windermere Ballroom

FRIDAY, 6 DECEMBER 2019

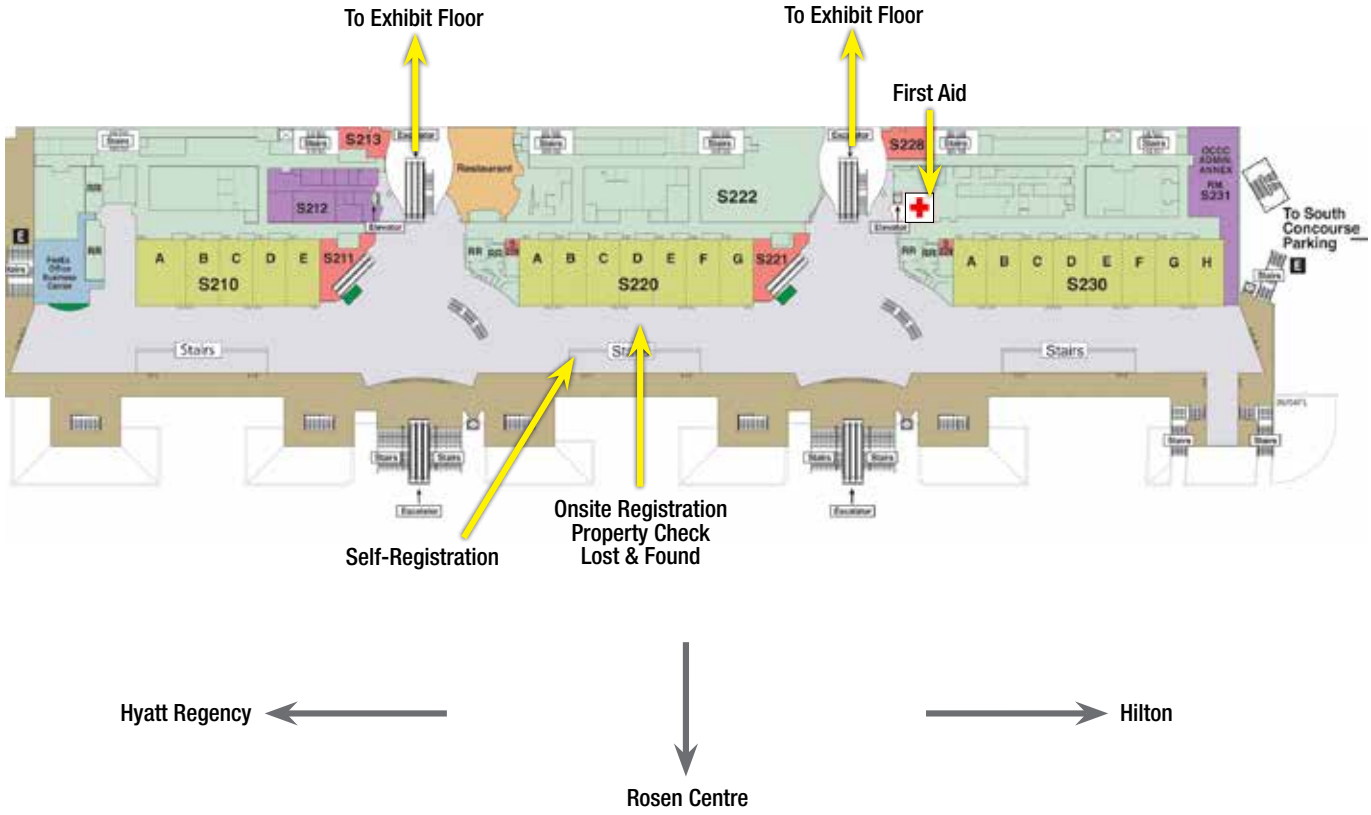
TIME	PROFESSIONAL DEVELOPMENT WORKSHOPS (Synopses on pages 71 - 73)	LOCATION
0800 - 1630	PDW1: CyberTRAINsitions	Room S330EF
0800 - 1200	PDW2: Certified Modeling & Simulation Professional (CMSP)	Room S331A
0800 - 1200	PDW3: Harnessing the Power of Data Analytics to Optimize Training	Room S331B
0800 - 1200	PDW4: Live-Virtual-Constructive (LVC) Interoperability Techniques	Room S331C
0800 - 1200	PDW5: Serious Game Design Workshop	Room S331D
0800 - 1200	PDW6: Team and Collective Training Needs Analysis (TCTNA)	Room S330G
0800 - 1200	PDW7: Using ROI-Focused Design Thinking to Deliver Impact Results	Room S330H
0800 - 1130	PDW1.1: Cyberspace Training: Is This Even Legal?	Room S330EF
1300 - 1530	PDW1.2: Blockchain in Simulation: Managing Innovations in Training, Games, Health and IoT	Room S330EF

South Concourse

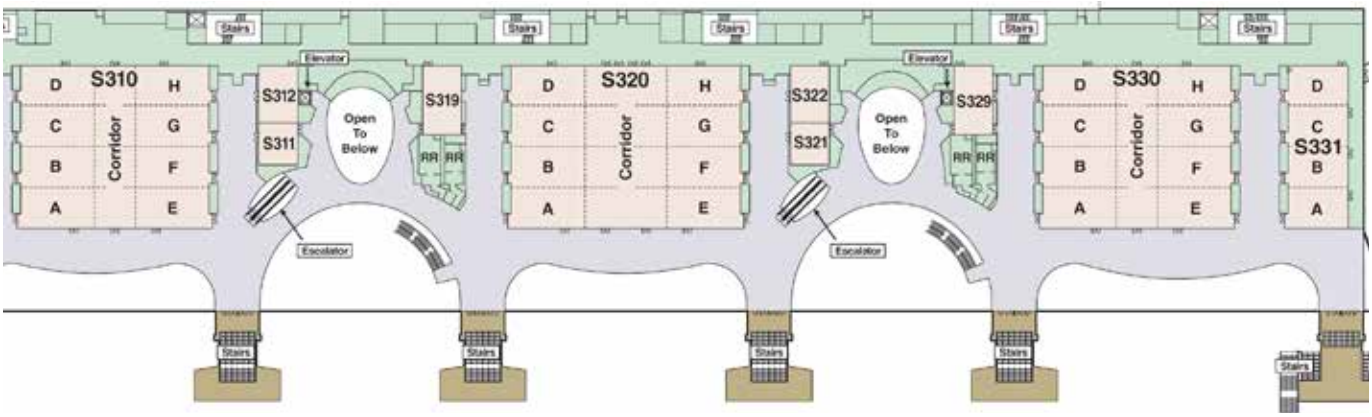
Although the buildings are large, a five-minute walk will take you...

- from the South Concourse to the North Concourse
- from the South Concourse to the Hilton
- from the South Concourse to the Hyatt Regency
- from the South Concourse to the Rosen Center

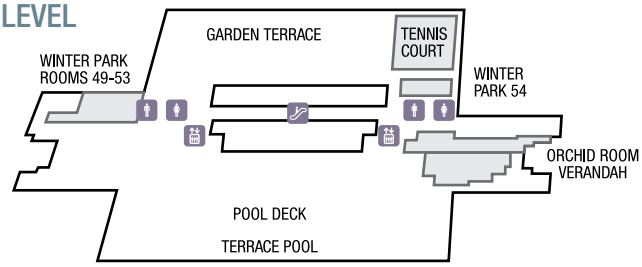
LEVEL 2 (Entry / Registration / Exhibit Hall)



LEVEL 3 (Tutorials / Presentations / Events / Practice Rooms / Professional Development Workshops)



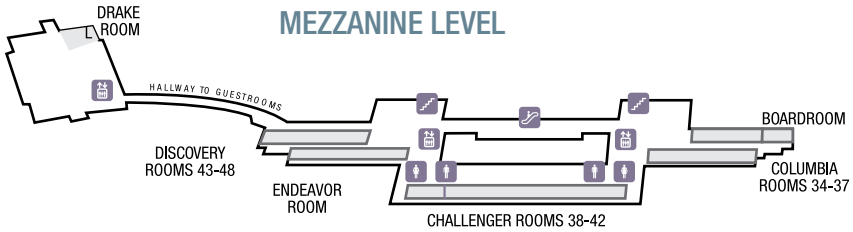
RECREATION LEVEL



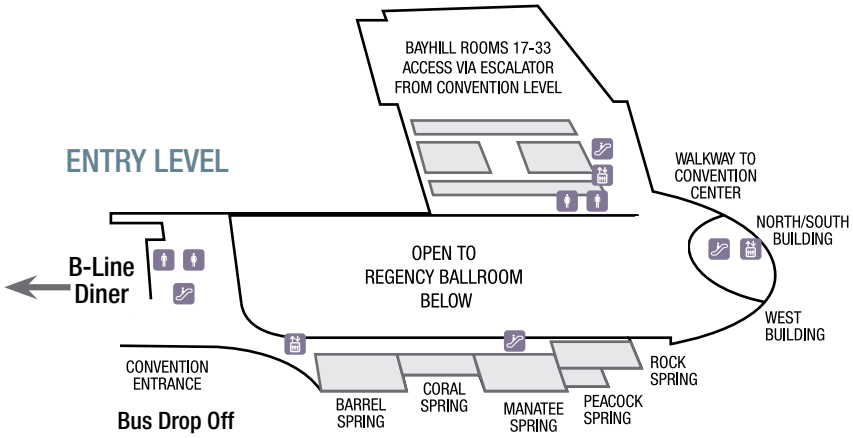
KEY

- Restrooms
- Escalator
- Stairway
- Elevator
- Information
- ATM

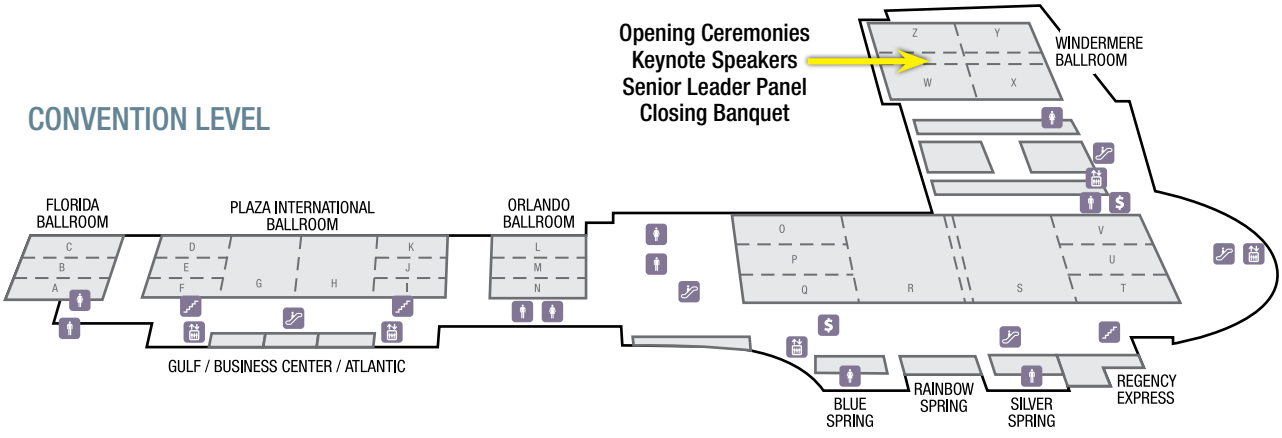
MEZZANINE LEVEL



ENTRY LEVEL



CONVENTION LEVEL



NOTES

Special Events

AIR FORCE '19 ARMY INDUSTRY NAVY USMC

WINNING THE WAR OF COGNITION
BY PUSHING READINESS & LETHALITY BOUNDARIES

Congressional Modeling and Simulation Event

SELECT MEMBERS OF CONGRESS WILL PARTICIPATE IN THIS I/ITSEC EVENT

MONDAY, 2 DECEMBER
1030 – 1200 • ROOM S330BCD
SE1

Session Chair:
Keith Henry, Air Force Agency for Modeling and Simulation (AFAMS)

This special event invites everyone attending the conference or exposition to hear from the training and simulation leaders in Congress. It is also a great opportunity for you to interact with Congressional Members on issues of importance to you or your company and to impress upon them your priorities. With defense budgets constantly in flux, this forum provides you an opportunity to advocate for the value of training and simulation in support of national security. Attendees will hear from the leadership of the Modeling and Simulation Congressional Caucus on their perspective of the situation in Washington and have the opportunity to make their case for timely investments in modeling and simulation. With every budget dollar being scrutinized, strong advocacy for training and readiness has never been more important. This event is always standing room only, so get there early.

The following members of Congress have been invited to address the M&S Community at I/ITSEC:

Bobby Scott*
Caucus Co-Chair
Virginia 3rd District

Stephanie Murphy*
Caucus Co-Chair
Florida 7th District

John Rutherford*
Caucus Co-Chair
Florida 4th District

Martha Roby*
Caucus Co-Chair
Alabama 2nd District

Robert Aderholt*
Alabama 4th District

Jack Bergman
Michigan 1st District

Gus Bilirakis*
Florida 12th District

Mo Brooks*
Alabama 5th District

Vern Buchanan*
Florida 16th District

Ken Calvert*
California 42nd District

John Carter*
Texas 31st District

Steve Cohen*
Tennessee 9th District

Mike Conaway*
Texas 11th District

John Cornyn
Texas

Ted Cruz
Texas

Susan Davis*
California 53rd District

Dianne Feinstein
California

Virginia Foxx*
North Carolina 5th District

Duncan Hunter
California 50th District

Tim Kaine
Virginia

Doug Lamborn*
Colorado 5th District

Elaine Luria
Virginia 2nd District

Ed Markey
Massachusetts

Scott Peters*
California 52nd District

Bill Posey*
Florida 8th District

Marco Rubio
Florida

C.A. Dutch Ruppersberger*
Maryland 2nd District

Mark Warner
Virginia

Elizabeth Warren
Massachusetts

Joe Wilson*
South Carolina 2nd District

Robert Wittman*
Virginia 1st District

**denotes members of the Congressional M&S Caucus*

The Congressional panel addresses the audience and visits the exhibit floor during I/ITSEC.

SIGNATURE EVENT

I/ITSEC Fellow 2019

MONDAY, 2 DECEMBER
1600 – 1730 • ROOM S310C
SE2

I/ITSEC 2019 Fellow

Richard Fujimoto, Ph.D.

About the 2019 Fellow

Richard Fujimoto is a Regents' Professor in the School of Computational Science and Engineering at the Georgia Institute of Technology. He received a Ph.D. from the University of California at Berkeley in 1983. Prior to this, he received an M.S. degree from the same institution and two B.S. degrees from the University of Illinois at Urbana-Champaign.

He has been an active researcher and educator in the parallel and distributed simulation field and has devoted his career to this subject. He has authored or co-authored hundreds of technical papers on this topic, including seven award-winning publications and three books, one devoted entirely to parallel and distributed simulation systems. He led the development of parallel and distributed simulation software systems, including the Georgia Tech Time Warp (GTW) simulation executive and the Federated Simulation Development Kit (FDK). He has given numerous keynote addresses and tutorials on parallel and distributed simulation at leading conferences. He led the definition of the time management services for the High Level Architecture for Modeling and Simulation standard (IEEE 1516). Fujimoto has served as Co-Editor-in-Chief of the journal Simulation: Transactions of the Society for Modeling and Simulation International, as well as a founding area editor for ACM Transactions on Modeling and Computer Simulation.

He has led in the organization of many modeling and simulation conferences, notably the PADS conference over the last thirty years. He was the founding Chair of the School of Computational Science (CSE) at Georgia Tech, among the first academic units of its kind focused on the discipline concerned with computer-based models of natural and engineered systems. In this role, he led the creation of the Ph.D. and M.S. degree programs in CSE as well as two undergraduate minors. He is a recipient of the ACM Distinguished Contributions in Modeling and Simulation Award for his accomplishments in the parallel and distributed simulation field.

Come See the I/ITSEC Fellow Presentation

Parallel Discrete Event Simulation: Past, Present and Future

Richard Fujimoto, Ph.D., focused his I/ITSEC Fellows paper on his personal views of the origins and development of the Parallel Discrete Event Simulation (PDES) field, as well as directions for future development. In presenting the early history of PDES, Richard tells of two distinct solutions to attack the time synchronization problem. The solutions developed were quite different since the application contexts in which they were applied dictated opposite approaches. He then discusses efforts to evaluate the performance of the competing camps, known as conservative and optimistic synchronization. Richard led the effort to define the time management services for the High Level Architecture (HLA), integrating both conservative and optimistic synchronization approaches. His legacy with this work ensures time stepped, real-time, and event-driven simulations can interoperate temporally within a federation. He concludes his paper and presentation by discussing commercialization efforts as well as future research in PDES, paying particular attention to updated computing platforms.

Session Chair:
Margaret Loper, Georgia Tech Research Institute

Senior Leader Panel

TUESDAY, 3 DECEMBER
1030 – 1200 • HYATT REGENCY
WINDERMERE BALLROOM
SE3

Moderator

Rear Admiral James A. Robb, USN (Ret.)
President, National Training and Simulation Association

Panelists

Fred Drummond, SES
Deputy Assistant Secretary of Defense (Force Education and Training), Office of the Secretary of Defense

Vice Admiral DeWolfe Miller, III, USN
Commander, Naval Air Forces/Commander, Naval Air Force, U.S. Pacific Fleet

Major General James A. Jacobson, USAF
Director of Training and Readiness, Deputy Chief of Staff for Operations

Major General William F. Mullen, USMC
Commanding General, Training and Education Command

Brigadier General Stephen Michael, USA
Deputy Commanding General, U.S. Army Combined Arms Center - Training

Brigadier General Ilamrs Lejins, NATO
Latvian Armed Forces
ACOS Joint Force Development at NATO Allied Command Transformation


RADM Robb, USN (Ret.)


Mr. Drummond, SES


VADM Miller, USN


Maj Gen Jacobson, USAF


MajGen Mullen, USMC


BG Michael, USA


BGEN Leijins, NATO

Global forces continue to be challenged by erratic budgets and complex threats. Services continue to prepare for a wide array of missions that range from disaster assistance to the return of great power competition. Additionally, Nations continue to deal with the opportunities and challenges of accelerating technology and cybersecurity. Our Senior Officer panel will address current and future environments within the context of this year's conference theme, "Winning the War of Cognition by Pushing Readiness and Lethality Boundaries". This year's panel will include senior representatives from OSD, all U.S. Military Services and NATO. Following opening remarks, the audience will interact with the panel through written questions. Don't miss the opportunity to hear from national leaders on the way ahead.

Air Force A3 Operational Training O-6 Panel

TUESDAY, 3 DECEMBER
1400 – 1530 • ROOM S330BCD
SE4

Moderator

Colonel Robert Epstein
Commander, Air Force Agency for Modeling and Simulation

Panelists

Colonel Gerard Ryan
HAF A3TI-Chief Operational Training Infrastructure

Colonel Michael C. Todd
AFSPC Division Chief A2-3-6

Colonel David M. Nyikos
ACC A3-Deputy Director of Operations

Colonel Sean A. Bradley
AFMC A3/6-Commander, 412th EWG

Colonel Ryan Aerni
Chief, Aircrew Ops and Training Division, AMC Directorate of Operations, Strategic Deterrence, and Nuclear Integration

Lieutenant Colonel Joseph S. Miranda
USAFE/Warrior Preparation Center-Deputy

Amand Heck
AFRC/A3R, Chief Advanced Programs and Simulation

Colonel Troy Havener
ANG Advisor, USAF Warfare Center

This event will provide an opportunity for I/ITSEC participants to engage with Air Force leaders involved with shaping the implementation of technology across the Air Force enterprise to increase readiness and lethality. Participants will be representing Headquarters Air Force and several Air Force Major Commands (MAJCOMs). This panel discussion will enable the speakers to share their perspectives on the conference theme of "Winning the War of Cognition by Pushing Readiness and Lethality Boundaries" and discuss where they are taking the Air Force of the future, from the viewpoints of their respective positions.

Session Chair:
Mike Genetti, Ph.D., Collins Aerospace

5G — From Hype to Reality

TUESDAY, 3 DECEMBER
1600 – 1730 • ROOM S310C
SE5

Moderator

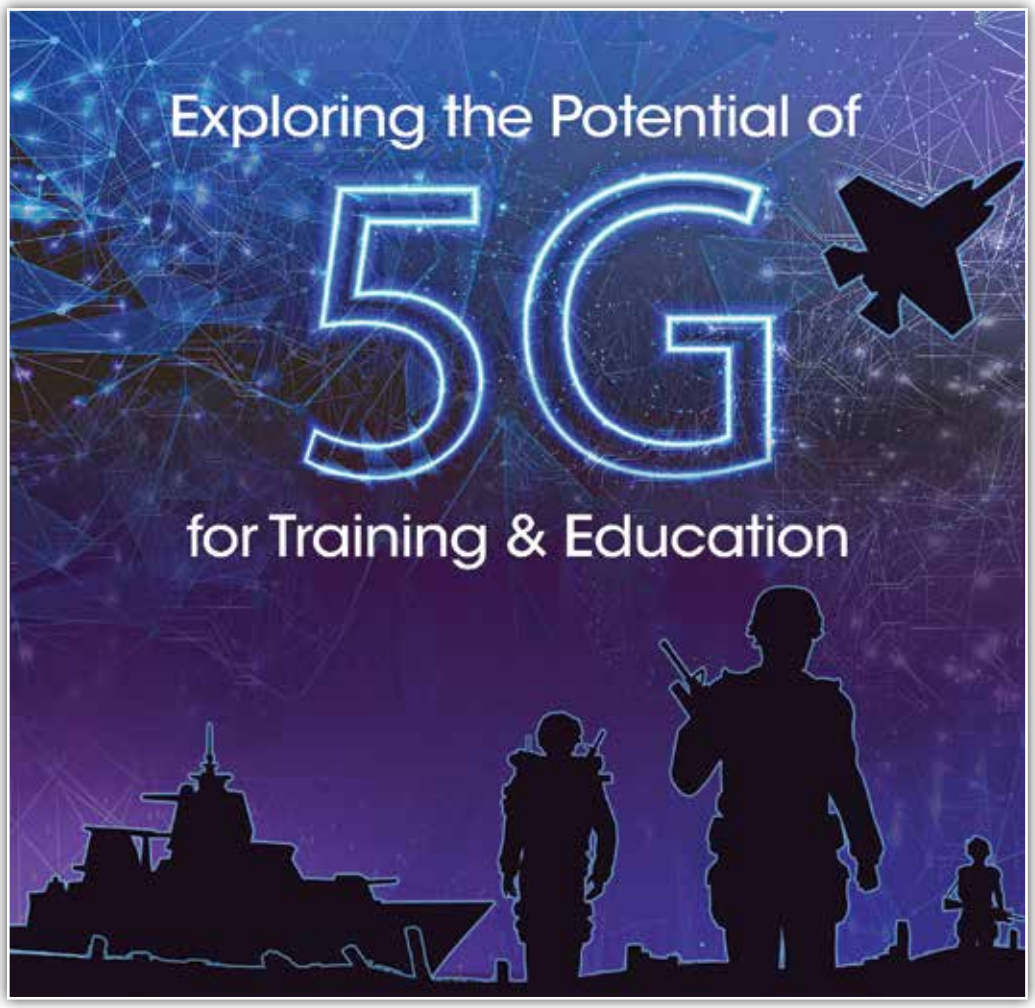
Fred Drummond, SES
Deputy Assistant Secretary of Defense (Force Education & Training), Office of the Secretary of Defense

Panelists

Major General Maria Gervais
Director, Synthetic Training Environment Cross Functional Team, U.S. Army Futures Command

Ellen Purdy
Director, Emerging Capabilities & Prototyping Initiatives & Analysis, Office of the Secretary of Defense (R&E)

Sal D'Itri
Chairman, National Spectrum Consortium



In its National Security Strategy, the Trump administration identified the deployment of a secure 5th generation — 5G — wireless telecommunications capability as a priority. Since then, the secure fielding of a 5G network has become even more critical for our national security, economic competitiveness, and to the Department of Defense.

This special event will focus on the emergence of 5G capability. Particular attention will be paid to how the evolving state of 5G can apply to DoD training and education efforts. The panelists, representing diverse perspectives, will look into the changing future landscape of 5G and what the development of 5G-enabled capabilities could mean.

Questions to be explored include:

- How can 5G help shape future military training and education efforts and advance mission readiness and lethality?
- What opportunities exist for the military, industry, and academia to collaborate on 5G efforts?
- Can 5G spur leap-ahead advances for our warfighters and the commercial sector?

Session Chair:
Amy Bair, HRS Consulting Inc.

SIGNATURE EVENT

The Impact of Data and Simulations for 21st Century Warfare

DATA IS A CRITICAL ASSET: LEARN WHY AND WHAT NEEDS TO BE DONE!

WEDNESDAY, 4 DECEMBER
0830 – 1000 • ROOM S310AB
SE6

Moderator

Robert Siegfried, Ph.D.
Chief Executive Officer, Aditerna
Vice-Chair, NATO Modelling and Simulation Group
Co-Chair, MSG-164 ("MSaaS Phase 2")

Panelists

William Forrest Crain, Ph.D., SES
Director, Center for Army Analysis

Tom Irwin, Ph.D., SES
Executive Director, Joint Force Development and Design Integration, U.S. Joint Staff J7

Stuart Whitehead, SES
Deputy Director, Cyber and C4 Integration, U.S. Joint Staff J6

Daniel T. Maxwell, Ph.D.
President, KaDSci LLC

Michael Mifsud
Product Manager, Business Analyst and Innovator Defence | Security | Transport, Deloitte UK

Session Chair:
Sean Carey, USAF/AMC/A3TD


Dr. Siegfried


Dr. Crain


Dr. Irwin


Mr. Whitehead


Dr. Maxwell


Mr. Mifsud

Our troops have more data available than ever before. Just think of the vast quantity of imagery, terrain data, and intelligence data — whether collected traditionally or through harvesting open sources like social media.

Data Outruns Our Capabilities!
While Velocity, Volume, Variety and Veracity (the 4 "magical" V's) of data are growing faster and faster, our capabilities to handle the data and — more importantly — to leverage data for our operational purposes are not growing nearly as fast.

Ultimately, todays Warfighters and Commanders can't leverage available data (e.g., for improved decision-making) as much as it is desired and required to dominate complex theaters.

Data Needs Our Attention!
The most successful businesses around the globe have realized that data is the fuel of the 21st century economy. It is no longer enough to simply store data or to produce standardized reports — fully exploiting data and generating real value requires more effort. Businesses must truly understand their data, they must investigate their data, and they must be able to instantaneously transform their data into insights that can be readily used.

Data is regularly a lot more expensive than the simulator or command & control system using the data — yet defense organizations around the world focus their operations and maintenance efforts on the systems, not on the data.

Data Requires Our Care!
We need to change our way of working! We need to treat data as a critical resource — a resource that requires constant attention and care. Without institutionalizing key aspects like data ownership and data portfolio management (very much like you manage your financial portfolio), our ability to benefit from data is limited, no matter how much data we have available, and the costs of dealing with data at scale are out of control.

Data – What You Should Know About It
Data and information systems (including simulators and C2 systems) impact all aspects of 21st century defense from acquisition and training to operations and missions. This event gives every warfighter, commander, system engineer, project manager, and leadership a true view on the value of data, and what each and every one of you can do to really leverage data.

AI Game Theory: Game Changing or Game Over? (USSOCOM)

3D AND AI TECHNOLOGIES CHANGING THE GAME

WEDNESDAY, 4 DECEMBER
0830 – 1000 PANEL DISCUSSION
1015 – 1200 Q&A
ROOM S330EF

SE7

Moderator

Randy K. Jackson
Chief, Mission Preparation, J3 Training and Education, U.S. Special Operations Command

Panelists

Major General Robert Karmazin, USA
U.S. Special Operations Command

David Spirk, SES
Chief Data Officer, U.S. Special Operations Command

Colonel Russell Voce, USAF
Deputy Chief Information Officer, U.S. Special Operations Command

MG Karmazin, USA

Mr. Spirk

Col Voce, USAF

This panel considers an array of emerging simulation technologies to increase cognition and reduce operational risk to special operations forces (SOF). The technologies under consideration range from virtual/augmented reality to artificial intelligence/machine learning applications. The panelists are members of the United Special Operations Command (USSOCOM), representing a variety of government and commercial experiences, assembled to discuss and further an enterprise strategy toward developing future game-changing capabilities.

The overarching focus is mission planning and preparation for Special Operators, including facets of training and analysis. The panelists will describe their respective portfolios and give preliminary thoughts on 3D simulation and artificial intelligence/machine learning optimization. Subsequently, other USSOCOM subject matter experts and analysts will address technical aspects of potential capabilities, including proliferation of interoperable systems and use of common database to achieve best outcomes.

Potential questions to drive the panel discussion include: Beyond battlefield lethality, what other gaps might AI address for SOF? How does SOF integrate maintenance training into its predictive maintenance applications of aircraft, vehicles, and/or waterborne vessels? What simulation tools and skills are required to modernize database development and storage from home station to the tactical edge?

Session Chair:
Jeremiah Folsom-Kovarik, Soar Technology

SIGNATURE EVENT

Navy Flag Officer Panel – The Navy the Nation Needs Now

PIVOT SPEED LETHALITY

WEDNESDAY, 4 DECEMBER
1030 – 1200 • ROOM S330BCD
SE8

Moderator

Rear Admiral James A. Robb, USN (Ret.)
President, National Training and Simulation Association

Panelists

Vice Admiral Luke McCollum, USN
Chief of Navy Reserve

Rear Admiral Don Gabrielson
Commander, U.S. Naval Forces, Southern Command

Rear Admiral Daniel Dwyer
Chief of Naval Air Training

Rear Admiral Edward Anderson
Deputy Commander, Undersea Warfare


RADM Robb, USN (Ret.)


VADM McCollum


RADM Gabrielson


RDML Dwyer


RDML Anderson

Superior technology and training is critical to the United States Navy's advantage over its potential adversaries. In this special event, Navy Flag Officers will discuss how the U.S. Navy plans to advance the best-prepared fighting force in the world. This year's I/ITSEC theme, "Winning the War of Cognition, by Pushing Readiness & Lethality Boundaries" highlights how the Navy uses the latest learning innovations and technology to modernize traditional military training methods to give us a distinct advantage.

In the face of any potential opponent, it is the readiness of our personnel – their ability to pivot and make sound decisions under pressure – that will provide our greatest asymmetrical, warfighting advantage. Because highly-skilled warfighters are able to make superior decisions and perform their missions better, training sits at the very core of naval readiness. To that end, the Department of the Navy is moving to become a true continual learning organization, because that is essential to maintaining Warfighting Readiness and ensuring excellence in the battle.

Likewise, the United States Maritime Strategy calls for the sea services to "create a true learning competency that unites our acquisition, requirements, and programming efforts to deliver the latest in technology and design, resulting in realistic simulation and live, virtual, and constructive scenarios before our people deploy…" High-quality training is an investment in improving the human performance of our warfighters. However, in developing training, we also have the responsibility to make affordability a priority throughout the training system cycle of research, development, acquisition and sustainment. To remain flexible, agile, and ready, our Navy seeks out and employs innovative training methods to train Sailors more efficiently and to ever-higher levels of proficiency while maintaining a high speed to fleet.

The Navy is taking efforts to prevent inefficiencies in the training pipeline and the training acquisition process. For the Navy, a key measure in deciding whether to invest in a new training technology is whether it will make the Naval force more lethal. Senior leaders know that people are foundational to everything the Navy does. The U.S. Military can have the best possible processes, the best ships, airplanes, rifles, and tanks – but without the people who operate and maintain them, they are worthless. This is why the Navy is dedicated to recruiting, training, and retaining the best Sailors in America.

Sailors with superior training are an essential component of maintaining maritime superiority, now and in the future. This panel of senior Navy leaders will provide insight from acquisition, research and development, and mission readiness perspectives into how effective and relevant training optimizes the human performance of U.S. Navy Sailors. As Chief of Naval Operations, Adm. Michael Gilday said, "We will question our assumptions. We will think differently about the competition that we are now in. We will be the navy the nation needs now and we will build a Navy the nation needs to fight and win in the future."

Session Chair:
Jeremiah Folsom-Kovarik, Soar Technology

Alignment of Army M&S Across the M&S Enterprise and the Army Future Force Modernization Enterprise

BUILD ONCE AND REUSE OFTEN!

WEDNESDAY, 4 DECEMBER
1400 – 1530 • ROOM S310AB
SE9

Moderators

Colonel Scott D. Gilman
Deputy Director, U.S. Army Modeling and Simulation Office

Panelists

Forrest Crain, Ph.D.
Director, Center for Army Analysis & U.S. Army Modeling and Simulation Office

John W. Diem, SES
Executive Director, U.S. Army Operational Test Command

Royce Manis
Highly Qualified Expert Soldier Lethality CFT Army Futures Command

Colonel Joseph M. Nolan
Deputy Director, STTC

Lori Mongold
Deputy Chief of Staff, Global Force Management, Chief Management Officer Headquarters Department of the Army, G-3/5/7

Lieutenant Colonel Carlos J. Kavetsky
M&S Integration Officer, SR Division, U.S. Army Modeling and Simulation Office

Glen Quesenberry
Program Manager, Army Geospatial Command


COL Gilman


Dr. Crain


Mr. Diem, SES


Mr. Manis


COL Nolan


Ms. Mongold


LTC Kavetsky


Mr. Quesenberry

Since the stand up of Army Futures Command (AFC), the Army Modeling and Simulation Office (AMSO) has been the only Headquarters, Department of the Army (HQDA) organization that has collaborated in-depth with both AFC HQ and each Cross Functional Team to ensure unity of effort with regard to modeling and simulation. Additionally, the Commanding General, AFC, and the Deputy Chief of Staff, G-8, directed AMSO to align M&S between the two enterprises.

An information overview of how the Army M&S Enterprise collaborates with Army Future Command's Cross Functional Teams in order to identify key areas for M&S innovation while exploiting opportunities to drive down technical costs, increase savings, and implement technical reuse.

Session Chair:
John Dzenutis, The Boeing Company

SIGNATURE EVENT

Multi-domain Battlespace Training

INTEGRATING CYBER INTO YOUR EXERCISES

WEDNESDAY, 4 DECEMBER
1400 – 1530 • ROOM S330BCD
SE10

Moderators

David "Fuzzy" Wells, Ph.D., CMSP
Deputy Director, University of Central Florida Institute for Simulation and Training

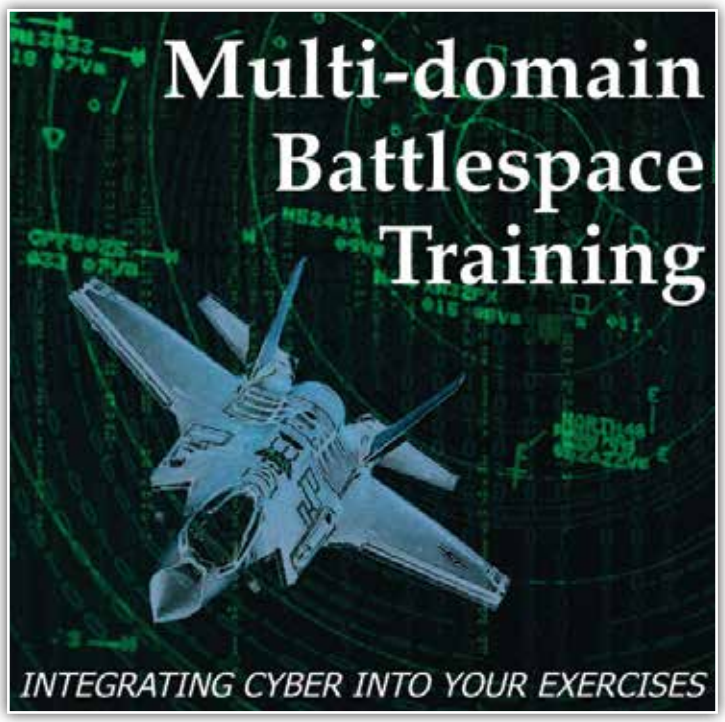
Derek Bryan
President, Ingenia Services, Inc.

Speakers

Lieutenant General Christopher Weggeman
Deputy Commander, Air Combat Command

Jennifer McArdle
Non-Resident Fellow, Center for Strategic and Budgetary Assessments

Lieutenant Colonel Chad Bates, Ph.D.
Chief, Modeling and Simulation Division, U.S. Army Cyber Command




Lt. Gen. Weggeman


Ms. McArdle


LTC Bates, Ph.D.

A common mantra within the U.S. military has been to "train as you fight." Yet, live training fails to replicate with fidelity the type of cyber and informationized operations that warfighters will experience in a contested and complex battlespace. Synthetic training environments can inject a much-needed degree of realism, replicating an information-saturated combat environment for non-cyber warfighter training. However, synthetic training systems, scenarios, and models must evolve to support this future.

Integrating cyber and informationized operations into non-cyber warrior training does not just require simulating the effects of an adversary's cyber or information operations in a synthetic training environment. Warfighters must also understand the unique attributes that cyber warriors bring to the fight when pursuing multi-domain operations, to include timing, authorities, and classification, among others. Multi-domain operations require warfighters to more seamlessly work between domains to support, augment, or assure their mission. An integrated synthetic training environment must support this end.

This special event will highlight multi-domain battlespace training requirements, successes, challenges, gaps, and potential solutions from the perspective of multi-domain warfighters, cyber simulation and training researchers, and integrated synthetic training environment developers. Scientists and technologists across academia, industry, and the services will showcase technologies they have developed that allow cyber effects to propagate across environments. The technology demonstration should provide a networking opportunity, so that participants can work together to scale and implement ideas to better serve the warfighter.

Session Chair:
Josh Looper, USAF

Improving Joint and Multinational Simulation Interoperability

THE TIME IS NOW: SIMULATION INTEROPERABILITY FOR TRAINING AND MISSION REHEARSAL

THURSDAY 5 DECEMBER
0830 - 1000 • ROOM S310AB
SE11

Moderator

Richard "Jenks" Reid
Demonstrations Branch Chief, U.S. Joint Staff J6, DDC5I, Joint Fires Division

Panelists

Stuart Whitehead
Deputy Director for Cyber and Command, Control, Communications and Computers Integration, Joint Staff J6

Major General Robert A. Karmazin
U.S. Special Operations Command

Commodore Allison Norris
Director General, Australian Defence Simulation and Training Centre

Terrence (Terry) E. Culton
Chief, Environment Architecture, Deputy Director Joint Training, The Joint Staff J7


Mr. Reid


Mr. Whitehead


MG Karmazin


CDRE Norris


Mr. Culton

Despite more than 25 years of experience in distributed simulation, we have made little progress in our ability to rapidly and routinely connect tactical simulators between different Services and nations. As live training resources diminish, simulation naturally assumes a bigger role in maintaining readiness. As we have observed during Bold Quest, numerous policy, programmatic and technical issues pose obstacles that prevent tactical warfighters from routinely training with other Service and coalition partners using distributed simulators to build and maintain joint fires proficiency.

The participants in this Special Event represent organizations who are actively working toward a shared long term goal of establishing a process for continuously improving simulation interoperability. Each participant has a different simulation experience to discuss (Civil–military relations, Digitally Aided Close Air Support (DACAS), Globally Integrated Operations (GIO), Net Enabled Weapons (NEW)), but the challenges are all familiar to the audience. Together, we must work to make one-off events of simulation integration into persistent capability that can be shared across all Services and multinational partners.

We hope these senior leader perspectives provide insights of interest to the I/ITSEC community on issues in networking, cybersecurity, information sharing, standards and how industry can help.

Session Chair:
Sue Numrich, Institute for Defense Analyses

Air Force Simulators Pitch Day

INNOVATION AT THE SPEED OF RELEVANCE

MEDIA DAY SESSION
THURSDAY, 5 DECEMBER
0830 – 1200 • ROOM S320GH
SE12

Colonel Philip Carpenter
Senior Materiel Leader,
Simulators Program Office,
Air Force Life Cycle
Management Center

Col Carpenter

In conjunction with the Air Force's Small Business Innovation Research (SBIR) program, the Simulators Program Office solicited proposals from small businesses to inject innovative technologies into operational training systems. The program office has asked small businesses to "pitch" how they can help the Air Force in certain areas or topics including but not limited to the following:

- High end weather effects within simulator gaming environments
- Deployable, austere environment high-fidelity simulator
- Visual acuity and fidelity of objects at long ranges within the simulator environment
- Interoperability among networked simulators
- Simulator interoperability considering releasability of capabilities
- Cloud-based simulators
- Performance based training, data collection and analysis
- Artificial intelligence aided instruction in simulator
- Shortening the timeline for maintenance training

The objective was not to ask small businesses to go out and invent something new, but rather to creatively repurpose existing technologies that could be leveraged to satisfy Air Force training needs. Ultimately the idea is to connect with industry which will help us move into the latest technological space faster.

The first phase of this effort, held in July 2019, resulted in a number of Phase I SBIR awards. In October, select Phase I awardees were given the opportunity to submit proposals for a Phase II award that would build on what was learned and demonstrated in their Phase I efforts. These companies were then invited to privately present their Phase II proposals to an Air Force panel at the Simulators Pitch Day event during I/ITSEC.

Regardless of whether the Phase II proposal resulted in an award or not, the selected companies are now given the opportunity to pitch their initiatives to the I/ITSEC community as a whole, during the "Media Day" event on 5 December. It is expected that attendees at this event will include major prime defense industry executives, venture capitalists and other service acquisition executives.

Session Chair:
Peter Swan, VT MAK

Iron Dev

A "COOKING SHOW" EVENT FOR DEVELOPERS

Main Event (Show)

THURSDAY, 5 DECEMBER
1000 – 1130 • LAUNCH PAD
BOOTH 793

Team Preparations

MONDAY, 2 DECEMBER
0830 – 1800 • ROOM S330G
TUESDAY, 3 DECEMBER
0830 – 1800 • ROOM S330G
WEDNESDAY, 4 DECEMBER
0830 – 1800 • ROOM S330G
FE1

Co-Hosts

Bob Kleinhample
Vice President, Training Solutions SAIC

Alethea Duhon, Ph.D.
Technical Director, Air Force Agency for Modeling and Simulation

Mark Tanner
Senior Modeling and Simulation Operations Research Analyst; Tony Stark Impersonator

Judges

Major General Maria R. Gervais
Director, Synthetic Training Environment Cross Functional Team

John Meyers, SES
Executive Director, Naval Air Warfare Center Training Systems Division

Col. Tony Millican, Ph.D., USAF
Director, Future Learning Initiatives

Paul Thurkettle
Education & Training Technologies Manager, Allied Command Transformation, North Atlantic Treaty Organization

Amy Peck
Senior Director, Enterprise Content, Vive Studios HTC Vive

Come watch the finale of the Iron Dev competition which features teams of training system developers. During the first several days of the conference, teams have been given a challenge and are building training systems relevant to our warfighters. The final show will be similar to competitive food cooking shows. The show hosts will describe how the teams worked during the first few days of competition in a fun and entertaining way. Meanwhile, the teams will be on the stage making final preparations to their training systems. They will then present their systems live to the panel of judges and audience. The judges will critique the systems in areas of technical precision, use of the secret ingredient, how well they addressed the challenge in their solution, and how bold and innovative they were. During this show, the winner will be announced. The extent to which teams consist of early career developers will be considered in the final score.

The competition format will provide a fun and professional development opportunity to help grow future leaders in our developer community.

Session Chair:
Kara Orvis, Aptima, Inc.

FOCUS EVENT

Best from Around the Globe

TUESDAY, 3 DECEMBER
1400 – 1530 • ROOM S320D
FE2

Presenters

MODSIM WORLD

Ivar Oswalt, Ph.D., CMSP
The MIL Corporation

Tim Cooley, Ph.D.
DynamX Consulting

ITEC

Jeanine Vlasblom
Netherlands Aerospace Centre NLR

Best from Around the Globe features the Best Paper awardees of MODSIM World and ITEC. Each of the winners was selected by a committee and criteria specific to the particular global conference focus and theme. Come hear the award winners from MODSIM World and ITEC offer their outstanding presentations from these prestigious international conferences.

MODSIM World 2019 Best Paper

Simulation-Based Training's Incorporation of Machine Learning

Ivar Oswalt, Ph.D., The MIL Corporation and Tim Cooley, Ph.D., DynamX Consulting

Machine learning (ML) is all around us. This paper describes ML and discusses emerging/innovative technological ideas on integrating ML into two categories of training systems. First are multi-person training simulators, such as convoy trainers, which — with the injection of ML — could realize decreases in training time and increases in proficiency. Second, the analysis expands these insights into the context of LVC training simulations. For LVC, it summarizes precursor semi-automated systems, highlights current ML applications, discusses the roles ML could play in future LVC environments, and describes how these systems could be wrapped in advanced training delivery approaches. This paper concludes with thoughts and considerations regarding ML topics that are critical in simulation-based training.

ITEC 2019 Best Paper

Making the Invisible Visible—Increasing Pilot Training Effectiveness by Visualizing Scan Patterns of Trainees Through AR

Jeanine Vlasblom, Netherlands Aerospace Centre NLR

This paper describes the development and evaluation of a scan pattern monitoring system using augmented reality (AR). The system enables instructors to monitor scan patterns of pilots by non-intrusively tracking the pilot's eyes and displaying the scan patterns to the instructor through augmented reality. Subject matter experts (pilot instructors) evaluated this application as a support for the debriefing.

Session Chair:
Amanda Davies, Interim Chair, Policing & Security, Rabdan Academy, UAE

Acquisition Agility

THE NAVY WAY

TUESDAY, 3 DECEMBER
1400 – 1530 • ROOM S320GH
FE3

Moderator

Mike Merritt
Acquisition Director, Naval Air Warfare Center Training Systems Division

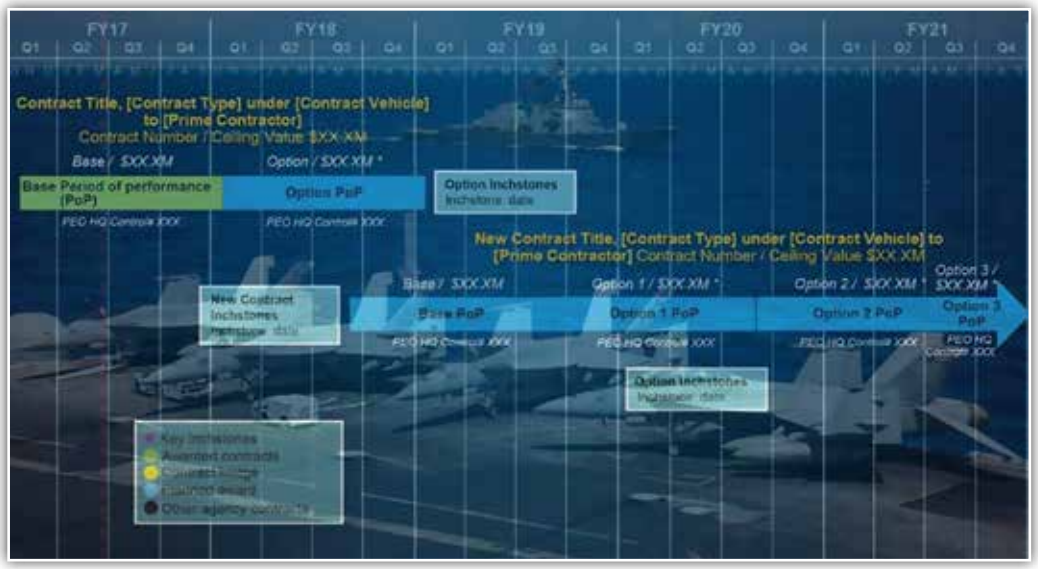
Participants

Captain Frank Futcher
Director, NavalX

Commander Sam "Chubs" Gray
Tech Bridge Director, NavalX

Bob Seltzer
Director Research and Technology Programs, Naval Air Warfare Center Training Systems Division

Greg Dougherty
Director of Contracts/Chief of the Contracting Office, Naval Air Warfare Center Training Systems Division



The Department of the Navy (DON) recognizes it lacks the agility needed to assure relevancy in the modern era of technology and competition. How do we flip the script and leverage the leading technologies and agile processes being developed in the private sector? It is critical that DON maintains relevance and closes the adversarial gap through acquisition agility.

During this panel, a group of Navy acquisition professionals will discuss acquisition agility challenges and potential solutions from both government and industry partners. This will be a lively discussion of how to take great ideas and turn them into readiness and new capabilities, to meet the Navy acquisition agility challenge.

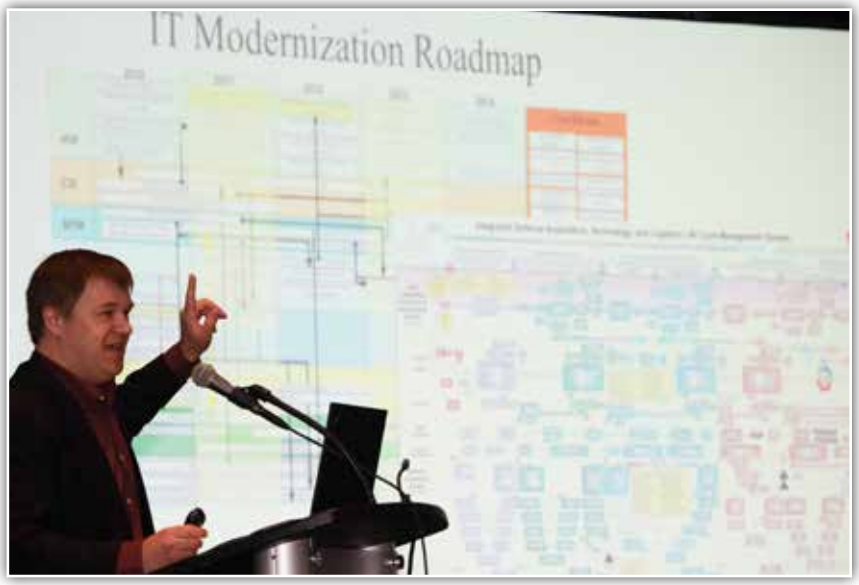
Session Chair:
Eric Jarabak, PM TRASYS ENG

Ignite!

ENLIGHTEN US, BUT MAKE IT QUICK!

TUESDAY, 3 DECEMBER
1400 – 1530 • ROOM S330EF
FE4

Moderator
John Aughey
Associate Technical Fellow,
The Boeing Company



Come and hear industry experts speak on topics such as education, design thinking, human-machine teaming and more. Have you ever sat through a long presentation and lamented that there were only five minutes of content? Imagine if you could hear only that five minutes of targeted, compelling and maybe even provocative content… that's Ignite! Ignite is a presentation format that allows dynamic, high octane speakers a platform to share their passion and ideas. I/ITSEC's version of Ignite focuses on topics that are relevant and thought-provoking. So bring your short attention span and prepare to be inspired, entertained, educated and amazed by an array of talented speakers. Each talk is jam-packed with inspiration and information using 20 slides that auto-advance every 15 seconds, creating a fun and dynamic event. See online program for an updated presenter list.

Presenters

John Aughey
The Boeing Company
Students! Students! Students!

Anne Little, Ph.D.
SAIC
Design Thinking

Ella M. Phillips
Escambia Virtual Academy
Is Virtual Reality Always the Best Instructional Medium?

Nathan Schurr, Ph.D.
Aptima, Inc.
How I Met Charlie: Developing the World's First AI Panelist

Samantha Dubrow
Aptima, Inc.
Human-Machine Teaming: What Skills do the Humans Need?

Session Chair:
Aaron Presnall, Jefferson Institute

Big Data in Training

WHAT'S IN IT FOR ME?

TUESDAY, 3 DECEMBER
1600 – 1730 • ROOM S320GH
FE5

Moderator

Commander Hank Phillips, Ph.D.
Operational Psychology Department Head, Naval Aerospace Medical Institute

Participants

Nelson Lerma, Ph.D.
Data Science Lead, Naval Air Warfare Center Training Systems Division

Keith Brawner, Ph.D.
Senior Engineer, Army Futures Command – Combat Capabilities Development Command, Simulation and Training Technology Center

Has Big Data lived up to the hype? Behold a spirited debate unfold between data scientists from the Army and Navy training worlds about the troubles, possibilities, and results from exploring the Big Data promise. If we are going to build the AI and Deep Learning capability of tomorrow what do we need to do today? Attendees are invited to add questions to the conversation.

Session Chair:
Alexandra Steiner, Trideum

FOCUS EVENT

Imagine 2030: AI-Empowered Learning

FIRST-OF-ITS-KIND DISCUSSION

WEDNESDAY, 4 DECEMBER
0830 – 1000 • ROOM S320GH
FE6

Moderator

Daniel Serfaty
Founder and Chief Executive Officer, Aptima, Inc.

Participants

Sae Schatz, Ph.D.
Director, Advanced Distributed Learning (ADL) Initiative

Benjamin Nye, Ph.D.
Director of Learning Sciences, University of Southern California, Institute for Creative Technologies

Ulrik Christensen, M.D.
Executive Chairman and Founder Area9

Colonel Robert H. "Hammerhead" Epstein
Commander, Air Force Agency for Modeling and Simulation

Charlie, A.I.
AI-Empowered Panelist, Aptima, Inc.

Join us for a fireside chat debate where panelists (four humans and one artificially intelligent bot) are asked to imagine what learning will look like in 2030. AI is poised to revolutionize how we approach training and learning; these panelists will share their perspectives on the dramatic impact that AI will have on that future. And while the human panelists lay out their vision, the AI panelist — driven by a cutting-edge, I/ITSEC-trained generative language model — will be creatively answering questions and providing its own vision in real-time.

The world is searching for better and more productive ways to incorporate AI in our lives. The military services are exploring the potential for AI to increase warfighter readiness, enable precision training, and ensure overmatch. And while AI is being used largely experimentally today, the potential is high for significant AI-driven increases in training effectiveness in the years to come.

One key topic for the discussion is how AI can go beyond generating learning materials and experiences. It is important to start thinking now of how we will incorporate more capable AI as instructors and even student/trainee peers, enabling collaboration and co-learning. Much in the same way we imagine AI being embedded in the learning of the future, we plan to embed AI into our panel discussion as well.

These panelists have both diverse perspectives and diverse backgrounds, ranging from academic to military to industry. Come and find out what each of our panelists have to share regarding the dramatic impact that AI will have on (and in) the future of learning.

Session Chair:
Heather Oonk, Pacific Science & Engineering Group

Perspectives on Competency-Based Learning

ENABLING PRECISION TRAINING

WEDNESDAY, 4 DECEMBER
1030 – 1200 • ROOM S310C
FE7

Moderator

Barb Buck, Ph.D.
Human Systems Lead, The Boeing Company

Panelists

Winston "Wink" Bennett, Ph.D.
Readiness Science and Technology Product Line Leader, U.S. Air Force Research Laboratory

Jim Pharmer, Ph.D.
Research Director, Naval Air Warfare Center, Training Systems Division

Naomi Boyer, Ph.D.
Director, Digital Credential Products, Education Design Lab

Athan Katsandres
Senior Flight Standards Pilot, The Boeing Company

Jim Gilkeson, Ph.D., CFA
Integrated Business Department Chair, University of Central Florida College of Business

Competency-based learning has been around for a while, yet is gaining traction in the commercial aviation world as the new preferred method for pilot training and performance evaluation. This special event will gather speakers who have helped to define standards and approaches for competency-based learning from across the spectrum of military, commercial and academic approaches.

This event is special because it brings together experts on competency-based learning from multiple areas of practice: from those in the military and academic domains who have been implementing this for some time, to those from the commercial aviation industry where the standards are newly emerging. We will present perspectives of those who support competency-based learning as a positive path for learning assessment, as well as others who have encountered difficulty in such implementation.

Session Chair:
Matthew Hackett,
U.S. Army Research Institute
ARL/HRED/SSTC

FOCUS EVENT

Patient Safety in Healthcare: The Role of Modeling and Simulation

INCREASING PATIENT SAFETY THROUGH SIMULATION

WEDNESDAY, 4 DECEMBER
1400 – 1530 • ROOM S310C
FE8

Moderator

Grace Peng, Ph.D.
Program Director, Division of Discovery Science & Technology, National Institute of Biomedical Imaging and Bioengineering

Panelists

Colonel Jeffrey Mikita, M.D.
USA Division Chief, Medical Modernization and Simulation Division, Defense Health Agency

Carolyn Lauzon, Ph.D.
Deputy Director of Artificial Intelligence & Technology, U.S. Department of Energy

Dana Andersen, M.D.
Scientific Program Director, Digestive Disease and Nutrition, National Institute of Diabetes and Kidney Diseases

Lieutenant Commander USPHS Rachel Slayton, Ph.D.
Mathematical Modeling Unit Lead, Healthcare Quality, Centers for Disease Control and Prevention

Steven H. Platts, Ph.D.
Deputy Chief Scientist, Human Research Program, National Aeronautics and Space Administration

Jack Norfleet, Ph.D.
Chief Engineer, Medical Simulation Research Branch, U.S. Army Futures Command

David Rodrick, Ph.D.
Healthcare Administrator, Agency for Healthcare Research and Quality

This is an NTSA-sponsored event in support of the Patient Safety Working Group established after I/ITSEC in 2018. The purpose is to continue the dialog surrounding patient safety and the role that M&S has in supporting patient safety across healthcare. This is a part of a series of activities to encourage participation from Government agencies, hospitals, universities, device manufacturers and organizations surrounding healthcare to expand the use of M&S to minimize risk and save money.

Session Chair:
Teresita Sotomayor, Medical Simulation and Performance Branch US AFC CCDC Soldier Center – STTC

Multinational Perspectives on Live, Virtual and Constructive Implementation in Ops

THE "WILD SIDE" OF PLANNING AND IMPLEMENTING LVC IN OPS. MULTINATIONAL SUCCESSES AND CHALLENGES

WEDNESDAY 4 DECEMBER
1400 – 1530 • ROOM S330EF
FE9

Moderator

Timothy Steffen, CMSP
Former Warrior Prep Center, Deputy Director and Chief Plans & Requirements, now with the Air National Guard, Washington, DC

Panelists

Wing Commander Mick Tully
Executive Officer, Air Force Ranges Directorate – Air Warfare Centre, Project Manager LVC and Ranges Capability

Wing Commander Ruari Henderson-Begg, MA RAF
Air Capability Delivery | DOTC(A) Programme Manager, HQ Air Command, DOTC(A) SO1

Major J.C. (Hans) van de Velde
Air & Space Warfare Centre, Royal Netherlands Air Force

Lieutenant Colonel Roberto Ambra
Italian Air Force – Air Staff Logistics Department, Mission Systems / Training & Simulation Manager

A number of multinational partners are investing in live, virtual, and constructive technologies and developing novel ways of blending these to achieve greater training value and improved readiness outcomes across a range of mission spaces and contexts.

Five invited international subject matter experts will discuss their national perspectives and activities as they relate to the operational integration of live, virtual, and constructive capabilities "in the wild of day-to-day ops."

Each presenter is actively involved in their country's day-to-day planning and implementation of LVC capabilities. They will highlight what they are doing today and planning in the near future, and discuss common and unique challenges and payoffs related to their LVC applications.

Session Chair:
Josh Looper, AFRL

FOCUS EVENT

Black Swan: To Tell the Truth, I've got a Secret

DEEP FAKE VIDEOS AND THE INSIDER THREAT

WEDNESDAY, 4 DECEMBER
1600 – 1730 • ROOM S310AB
FE10

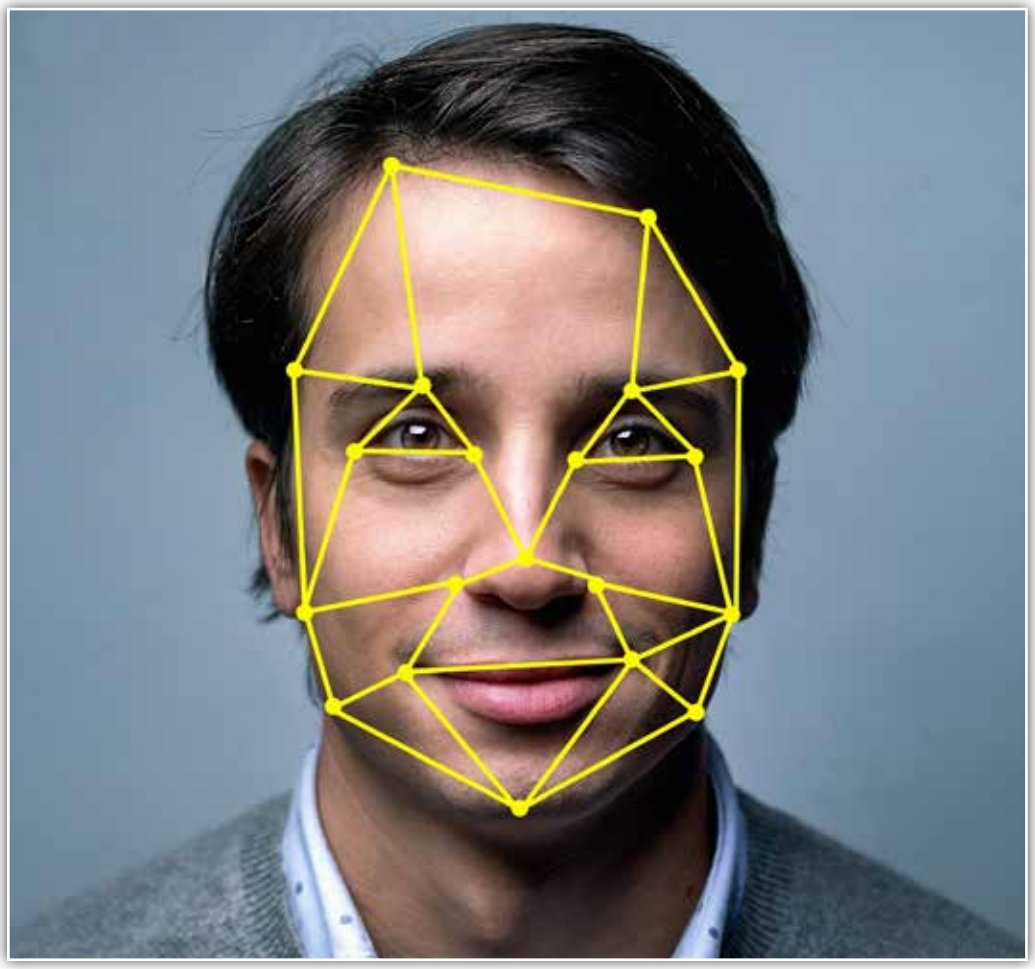
Moderator

Michael van Lent, Ph.D.
President and Chief Executive Officer, Soar Technology

Panelists

Josef Schaff, DSc.
NAWCAD Lead Autonomy Architect, U.S. Navy
NAVAIR Associate Fellow

John Mendoza
Deputy Director Insider Threat Office, U.S. Air Force



Continuing our Black Swan series of panel discussions, we propose the scenario of a deep fake video authenticated by a credible insider threat. We examine the artificial intelligence (AI) algorithms behind the creation of deep fake videos and how they can be used for training and possibly public deception. We also add the intrigue of using an insider threat to authenticate this deceptive video and how insider threats can be used to gain access to the inner circle information and possibly sway public opinion.

As training videos are used extensively in the military and industry, the science of AI and its application to creating deep fake videos must be explored and understood. Insider threat knowledge and the tradecraft includes the use of such deception and thus complicates its countermeasures. This session hopes to introduce the audience to these techniques and explore both their nefarious and beneficial uses to the training and simulation communities.

The term black swan is used to describe a low probability/high impact event which could profoundly affect our future. The term comes from the 2007 book, *The Black Swan: The Impact of the Highly Improbable* by Nassim Nicholas Taleb, where he presents various world changing events and advocates anti-fragility to not only survive but thrive during crises. Modeling and simulation can play a major part in exploring these events in a cost-effective manner.

Please join us for this engaging session!

Session Chair:
Nina Deibler, Serco, Inc.

Modernizing Learning

BUILDING THE FUTURE LEARNING ECOSYSTEM

THURSDAY, 5 DECEMBER
0830 – 1000 • ROOM S329
FE11

Moderator

Sae Schatz, Ph.D.
Director, Advanced Distributed Learning (ADL) Initiative

Panelists

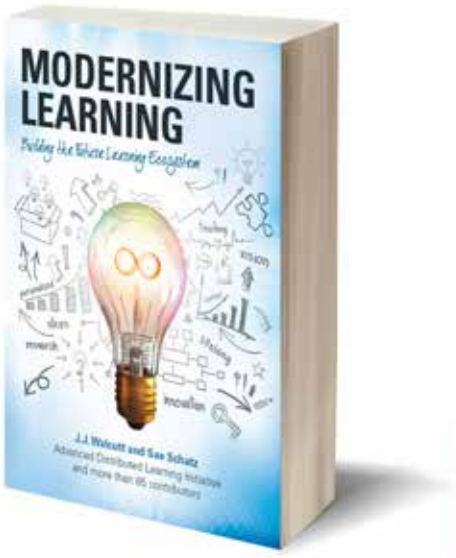
Phill Miller
Chief Learning and Innovation Officer, Blackboard

Christopher Dede, Ed.D.
Timothy E. Wirth Professor in Learning Technologies, Harvard Graduate School of Education

Arlyn "Reese" Madsen, Jr.
CHCO Council Senior Advisor for Talent Development, DoD Intelligence and Security Chief Learning Officer

Michelle Barrett, Ph.D.
Vice President, Research Technology, Data Science, and Analytics at ACT

Jason Tyszko
Vice President, Center for Education and Workforce, U.S. Chamber of Commerce Foundation



Dr. Schatz | Mr. Miller | Dr. Dede | Mr. Madsen | Dr. Barrett | Mr. Tyszko

The landscape for training and education is changing rapidly. Increasing operational demands, new technologies, and an increased understanding of human performance have us rethinking learning and development. How do we harness these new opportunities to develop talent and enable learning, particularly, learning at scale? After a multiyear study, a new book — *Modernizing Learning: Building the Future Learning Ecosystem* — provides a blueprint for the future learning ecosystem. This vision is characterized by interconnected lifelong learning systems, a blending of formal and informal learning, and an integration of emerging technologies with contemporary learning science principles. These concepts promise to revolutionize talent development, but only if they can bridge the research–practice gap.

Extensive research, across myriad disciplines, has already examined many aspects of the future learning ecosystem. However, to achieve its full implementation and maximal benefits, it's necessary to harmonize the advancements in learning science, technology, data science, organizational dynamics, and public policy.

This panel brings together experts who contributed to the book *Modernizing Learning*. The speakers will consider the future of learning—and, notably, how we realize this vision in the real world—across six aspects: Tech infrastructure, design, policy and commitment, governance, and human infrastructure. This session will be moderated by the book's co-editor, Sae Schatz, Ph.D. She will challenge the panelists to outline actionable plans for achieving the future learning in practice and will engage the audience to encourage dialog and interactivity in this session.

Session Chair:
Mike Thorpe, SERCO, Inc.

FOCUS EVENT

Immersive Environments — Suspending Disbelief

EXPANDING OUR HORIZONS

THURSDAY, 5 DECEMBER
1030 – 1200 • ROOM S330EF
FE12

Moderator

Bernice Glenn
Senior Vice President of Strategic Partnerships, NSTXL

Panelists

Marianna Eddy, Ph.D.
Team Leader, Cognitive Science and Applications, Combat Capabilities Development Command Soldier Center, U.S. Army

Pinata Sessoms, Ph.D.
Research Biomedical Engineer, Biomechanist, Director of the Physical and Cognitive Operational Research Environment (PhyCORE) Laboratory, Warfighter Performance Department and Operational Readiness Directorate, Naval Health Research Center

Nadia Matthews
Strategic Initiatives Director, Microsoft Federal

Elizabeth Baron
Vice President, Immersive Solutions at Silverdraft Supercomputing

This must-attend event brings together a panel of thought leaders who are implementing immersive technologies in defense and commercial applications. They will share use cases from the fields of training, medicine, and engineering; discuss some of the most pressing challenges to effective implementation; and offer guidance on how to generate buy-in among colleagues for adopting immersive technology.

The discussion will appeal to attendees who are either learning to develop better business cases for the use of AR, VR, and MR in their practice or looking for guidance on how to take their technological capabilities in the areas of immersive technology to the commercial sector. The audience will be invited to pose questions to and engage in dialogue with the panelists at the end of the session.

Session Chair:
Monique Brisson, USAF

New and Emerging Augmentation Technologies for Training and Operations within the NATO Alliance Nations

SHOWCASING THE STATE OF THE ART IN HUMAN PERFORMANCE AUGMENTATION

THURSDAY, 5 DECEMBER
1330 – 1500 • ROOM S310C
FE13

Moderators

Elizabeth Biddle, Ph.D.
Technical Fellow/RTG Member, Boeing Research & Technology, The Boeing Company (United States)

Benjamin Goldberg, Ph.D.
Senior Scientist/RTG Member and Co-Chair, U.S. Army CCDC-Soldier Center, STTC (United States)

Panelists

Thomas Alexander, Ph.D.
RTG Member/Co-Chair, Federal Institute for Occupational Safety and Health (BAUA; Germany)

Jerzy Jamais, Ph.D.
RTG Member, Toronto Research Centre – Defence Research and Development Canada (Canada)

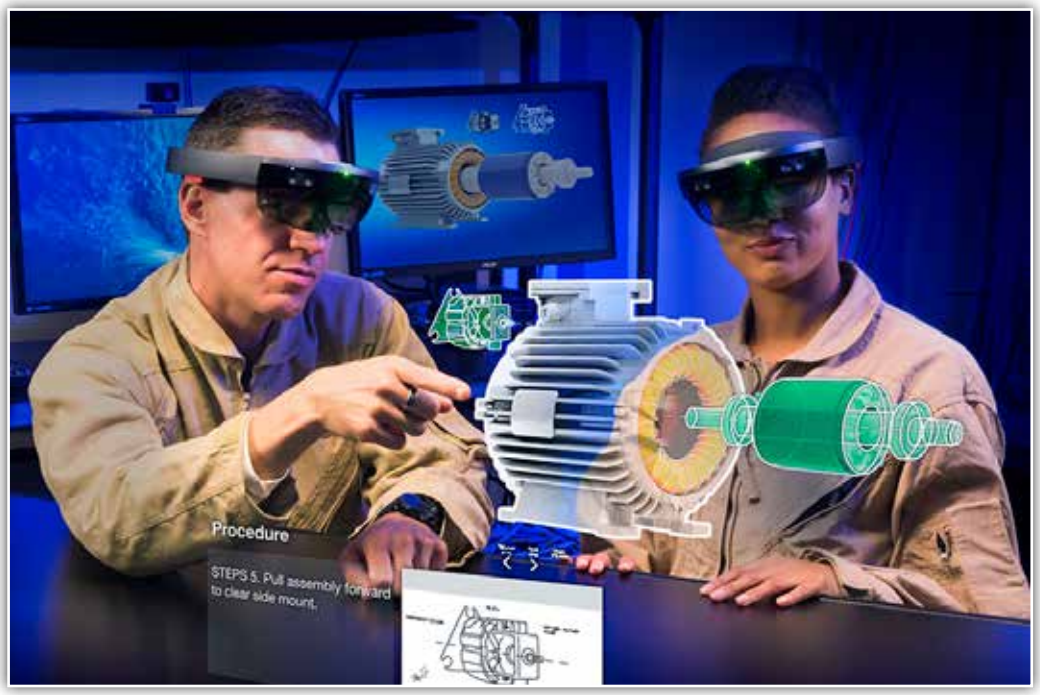
Glenn Gunzelmann, Ph.D.
RTG Member U.S. Air Force Research Laboratory (United States)

Peder Sjolund, Ph.D.
RTG Member, Skydome (Sweden)

Ian Greig, Ph.D.
RTG Member, Defence Science and Technology Laboratory (United Kingdom)

Dexter Fletcher, Ph.D.
RTG Member, Institute for Defense Analyses

LTC Vincent Capaldi, M.D.
RTG Member, Walter Reed Army Institute of Research



In this Special Event, we showcase the North Atlantic Treaty Organization (NATO) Research Task Group (RTG) focused on the assessment of human performance oriented augmentation technologies. The event will start with a short engagement with the RTG to review task group objectives, followed by an overview of the innovative technologies that will be showcased. We provide an interactive forum to demonstrate current trends in augmentation technology in the context of human performance. This will involve hands-on demonstrations of eight current and emerging technologies that interact with and stimulate user(s) perceptual systems resulting in higher learning, performance, retention, and/or transfer. As a participant in the Special Event, you will have a chance to engage directly with RTG members and I/ITSEC attendees in this focused context. The event will be documented and included as a chapter in the RTG final recommendation report.

Technology Demonstrations:

- Madigan Army Medical Group *(Kyle Couperus)*
- Design Interactive *(Luke Devore)*
- NeuroTracker *(Scott Kozak and Lee Sidebottom)*
- Modest Tree Media *(Sam Sannandeji and Emily Smits)*
- Intelligent Automation *(Bob Pokorny, Chad Zalkin, Jeff Kish and Lisa Holt)*
- Soar Technology *(Alyssa Tanaka)*
- Charles River Analytics *(Caroline Kingsley, Arthur Wollocko and Michael Jenkins)*
- HTC Vive *(Amy Peck and Frank Black)*
- Skydome *(Peder Sjolund)*
- University of Central Florida METIL *(David Metcalf, Tim Welch, Michael Eakins)*
- Microsoft/Insight Enterprise *(Matt Fedorovich and David Eager)*

Session Chair: Craig Langhauser, Collins Aerospace

TUESDAY, 3 DECEMBER • 1400 – 1530 • ROOM S329 • COI1

Conceptual Modeling of Adaptive Instructional Systems (IEEE Project 2247.1)

This event is intended to expose the I/ITSEC community to IEEE learning technology activities in the area of conceptual modeling of Adaptive Instructional Systems (AISs), which are artificially-intelligent, computer-based systems that guide learning experiences by tailoring instruction and recommendations based on the goals, needs, and preferences of each individual learner or team in the context of domain learning objectives. AISs include learning technologies that include intelligent tutoring systems (ITSs), intelligent mentors (recommender engines), and intelligent instructional media.

Members of the IEEE Project 2247.1 standards activities are reviewing existing and emerging learning technologies to classify the components, features, and processes of AISs. In other words, what makes an AIS an AIS?

This panel will discuss AIS ontologies and terms of reference. Panelists will advocate for schemes to model AISs at various levels of detail and will discuss AISs as self-improving instructional technologies that can tailor learning and development experiences to meet the goal, needs, and preferences of each individual learner or group of learners.

Panel members represent Industry and Academic Research perspectives on AISs and draw on decades of work designing, building and evaluating a wide range of AISs for training and education applications.

Potential AIS consumers will learn about the potential of current AISs and expectations for future capabilities to make AISs an effective and affordable solution for training and educational domains.

AIS developers will gain perspective on the range of AIS capabilities and design issues that will enable customers to exploit the power of AISs.

View panelist papers through the I/ITSEC 2019 Mobile App.

Moderator

Robert Sottilare, Ph.D.
Science Director, Intelligent Training, Soar Technology

Panelists

Xiangen Hu, Ph.D.
Professor of Psychology, University of Memphis
Dean, School of Psychology, China Central Normal University

Randolph Jones, Ph.D.
Senior Artificial Intelligence Engineer, Soar Technology

Andrew Hampton, Ph.D.
Assistant Professor, Institute for Intelligent Systems, University of Memphis Secretary, IEEE Project 2247

Session Chair: Marty Bink, University of Georgia

TUESDAY, 3 DECEMBER • 1600 – 1730 • ROOM S329 • COI2

The European Perspective on Battlelabs and the Role of Simulation

Battlelabs are used to provide insight in current and future military operations and develop new systems and operational concepts. The challenges of a complex mission environment lead to increasing use of simulation as a cost-effective technology for Battlelabs.

The European Training and Simulation Association (ETSA, the European voice of the modelling, simulation, and training community) has invited representatives from several European armed forces to discuss the national vision on the use of Battlelabs and the role of Simulation. The presenters will provide an overview of current capabilities and share examples of Battlelab applications that leverage the advantages of simulation. The evolution and mid-term plans will be discussed as well as the partnerships (NATO, EDA, R&D, Industry) that are in place or desired to further develop Battlelab simulation capabilities.

The ETSA special event panel session will engage with the audience on the way ahead towards interoperable Battlelabs and discuss how to engage with ETSA and leverage its partnership agreements with NTSA, EDA and Industry.

Moderator

Wim Huiskamp
Chief Scientist, Modelling, Simulation and Gaming TNO, Defence Research, ETSA Board Member (The Netherlands)

Panelists

Andy Smith
ETSA Chairman, Halldale (United States)

Colonel Jean Marchal
Colonel (Armament) Direction Générale de l'Armement (France)

Andrew J. Fawkes
Independent Consultant and Engineer, Thinke Company, (United Kingdom)

LtCol Peter van Onzenoort
M&S Expert, Airforce Aerospace Battle Lab (CABL), Royal Netherlands Army (The Netherlands)

Lesley Jacobs
Senior Scientist, Military Operations, Training and Simulation, TNO Defence Research (The Netherlands)

Session Chair: Leslie Dubow, VHA EES

WEDNESDAY, 4 DECEMBER • 0830 – 1000 • ROOM S329 • COI3

Adaptive Instructional System Interoperability Standards (IEEE Project 2247.2)

This event iwill to expose the I/ITSEC community to IEEE learning technology activities in the area of interoperability and reuse of Adaptive Instructional Systems (AISs) and AIS components. AISs are artificially-intelligent, computer-based systems that guide learning experiences by tailoring instruction and recommendations based on the goals, needs, and preferences of each individual learner or team in the context of domain learning objectives. AISs include learning technologies that include intelligent tutoring systems (ITSs), intelligent mentors (recommender engines), and intelligent instructional media.

This event provides an intersection of a large professional society (IEEE) and activities related to I/ITSEC professional disciplines.

This will provide insight to the I/ITSEC audience regarding:
- Learning engineering as an academic and career field
- Learning-technology, international development efforts
- Learning-technology, international standards
- Brings new learning scientists and engineers to I/ITSEC

View panelist papers through the I/ITSEC 2019 Mobile App.

Moderator

Keith Brawner, Ph.D.
Senior Engineer, Army Combat Capabilities Development Command Soldier Center

Panelists

Roger Azevedo, Ph.D.
Professor and Lead Scientist, Learning Sciences and Educational Research, University of Central Florida

Winston "Wink" Bennett, Ph.D.
Readiness Science and Technology Product Line Leader, U.S. Air Force Research Laboratory

Richard Tong
Chief Architect and General Manager, U.S. Operations Squirrel AI Learning by Yixue Group

Session Chair: Randy Jensen, Stottler Henke Associates Inc.

WEDNESDAY, 4 DECEMBER • 1030 – 1200 • ROOM S329 • COI4

Learning Engineering: A New Academic Discipline and Engineering Profession

This event provides an intersection of a large professional society (IEEE) and activities related to I/ITSEC professional disciplines. The goal of this panel is to develop recommendations regarding learning engineering as an academic and career field.

Schools, colleges, and training departments are deploying more and more new technologies with the goal of improving learning and training effectiveness. The quantity and diversity of these technologies, and the increasingly ambitious pedagogical innovations being explored, has created a demand for engineers with special training in how people learn and how technology is used. These are called learning engineers. The panelists will share their ideas about why learning engineers are needed, what a learning engineer must know, the problems learning engineers solve, and how this will impact the Government training, education, and simulation community.

This will provide insight to the I/ITSEC audience regarding:
- Learning sciences, simulation, training, education, human factors
- Learning engineering as an academic and career field
- Learning-technology, international development efforts
- Learning-technology, international standards

View panelist papers through the I/ITSEC 2019 Mobile App.

Moderator

Avron Barr
Adjunct Staff, Institute for Defense Analyses Chair

Panelists

Shelly Blake-Plock
President and Chief Executive Officer, Yet Analytics, Inc.

Robby Robson, Ph.D.
Chief Executive Officer, Eduworks, Inc. & IEEE Board of Governors

Dylan Schmorrow, Ph.D.
Chief Scientist and Executive Vice President, Soar Technology

Michelle Barrett, Ph.D.
Vice President, Research Technology, Data Science, and Analytics, ACT Inc.

Session Chair: Andrew Koch, NAWCAD

Best Practices for the Evaluation of Adaptive Instructional Systems (IEEE Project 2247.3)

This event is intended to expose the I/ITSEC community to IEEE learning technology activities in the area of recommended practices for the evaluation of Adaptive Instructional Systems (AISs) which are artificially-intelligent, computer-based systems that guide learning experiences by tailoring instruction and recommendations based on the goals, needs, and preferences of each individual learner or team in the context of domain learning objectives. AISs include learning technologies that include intelligent tutoring systems (ITSs), intelligent mentors (recommender engines), and intelligent instructional media.

As AISs proliferate and interest in such systems grows, there is notable variation in providers' claims about the features of their AISs. Potential consumers now have to sort out answers to question such as: What is an AIS? What makes AISs good, or better than other learning support mechanisms? What makes one AIS better (or more appropriate to some application) than another AIS? How does a consumer find or generate answers to questions like these?

This panel will discuss guidelines and standards for conveying to consumers useful information about the value of AIS products. That includes characterizing system features and the benefits they provide. It also includes characterizing overall system effectiveness—in some range of application contexts—at providing tangible measurable value. Such value might be in terms of improved learning outcomes, cost efficiencies, or other desirable attributes. Panelists will advocate for schemes to conceptualize, collect, present, and interpret information on AIS capabilities and performance.

Panel members represent Government, Industry, and Educational Research perspectives on these questions, drawing on decades of work commissioning, designing, building and evaluating a wide range of AISs for education and training applications.

Potential AIS consumers will learn more about what to expect from an AIS, and how to tell whether any particular offering is likely to provide the kinds of benefits required for their application.

AIS developers will gain perspective on the range of issues that matter in real applications, and how to informatively position their offering in the evolving marketplace.

View panelist papers through the I/ITSEC 2019 Mobile App.

Moderator

Eric A. Domeshek, Ph.D.
AI Project Manager , Stottler Henke Associates, Inc.

Panelists

Sowmya Ramachandran, Ph.D.
Principal Research Engineer, Stottler Henke Associates, Inc.

Natalie B. Steinhauser
Senior Research Psychologist ,Naval Air Warfare Center Training Systems Division

Louise Yarnall, Ph.D.
Senior Research Social Scientist
Center for Education Research & Innovation
SRI Education

Session Chair: Timothy Quiram, U.S. Coast Guard

THURSDAY, 5 DECEMBER • 0830 – 1000 • ROOM S310C • COI6

Simulation Standards and SISO

Standards provide a proven method for increasing interoperability and reducing time and cost to deliver effective solutions. This is especially true in areas like modeling, simulation, and training where a mix of existing and/or newly developed components often need integrating.

M&S standardization leads from the US DoD, NATO, and the Simulation Interoperability Standards Organization (SISO) will describe their standardization processes. You will hear from leads and proponents of three SISO standards at different points in the standardization process—concept exploration for a new standard, a recently published standard, and a well-established, supported standard.

You will gain renewed appreciation for the value of standards and a deeper understanding of how they are developed, adopted, supported, and maintained. If you attended last year, plan to attend again this year. US DoD, NATO, and SISO standards program information will be updated and a different set of standards will be covered this year.

Moderator

Roy Scrudder
Program Manager, Applied Research Laboratories, The University of Texas at Austin

Panelists

Brian Miller
Associate Director, Defense M&S Coordination Office

Wim Huiskamp
Chief Scientist, Modelling, Simulation and Gaming
TNO Defence Research (Netherlands)

Katherine L. Morse, Ph.D., CMSP
Principal Professional Staff, Johns Hopkins University, Applied Physics Laboratory (JHU/APL)

Randy Saunders
Principal Professional Staff
JHU/APL

Lt Col Stefan Ungerth
Head, Air Force Air Combat Simulation Center
Swedish Defence Research Agency

David Drake
Senior Professional Technical Staff, JHU/APL

Michael O'Connor
Chief Technologist, Trideum Corporation

David Taylor
Senior Staff Systems Engineer, Lockheed Martin Missiles and Fire Control

Charles Turnitsa, Ph.D.
Assistant Professor, Engineering & Computer Science, Regent University

Bill Lademan, Ph.D.
Director, USMC Wargaming Division, Marine Corps Warfighting Laboratory

Session Chair: Leigh Yu, OSD

THURSDAY, 5 DECEMBER • 1030 – 1200 • ROOM S310C • COI7

Geospatial Forum

The Geospatial Forum provides a unique opportunity for geospatial stakeholders and database producers to meet with leaders in geospatial standardization, and geospatial dataset consumers and suppliers to discuss goals and challenges; and explore emerging technology, standards and services to reduce data production times to empower the agile force. This year we are expanding on the development and use of geospatial standards for models and simulations that support the warfighter.

The transition to open consensus-based standards for geospatial data creates opportunities for modeling and simulation systems to reduce technology risk by:

Reduce technology risk by:
- Improving interoperability through convergence on data standards
- Broadening choice of solutions to a growing list of commercial products
- Increase efficiency and effectiveness through:
  - » Rapid integration of information, technology and authoritative data
  - » Taking advantage of advancements in data storage, computing, and visualization capabilities.

Opening Comments

Randy K. Jackson
Chief of Mission Preparation, U.S. Special Operations Command

Moderator

Scott Schutzmeister
Senior Research Analyst, Defense Modeling and Simulation Coordination Office

Panelists

Earl Miller
Branch Chief, Special Operations Forces Planning, Rehearsal, and Execution Preparation, U.S. SOCOM

Tom Creel, Ph.D.
SFN Executive, National Geospatial Intelligence Agency

David Graham
Chair, Common Data Base Standards Working Group, Open Geospatial Consortium

Glen Quesenberry
Army Geospatial Center

Lilian Campbell-Wynn, Ph.D.
Advisor, LVC Operations, Air Force Agency for Modeling and Simulation

Session Chair: Richard Grohs, USAF, HQ ACC/A5T

TUESDAY, 3 DECEMBER
1600 – 1730
ROOM S330EF

PB1

Air Force Acquisition Update

Session Chair:
Rob Lechner,
The Boeing Company

This Special Event will provide the latest information from the Air Force regarding acquisition policy and upcoming training system acquisition actions. It will feature remarks by Mr. Paul Waugh, the Air Force Program Executive Officer for Agile Combat Support, who will share his perspective on the current state of the Air Force acquisition process and ongoing initiatives, as they apply to the I/ITSEC community. This will be followed by a presentation by Col Philip Carpenter, Senior Material Leader, Simulators Program Office. He will provide an update on Air Force simulator business opportunities, as a follow-on to the Simulation and Training Community Forum (STCF) held earlier this year. The session will be two briefings followed by Q&A.

Moderator

Tony DalSasso
Engineering Technical Advisor
Simulators Program Office

Panelists

Mr. Paul Waugh, SES
Program Executive Officer
Agile Combat Support Directorate

Colonel Philip Carpenter
Senior Materiel Leader
Simulators Program Office

WEDNESDAY, 4 DECEMBER
0830 – 1000 AND
1600 – 1730
ROOM S330BCD

PB2

U.S. Army PEO STRI TSIS Update

Session Chair:
Amy Motko,
Carley Corporation

The U.S. Army Program Executive Office for Simulaiton, Training, and Instrumentation (PEO STRI) Training and Simulation Industry Symposium (TSIS) updates at I/ITSEC will provide the latest information regarding the current and future PEO STRI business opportunities. This will be updated from the June 2019 TSIS and will include presentations from the Project Managers, International Program Office (IPO) and the Army Contracting Command-Orlando.

Moderator

Donna Veil
G3/G5 Plans and Strategy, U.S. Army PEO STRI

WEDNESDAY 4 DECEMBER • 0830 – 1000

0830 - 0845 Tim Bishop
Deputy Program Executive Officer Simulation, Training and Instrumentation

0845 - 0910 Colonel Scott McLeod, USA
Project Manager, Soldier Training (PM ST)

0910 - 0935 Colonel Marcus Varnadore, USA
Project Manager, Synthetic Environment (PM SE)

0935 - 1000 Colonel Corey Hemingway, USA
Project Manager Cyber, Test, and Training (PM CT2)

WEDNESDAY 4 DECEMBER • 1600 – 1730

1600 - 1625 Dale Whittaker
International Programs Office (IPO)

1625 - 1650 Mike Harris
Army Contracting Command-Orlando

THURSDAY, 5 DECEMBER
0830 – 1000
ROOM S330EF

PB3

Navy Vision from the Training System's Program Offices

Session Chair:
John Hodak, NAWCTSD

Each year at I/ITSEC, a panel of Navy captains and senior civilian leaders representing the Navy's training acquisition organizations convenes to discuss the year's highlights and share their strategic vision. I/ITSEC participants are welcome and encouraged to attend to hear about the state of the Navy's Training Systems.

Moderator

Mike Merritt
Acquisition Director, Naval Air Warfare Center Training Systems Division

Panelists

Captain Tim Hill, USN
Command Officer. Naval Air Warfare Center Training Systems Division

Captain Lisa Sullivan, USN
Program Manager, Naval Aviation Training Systems NAVAIR PMA-205

Robert Kerno
Program Manager, Naval Surface Training Systems, NAVSEA PMS-339

Jimmy Lee
Director of Submarine Training, NAVSEA O7TR

Industry Days

U.S. Air Force

Training Systems Acquisition (TSA) IV
Monday, 2 December • 1500 – 1700 • Room S329

KC-10 Training System
Wednesday, 4 December • 1300 – 1400 • Room S230C

C-5 Training System
Wednesday, 4 December • 1430 – 1530 • Room S230C

C-17 Training System
Wednesday, 4 December • 1600 – 1700 • Room S230C

Man-In-The-Loop (MITL)
Thursday, December 5 • 0900 – 1200 • Room S230C

U.S. Army

Synthetic Training Environment (STE) Update to Industry
Monday, 2 December • 1300 – 1430 • Room S330EF

Cyber Resiliency and Training
Monday, 2 December • 1500 – 1630 • Room S330EF

Building the Network to Deliver STE
Monday, 2 December • 1500 – 1600 • Room S230D

Training and Readiness Accelerator (TReX) Overview and Update
Tuesday, 3 December • 1000 – 1100 • Room S230D

Virtual Training Systems Competitive Opportunities Update
Tuesday, 3 December • 1100 – 1200 • Room S230D

Future Army System of Integrated Targets (FASIT) Technology Working Group
Tuesday, 3 December • 1300 – 1500 • Room S230D

STE: Improving Realism in Live and Virtual
Wednesday, 4 December • 1145 – 1245 • Room S230D

Live Training Transformation (LT2) Marketplace - How Industry Can Participate
Wednesday, 4 December • 1300 – 1400 • Room S230D

Future Army System of Integrated Targets (FASIT) Program of Record Introduction
Wednesday, 4 December • 1400 – 1500 • Room S230D

U.S. Marine Corps

Advanced Small Arms Lethality Trainer (ASALT)
Monday 2, December • 1300 – 1400 • Room S230B

Wargaming
Tuesday, 3 December • 1300 – 1400 • Room S230B

Trackless Mobile Infantry Target (TMIT) 1:1 Sessions
Wednesday, 4 December • 1300 – 1430 • Room S230B

Combat Vehicle Training Systems Version 3.0 (CVTS 3.0), Advanced Gunnery Training System (AGTS)
Wednesday, 4 December • 1445 – 1545 • Room S230B

INTERNATIONAL ATTENDEES - INTERNATIONALE TEILNEHMER - LES PARTICIPANTS INTERNATIONAL INTERNATIONAL DELTAKERE - INTERNATIONELL DELTAGARE - INTERNATIONAL DEELNEMERS

International Pavilion

ROOM S310E-H

International attendees can meet and connect with counterparts from around the world. Limited private meeting space is available on a first-come, first-served basis to our international participants and may be scheduled at the International Pavilion's Welcome Desk. Additional information about the many international activities throughout I/ITSEC is readily available in the International Pavilion.

International registrants should register at the dedicated international check-in station positioned near the main registration desk in the south concourse. International conference attendees' meeting bags will be available for pick-up at the main registration desk this year. Other materials of interest for international attendees will be available in the International Pavilion.

International Pavilion sponsored by Bohemia Interactive Simulations.

International Pavilion Hours of Operation

Monday, 2 December	0800-1800
Tuesday, 3 December	1030-1800
Wednesday, 4 December	0800-1500
Thursday, 5 December	0800-1500

Program Notes of Special Interest For International Attendees

Papers

Explore your Program for the ✈ indicating Papers from International Authors.

Tutorial

Monday, 2 December • Room S320D • 1430-1600

Introduction to HLA (1916)

INTERNATIONAL ATTENDEES - INTERNATIONALE TEILNEHMER - LES PARTICIPANTS INTERNATIONAL INTERNATIONAL DELTAKERE - INTERNATIONELL DELTAGARE - INTERNATIONAL DEELNEMERS

PAPERS / FOCUS EVENT

Best from Around the Globe

FE2 • Tuesday, 3 December • 1400 – 1530 • ROOM S320D

(See page 28 for more information)

Come hear the award winners from MODSIM World and ITEC offer their outstanding presentations from two prestigious international conferences.

COMMUNITY OF INTEREST

The European Perspective on Battlelabs and the Role of Simulation

Tuesday, 3 December • 1600 – 1730 • ROOM S329

(See page 40 for more information)

Battlelabs are used to provide insight in current and future military operations and develop new systems and operational concepts. The challenges of a complex mission environment lead to increasing use of simulation as a cost-effective technology for Battlelabs. The European Training and Simulation Association (ETSA), "The European Voice" of the Modelling, Simulation & Training community, has invited representatives from several European armed forces to discuss the national vision on the use of Battlelabs and the role of simulation. The presenters will provide an overview of current capabilities and share examples of Battlelab applications that leverage the advantages of simulation. The evolution and mid-term plans will be discussed as well as the partnerships (NATO, EDA, R&D, Industry..) that are in place or desired to further develop Battlelab simulation capabilities. The ETSA Special Event panel session will engage with the audience on the way ahead towards interoperable Battlelabs and discuss how to engage with ETSA and leverage its partnership agreements with NTSA, EDA and Industry.

SIGNATURE EVENT

The Impact of Data and Simulations for the 21st Century Warfare

Wednesday, 4 December • 0830 – 1000 • ROOM S310AB

(See page 20 for more information)

Our troops have more data available than ever before. Just think of the vast quantity of imagery, terrain data and intelligence data – whether collected "traditionally" or through harvesting open sources like social media. Data is regularly a lot more expensive than the simulator or command & control system using the data – yet, defense organizations around the world focus their operations and maintenance efforts on the systems, not on the data. Data and information systems (including simulators and C2 systems) impact all aspects of 21st century defense from acquisition and training to operations and missions. This Special Event gives every warfighter, commander, system engineer, project manager and leader a true view on the value of data and what each and every one can do to really leverage data.

FOCUS EVENT

Multinational Perspectives on Live, Virtual and Constructive Implementation in Ops

Wednesday, 4 December • 1400 – 1530 • ROOM S330EF

(See page 35 for more information)

This Special Event will take a Multinational perspective on the planning and operational implementation of LVC in each of the countries. Given the breadth of LVC capabilities being fielded around the world, this event will highlight some of these and provide an opportunity for each national subject-matter-expert (SME) to share their unique plans, implementations and experiences to date and offer lessons learned that are both common and unique to their applications and their armed forces.

SIGNATURE SESSION

Improving Joint and Multinational Simulation Interoperability

Thursday, 5 December • 0830 – 1000 • ROOM S310AB

(See page 25 for more information)

The participants in this Special Event represent organizations who are actively working toward a shared long-term goal of establishing a process for continuously improving simulation interoperability. Each panel participant has a different case study to discuss (Civil–military relations, Digitally Aided Close Air Support (DACAS), Globally Integrated Operations (GIO), Net Enabled Weapons (NEW)), but the challenges are all familiar to the audience. Together, we must work to make one-off events of simulation integration into persistent capability that can be shared across all Services and multinational partners.

FOCUS EVENT

New and Emerging Augmentation Technologies for Training and Operations within the NATO Alliance Nations

Thursday, 5 December • 1330 – 1500 • ROOM S310C

(See page 39 for more information)

The NATO HFM-297 (Human Factors and Medicine) Research Task Group (RTG) is a three-year endeavour to review and analyze opportunities for moving new and emerging augmentation technologies from state-of-art to state-of-practice for training and operations within the NATO alliance nations. The goal of this I/ITSEC 2019 Special Event is to assist the RTG in baselining the state of the art and to provide an interactive forum to demonstrate current trends in augmentation technology in the context of human performance. This will involve identifying current and emerging technologies that interact with and stimulate user(s) perceptual systems resulting in higher learning, performance, retention and/or transfer.

Launch Pad

Exhibit Hall – Booth 793

The training, education, and simulation community will once again demonstrate their game-changing innovations to key government decision makers and procurement officials at I/ITSEC 2019. A panel of government and industry members selected the most innovative white papers via an objective, competitive process. The selected demonstrators employ technological innovations, re-define training and simulation processes, or create something entirely new that is going to change the way we train, simulate and educate.

The Launch Pad Special Event targets all I/ITSEC attendees, including select government acquisition stakeholders. Acquisition program leadership and Science and Technology divisions will be at I/ITSEC to assess the Launch Pad presentations' technology readiness levels. Speed to market is a key acquisition principle, and Launch Pad provides an opportunity to highlight technology that may be appropriate for rapid prototyping/rapid fielding initiatives.

Tuesday, 3 December – Session 1 (Language Tools and Apps)		
1400	Using Artificial Intelligence Technology and Personalized Services for Optimized Dynamic Language Teaching and Learning	Ponddy Education, Inc.
1430	An App-based Approach for Reliably and Efficiently Bringing Users to Fluency in a New Language	Fluent Forever, Inc.
Tuesday, 3 December – Session 2 (Game Engine Tools)		
1600	One World SDK for Unity	SimBlocks LLC
1630	Physically Based Night Vision Goggle Sensor Simulation in Game Engine	Presagis
Wednesday, 4 December – Session 3 (Augmented/Virtual Reality Tool/Robotics)		
1400	Omni-Directional Treadmill	Infinadeck
1430	The Robot Operating System (ROS) and the Gazebo Simulation Environment	Huntington Ingalls Industries
Wednesday, 4 December – Session 4 (Augmented and Virtual Reality Tools)		
1600	Computer Vision on the Edge	MapBox, Inc.
1630	Disruptive Training Across the Spectrum of Use Cases Using Virtual Immersive Experiences	Enduvo

Professional Development

OPEN TO ALL ATTENDEES

I/ITSEC Tutorials are designed to serve three purposes:

① Provide foundational educational material, including material essential in preparation as a Certified Modeling & Simulation Professional (CMSP).

② Serve as a refresher and more advanced learning opportunity for those seeking to maintain their certification.

③ Bring topics of special interest in training, simulation and education to I/ITSEC attendees.

FOR YOUR CONVENIENCE, FOOD STATIONS ARE OPEN DURING MONDAY SESSIONS.

TUTORIALS SCHEDULE

✈ Tutorial from International author(s)

ROOM	TRACK/CHAIR	0830 – 1000	1245 – 1415	1430 – 1600
S320B	Track1: Cutting Edge Ramona Shires, ND	A Comprehensive Introduction to Medical Simulation (1910)	M&S Case Study Analysis: Design for Additive Manufacturing & 3D Printing (1920)	Location, Location, Location: Big data, Artificial Intelligence and Analytics in the Cloud (1936)
S320C	Track 2: LVC Michael O'Connor	Live, Virtual and Constructive (LVC) Simulation Interoperability 101 (1931)	Distributed LVC Event Integration and Execution Process (1911)	A Functional Approach to Distributed Network Architectures for LVC (1922)
S320D	Track 3: Architectures S.K. Numrich (Sue), Ph.D.	TENA/JMETC: Live-Virtual-Constructive Integration for Test and Training (1928)	Distributed Interactive Simulation (DIS) 101 (1937)	Introduction to HLA (1916)
S320E	Track 4: Think It Through Juliana Slye	Cybersecurity in LVC (1917)	Risk Management Framework: Cyber Security Compliance for Modeling, Simulation and Training Systems (1939)	Simulation Conceptual Modeling Theory and Use Cases (1943)
S320F	Track 5: M&S Fundamentals Mike Freeman	Introduction to DoD Modeling and Simulation (M&S) (1923)	Addressing the Challenges of Rigorous Simulation Validation (1941)	Design of Experiments: Applications for the Simulation Profession (1918)
S320GH	Track 6: Best Tutorials Lee Lacy	An Introduction to Cognitive Systems for Modeling & Simulation (1914)	Artificial Intelligence: Past, Present, Capabilities and Limitations (1919)	Superforecasting: Proven Practices for Leveraging Human Ingenuity (1921)

TRACK 1: CUTTING EDGE • 0830 - 1000 • ROOM S320B

A Comprehensive Introduction to Medical Simulation

(1910)

Simulation tools and techniques have been a part of acquiring medical knowledge and skills for over 4,000 years, with more scientific approaches emerging hand-in-hand with the European Renaissance. These devices were initially used as a means to convey homeopathic experience and the knowledge gained through cadaveric dissection. More recently, the devices have been computerized and restructured according to modern learning theories.This tutorial is a comprehensive overview of medical simulation to include "what's new", history, proposed system taxonomies, devices and techniques for representing external and internal anatomy and physiology for medical interventions, the role of team training, and criteria for current simulation accreditation programs. The tutorial concludes with a predictive view into the future of the devices and practices as outlined by forward thinkers in the field. This includes an understanding of the financial, cultural, and scientific forces which both aid and restrain the application of simulation in medicine.The story includes manikins, part-task trainers, surgical simulators, standardized patients, physical prostheses, team training events, and certifications. These categories are drawn from taxonomies initiated by the American College of Surgeons and the Society for Simulation in Healthcare. The tutorial concludes with a predictive view into the future of the devices and practices as outlined by forward thinkers in the field.

Presenters

ROGER SMITH, Ph.D., is currently the Chief Technology Officer for the AdventHealth Nicholson Center and previously served as the CTO for the U.S. Army PEO STRI. He holds a Ph.D. in Computer Science and a Doctorate in Management. He has published 3 textbooks on simulation, 12 book chapters, and over 100 journal papers. His most recent book is A CTO Thinks About Innovation.

DANIELLE JULIAN, M.S., is a Senior Research Scientist at AdventHealth's Nicholson Center. Her current research focuses on robotic surgery simulation and effective surgeon training. She is currently a Ph.D. student in Modeling and Simulation at the University of Central Florida where she previously earned an M.S. in Modeling and Simulation and a B.S. in Psychology.

TRACK 2: LVC • 0830 - 1000 • ROOM S320C

Live, Virtual and Constructive (LVC) Simulation Interoperability 101

(1931)

The tutorial is intended for decision makers who have recently come in contact with distributed simulation and need a top-level understanding of Live, Virtual and Constructive (LVC) interoperability and the supporting standards, technology and processes. The purpose of this tutorial is to provide managers the necessary insight needed to support intelligent decision making. The tutorial will discuss the various domains of the technology and how it can potentially relate to their LVC needs. The tutorial provides a relevant use case as the mechanism to explain the concepts and the solutions required to achieve success. The tutorial will not be an in-depth technology review of LVC interoperability yet will provide sufficient management-level insight into interoperability solutions and standards like Distributed Interactive Simulation (DIS), High Level Architecture (HLA), and the Test and Training Enabling Architecture (TENA) product line.

Presenters

KURT LESSMANN is the co-founder and Chief Technology Officer of Trideum Corporation headquartered in Huntsville, Alabama. For the 7th time in 2019, Trideum has made the Inc. 5000 list of the fastest-growing private companies in America. Trideum focuses on four core competencies: Live, Virtual and Constructive (LVC) Interoperability, Test & Evaluation (T&E), Training Solutions & Engineering Analysis. Mr. Lessmann has supported the Modeling and Simulation (M&S) and LVC communities for the past 25 years where he has been involved in interoperability standards development and deployment for DIS, HLA and TENA. His primary focus has been applying M&S and LVC technologies to enhance weapons system test and evaluation effectiveness. He is currently focusing on developing solutions that provide an operationally realistic distributed LVC environments that support weapon system cybersecurity vulnerability assessments. He holds a Bachelor of Aerospace Engineering Degree from Auburn University, lives in Huntsville, Alabama, with his wife of over 25 years and their three children.

DAMON CURRY has 30 years experience in the simulation industry specializing in distributed training systems, 3D visualization, and 3D terrain. He helped start several successful simulation industry companies and is presently Pitch Technologies' manager for business development in North America. Damon is co-inventor of a real-time image processing technique and a wireless video transmission method for virtual reality with one patent awarded and another patent pending. Prior to working in the simulation industry, he served 16 years with the US Air Force, including software engineering on cruise missiles and avionics engineering on the F-16. He is a graduate of The Ohio State University with a Bachelor of Science in Electrical Engineering.

TRACK 3: ARCHITECTURES • 0830 - 1000 • ROOM S320D

TENA/JMETC: Live-Virtual-Constructive Integration for Test and Training

(1928)

The Test and Training Enabling Architecture (TENA) and the Joint Mission Environment Test Capability (JMETC) program provide an advanced set of interoperability software, interfaces, and connectivity for use in joint distributed testing and training. This tutorial will provide information about the how TENA works and why it is important to the test and training communities, with some comparison to other interoperability architectures. TENA provides testers and trainers software such as the TENA Middleware — a high-performance, real-time, low-latency communication infrastructure that is used by training range instrumentation software and tools during execution of a range training event. The standard TENA Object Models provide data definitions for common range entities and thus enables semantic interoperability among training range applications. The TENA tools, utilities, adapters and gateways assist in creating and managing an integration of range resources. The current version of the TENA Middleware, Release 6.0.5, is being used by the range community for testing, training, evaluation, and feedback and is be used in major exercises in the present. JMETC is a persistent test and evaluation capability throughout the US DoD, connecting many test ranges together, including a bridge to the JTEN training network; a set of TENA-compliant software middleware, interfaces, tools, and databases; and a process for creating large distributed test events. The combination of TENA and JMETC gives testers and trainers unprecedented power to craft a joint distributed mission environment that forges the future for innovative testing and training.

Presenter

EDWARD T. POWELL, Ph. D., is a lead architect for the Test and Training Enabling Architecture. After receiving his Ph.D. in Astrophysics from Princeton University, he worked for the Lawrence Livermore National Laboratory performing simulation-based analysis. He moved to SAIC (now Leidos) in 1994, and participated as lead architect in some of the most complex distributed simulation programs in DoD, including the Joint Precision Strike Demonstration (JPSD), the Synthetic Theater of War (STOW), the Joint Simulation System (JSIMS). He then worked in the intelligence community on architectures for integrating large-scale diverse ISR systems. He has been the lead architect for TENA for fifteen years, and is currently working on expanding the applicability of TENA, and integrating TENA with broader DoD-wide Data Management and Big Data analysis systems. Currently, he owns his own consulting company specializing in Simulation and Systems Architecture and Engineering.

TRACK 4: THINK IT THROUGH • 0830 - 1000 • ROOM S320E

Cybersecurity in LVC

(1917)

Cyber adversaries have a vast array or tools and a keen sense of when to use each one for maximum effect. You may not be able to stop all attacks but, you can minimize risk and impact of threats by constraining adversaries' operational space. Given LVC's inherently connected nature and the increasing dependence on commercial technologies, cybersecurity is critical to training and simulation. The objective is to reduce any adversary's ability to operate in your environment. Network flow data provides a wealth of behavioral information useful in understanding operations and detecting abnormalities. Detailed flow information can enable pervasive visibility and effective cybersecurity from the endpoint, through the network, to the data center and to the cloud. An effective cybersecurity architecture will provide early warning to help get inside the attacker's timeline and then it will help block attacks to prevent damage, compromise, loss of information, or even operational and safety risks. It's also important to close the vulnerability and ensure that your system learns from the attack and strengthens defenses after an attack.The ability to collect flow data and contextual information about users, applications and devices enables the network to serve as a powerful security resource. Coupled with accurate and timely threat intelligence, new technology and techniques allow today's network infrastructure to leverage embedded security capabilities to enable the entire network, and even the data center, to serve as an invaluable security resource. Integration and communication between network control and security are absolutely essential.

Presenters

JOSEPH BEEL, is the Senior Defense Strategist at Cisco Systems, Inc. He develops and implements strategies to support the U.S. Department of Defense. He is a retired naval officer who was a helicopter pilot and acquisition professional serving in command in both the Naval Air Systems Command and Space and Naval Warfare Systems Command (now Naval Information Warfare Command).

KURT KOLLMANSBERGER, Mr. Kollmansberger is a network engineer with over 27 years of networking experience; the last 20+ years at Cisco Systems. He currently supports DoD customers and partners and also consults with other Federal agencies. He works with leading platform manufacturers and system integrators to enhance current DoD capabilities on airborne and sea/ground-based networks. He also works with test and training ranges on modernizing networks and building out support for LVC capabilities.

JOSH TURNER is a Technical Solutions Architect with Cisco Systems. He provides cybersecurity architect support to the U.S. Navy and U.S. Marine Corps. As a former Airmen in the U.S. Air Force, he has a strong grasp of how critical cybersecurity is to the overall mission to all MILDEPS. His cybersecurity experience includes Joint Interoperability Test Command and programs such as CANES, LCS, AEGIS and ADNS. He has a deep technical background in overall Comply to Connect for Network Access and Control, CsFC multi-party security integration, threat intelligence, secure tactical networks and cybersecurity training for the warfighters.

TRACK 5: M&S FUNDAMENTALS • 0830 - 1000 • ROOM S320F

Introduction to DoD Modeling and Simulation (M&S)

(1923)

This tutorial will describe the fundamental technologies, terms and concepts associated with Modeling and Simulation (M&S) and describe M&S development and application in the Department of Defense (DoD). The tutorial will cover various aspects of M&S including key M&S terms and concepts that describe M&S technology, development, and application. It will include: (a) M&S terminology and concepts used in the DoD; (b) M&S technology, architectures and interoperability protocols; (c) the processes for developing valid representations of DoD warfighting capabilities, threat capabilities, cyber, natural environment, complex systems, and human/organizational behavior. The attendee will become familiar with how M&S is used in the DoD for operational purposes - especially training and other areas of direct warfighter support; and the DoD M&S role in enabling key functions of the Department. This tutorial will identify key policies and procedures for DoD M&S, and present the critical role of Verification, Validation and Accreditation (VV&A) in ensuring that models and simulations meet the needs of their users. The tutorial will present the role of M&S Standards in the Defense Standardization Program, its role within the M&S framework, and its relationship with the Joint Information Enterprise (JIE) and cloud-based DoD IT. The tutorial will describe the characteristics and associated challenges of M&S applications within DoD functional areas with examples of: Training, Analysis, Acquisition, Test and Evaluation, Experimentation, Planning, and Intelligence. The tutorial will also identify accessible DoD M&S information resources and explain the role of the DMSCO as the focal point of DoD M&S information, practice, technology, and functional use.

Presenters

JOHN DALY is a senior engineer with Booz Allen Hamilton. He currently leads a team providing modeling and simulation technical and policy support to the Defense Modeling and Simulation Coordination Office. He has worked with OSD, Joint Staff, COCOM, Service, and DISA clients in the development of simulation systems for: training, acquisition, operational decision support, visualization of complex phenomena, testing, analysis, and operational simulation applications embedded in command and control systems.

JAMES E. COOLAHAN, Ph.D., is the Chief Technology Officer of Coolahan Associates, LLC, having retired from full-time employment at the Johns Hopkins University Applied Physics Laboratory (JHU/APL) He chaired the M&S Committee of the Systems Engineering Division of the National Defense Industrial Association from 2010 through 2016, and teaches courses in M&S for Systems Engineering in the JHU Engineering for Professionals M.S. program. He holds B.S. and M.S. degrees in aerospace engineering from the University of Notre Dame and the Catholic University of America, respectively, and M.S. and Ph.D. degrees in computer science from JHU and the University of Maryland, respectively.

TRACK 6: BEST TUTORIALS • 0830 - 1000 • ROOM S320GH

An Introduction to Cognitive Systems for Modeling & Simulation

(1914)

There are increasing requirements for automated reasoning abilities across the broad spectrum of modeling and simulation, as well as in battlefield information and control systems. Additionally, the cognitive capabilities that have been developed and tested in simulation are migrating to real-world systems. Cognitive systems represent a maturing computational approach to intelligence that can provide robust, scalable, and adaptive decision making. This tutorial provides an introduction to cognitive systems, concentrating on production system computation and high-level design of human-like reasoning systems. We draw examples and comparisons from existing cognitive systems, focusing on the tradeoffs between cognitive and non-cognitive modeling approaches. The tutorial content does not require any specialized knowledge, but some experience with software engineering or behavior modeling can be helpful. Attendees will learn to recognize problems that suggest cognitively based solutions, and they will be better able to assess risks, costs, and benefits of different approaches. This tutorial is targeted toward developers who might be interested in cognitive approaches to software engineering, as well as customers who have problems that may be amenable to a cognitive approach.

Presenters

RANDOLPH M. JONES, Ph.D.–Senior artificial intelligence engineer and co-founder at Soar Technology, is a leading developer of knowledge-rich intelligent agent software. He has been principal investigator for a variety of advanced R&D projects funded by ONR, ARI, DMSO, DARPA and other DoD agencies. He has held teaching and research positions at Colby College, the University of Michigan, the University of Pittsburgh and Carnegie Mellon University. His areas of research include computational models of human learning and problem solving, executable psychological models and full-spectrum intelligent behavior models. He earned a B.S. in Mathematics and Computer Science at UCLA and an M.S. (1987) and Ph.D. (1989) degrees from the Department of Information and Computer Science at the University of California, Irvine.

DYLAN SCHMORROW, Ph.D.–Chief Scientist at Soar Technology, leads the advancement of research and technology tracks to build intelligent systems for defense, government, and commercial applications that emulate human decision making in order to make people more prepared, more informed, and more capable. He also serves as a Potomac Institute for Policy Studies Senior Fellow, Editor of the Theoretical Issues in Ergonomics Journal, and the Technical Advisor for the Applied Human Factors and Ergonomics Conference Series. He is one of the nation's leading experts on national security research, technology, and policy related to information technology, medical research and human performance applications. Past service includes OSD, DARPA, NAWC, NRL, ONR, Naval Postgraduate School, and Executive Assistant to the Chief of Naval Research. Dr. Schmorrow holds a Ph.D. in Experimental Psychology from Western Michigan University, as well as M.S. degrees in Psychology and Philosophy. He retired from the U.S. Navy as a Captain in 2013, after 20 years of service.

TRACK 1: CUTTING EDGE • 1245 - 1400 • ROOM S320B

M&S Case Study Analysis: Design for Additive Manufacturing & 3D Printing

(1920)

Additive modes of product manufacturing, more commonly referred to as 3D Printing (3DP), are substantially altering the manner in which we approach subsystem component and design prototype conceptualization and generation. Lighter, stronger, and far more complex (i.e., both in terms of shape, and material) components can be achieved by leveraging these advanced technologies, and in a manner that is typically more process- and cost-efficient than traditional (subtractive) methods of manufacture. However, as these technologies continue to rapidly mature, the iterative pipeline between Conceptual Modeling, 3D digital Design, preliminary Rapid Prototyping, and end-product Manufacturing is continually evolving to improve process efficiency and overall rates of success. In this Tutorial, we feature four extensive 3DP Case Studies, each within separate domains of interest pertinent to Modeling & Simulation (M&S) (i.e., Military, Health Care, Aerospace, Entertainment) that emphasize the "Design for Additive Manufacturing (DFAM)" process pipeline. The Case Studies will be preceded by core introductory material for those new to Additive Manufacturing (AM) practice, including a targeted discussion of Fundamental printer, material, structural, and critically — COST considerations all interrelated to 3DP. Likewise, the associated impacts of emerging AM and 3DP technologies upon Training, Simulation, and Education — the three critical "pillars" of I/ITSEC — will be justified and emphasized throughout this emergent technology Tutorial.

Presenters

SOURABH SAPTARSHI is currently working as a Development/Quality Engineer for the New Product Industrialization department at Sumitomo Rubber Industries USA, LLC. He received his Master's Degree in Industrial and Systems Engineering from University at Buffalo, SUNY, NY with specializing in manufacturing technologies. Sapatarshi has a bachelor's degree in Mechanical Engineering and current areas of interest include 3D Printing and Design for Manufacturing (DFM).

KEVIN F. HULME, Ph.D., CMSP, received his Ph.D. from the Department of Mechanical and Aerospace Engineering at the University at Buffalo, specializing in multidisciplinary analysis and optimization of complex systems. Dr. Hulme's current areas of technical focus include: game-based approaches for applied modeling and simulation (M&S), human factors research in autonomous and connected vehicles (both ground and flight), 3D Printing and Design for Additive Manufacturing (DFAM), and applied M&S and experiential learning within next-generation engineering curriculum design. In November of 2015, Dr. Hulme became a Certified Modeling and Simulation Professional (CMSP).

TRACK 2: LVC • 1245 - 1400 • ROOM S320C

Distributed LVC Event Integration and Execution Process

(1911)

Integration and execution of large distributed Live, Virtual, Constructive (LVC) events consume substantial time and resources. While the underlying distributed LVC technologies are mature, the processes for integrating events are not. The IEEE Std 1730-2010 Distributed Simulation Engineering and Execution Process (DSEEP) standard presents a process model for the development of an event. However, the user still has to instantiate the process and develop artifact templates. Based on the experience of the integration and execution of many distributed LVC events, an instantiation of two of the seven DSEEP steps has been developed. This tutorial provides a detailed set of processes, templates, and guidance on how to perform step 5 Integration and Test Simulation Environment and step 6 Execute Simulation steps. The tutorial also describes how the products produced in the first 4 steps are used the subsequent steps. The process covers the integration of simulations and tactical systems to meet the objectives of the LVC event.This tutorial is beneficial for anyone involved in the integration and execution of large distributed events. The tutorial is particularly beneficial for engineers tasked with planning and executing distributed events. The tutorial does not require knowledge of the DSEEP standard.

Presenters

MICHAEL J. O'CONNOR is Chief Technologist at Trideum Corporation. Mr. O'Connor has more than 25 years' experience in Modeling and Simulation (M&S). He has been a key participant in the development of distributed modeling and simulation standards, including IEEE 1278 and IEEE 1516. He has held many positions in the community, including Chairman of the SISO Standards Activities Committee and is currently the Chairman of the SISO Executive Committee. He has served as the chair of the I/ITSEC Simulation Subcommittee the I/ITSEC Training Subcommittee. He has led the development of multiple simulations using DIS, HLA, and TENA. Mr O'Connor has led the technical integration of several large multi-architecture distributed events. He holds a bachelor's degree in Computer Engineering from Auburn University, and a master of science in Computer Science from the University of Alabama in Huntsville. Mr. O'Connor is a CMSP.

KENNETH G. LeSUEUR, Ph.D., serves as the chief technologist of the Modeling & Simulation Division at the U.S. Army Redstone Test Center (RTC). His work and research have been concentrated in HWIL testing, distributed testing, modeling and simulation, and high performance computing. He received his master's degree and doctorate in computer engineering at the University of Alabama in Huntsville.

TRACK 3: ARCHITECTURES • 1245 - 1400 • ROOM S320D

Distributed Interactive Simulation (DIS) 101

(1937)

The Distributed Interactive Simulation (DIS) protocol is a well-established IEEE standard for packet-level exchange of state information between entities in military simulations. DIS facilitates simulation interoperability through a consistent over-the-wire format for information, widely agreed upon constant enumeration values, and community-consensus semantics.Anyone can obtain the IEEE-1278 standard and implement their own compliant, interoperable, DIS application. A large variety of tools and codebases simplify this effort, and enable multi-architecture integration of simulations using the DIS stand baseline. DIS focus begins with real-time, physics-based, entity-scale simulations, providing state update and interaction mechanisms which can scale to large virtual environments.This tutorial is a "DIS 101" introduction for software implementers and an introduction to the DIS philosophy for simulation systems integrators. Examples are provided using the open-source Open-DIS library for DIS v7 support, available in multiple programming languages. Ongoing work is included in WebRTC browser streaming, unit testing of DIS streams, and Web-based implementations using 2D maps and X3D Graphics.

Presenters

DON BRUTZMAN Ph.D., is a computer scientist and associate professor working in the Modeling Virtual Environments & Simulation (MOVES) Institute at the Naval Postgraduate School (NPS) in Monterey, California. A shared theme across all his projects is establishing Web-scale distributed simulation capabilities. Currently he co-chairs the Extensible 3D (X3D) Working Group for the Web3D Consortium. He wrote the book *X3D Graphics for Web Authors* with co-author Leonard Daly, published April 2007 by Morgan Kaufmann. He is a retired naval submarine officer and principal investigator for the Network Optional Warfare (NOW) project. His research interests include underwater robotics, real-time 3D computer graphics, artificial intelligence, and high-performance networking.

CHRISTIAN FITZPATRICK, Naval Postgraduate School (NPS)

TRACK 4: THINK IT THROUGH • 1245 - 1400 • ROOM S320E

Risk Management Framework: Cyber Security Compliance for Modeling, Simulation and Training Systems

(1939)

Cybersecurity, it is everywhere we look in today's world and when it comes to government systems it can seem like an extremely broad topic which evokes the fear of insurmountable regulations that ultimately provide little benefit. This tutorial aims to break the stigma surrounding Cybersecurity compliance as nothing more than a burdening nuisance and leave the audience with an understanding of the ultimate goals of the Risk Management Framework (RMF) and how it was designed to relieve excessive regulation and costs. The primary goal of Cybersecurity RMF compliance is to ensure the confidentiality, integrity and availability of government run systems, software, and data are upheld, enabling those systems to remain operational and available to support military missions. Such missions include simulation and training environments which are becoming increasingly more important to protect as the concept of force readiness becomes a priority for the world's militaries.This tutorial will focus on understanding the requirements for the Cybersecurity Risk Management Framework (RMF) and how it applies to modeling, simulation, and training systems. We will detail the need for Cybersecurity compliance, the key concepts, and why it is critical for military, government, and even civilian applications. The tutorial will then dive deeply into the regulations behind RMF and the certifications required for compliance. This will include where to find additional information and how to achieve those certifications, from both a government and contractor perspective.The tutorial will then explain the general process of approaching RMF compliance and how the Cybersecurity implementation plans are created and revised in the requirements gathering phase. Using these RMF requirements and concepts, the tutorial will then take it a step further and analyze the documentation deliverables associated with RMF, their purposes, and finally the government processes necessary to submit a system for an Authority-to-Operate decision. Attendees will gain a strong foundational understanding of the Cybersecurity Risk Management Framework and how to apply it in their own programs.

Presenters

DONALD LAWSON is Cybernet's Vice President of Cybersecurity and Training Systems with over 15 years of combined experience in software engineering, system integration/development, and cybersecurity compliance. He has a Bachelor's degree in Computer Science from the University of Central Florida along with a CISSP and Security+ certification. He has been instrumental in obtaining numerous Modeling, Simulation, & Training device Authority-to-Operate designations across most branches of the U.S. military and continues to propel the current state of cybersecurity accreditation forward by embracing the NIST Risk Management Framework (RMF) and the supporting technologies and processes required to successfully implement it.

CHARLES COHEN is Cybernet's Chief Technology Officer, and has been a technical lead and project manager in the fields of modeling and simulation, cybersecurity, image processing, sensors, robotics, human-computer interaction, and artificial intelligence for over a decade. At Cybernet, he has led projects for the U.S. DoD, NASA, Homeland Security, and other government agencies. His projects include work on simulation, training, visual surveillance, real-time optical pose determination, robotics, virtual reality, object identification, feature and body tracking, and human performance evaluation. He also currently serves on the I/ITSEC Tutorial Board. He has served for years as a member of the Simulation Interoperability Standards Organization, which facilitates interoperability across live, virtual, and constructive environments. He holds a Ph.D. in Electrical Engineering Systems from the University of Michigan.

TRACK 5: M&S FUNDAMENTALS • 1245 - 1400 • ROOM S320F

Addressing the Challenges of Rigorous Simulation Validation

(1941)

The process of validation is essential to the credible and reliable use of any simulation. Although Department of Defense policy and guidance increasingly emphasizes the importance of rigorous validation founded in the application of strong statistical analysis, implementation of rigorous validation continues to face multiple challenges. This tutorial will address several of those challenges:

- How to identify, collect, and combine validation referent data (what the simulation results will be compared to)
- How to identify the simulation measures and metrics to use as the basis of comparison (the aspects of the results that will be compared to the referent)
- Methods to apply when performing the results/referent comparison
- How to quantify risk and residual uncertainty associated with the application of the simulation

The tutorial will enhance the learning experience by incorporating lessons learned derived from the many VV&A applications with which the authors have been involved.

Presenters

SIMONE M. YOUNGBLOOD is a member of the Johns Hopkins Applied Physic Laboratory's Principal Professional Staff. Leveraging an extensive background in simulation development and credibility assessment, she has served as the DoD VV&A focal point for the past 25 years. Ms. Youngblood was the editor of the DoD VV&A Recommended Practices Guide and chaired the development of several VV&A related standards including: IEEE Standard 1278.4, IEEE Standard 1516.4 and MIL-STD 3022. Ms. Youngblood has served as the V&V and/or Accreditation agent for numerous M&S efforts that span a broad organizational spectrum to include: PEO IWS 1, the Defense Threat Reduction Agency (DTRA), the Domestic Nuclear Detection Office (DNDO), the US Naval Air Systems Command, and the U.S. Army Medical Research and Material Command. Ms. Youngblood has a B.A. in mathematics as well as B.S. and M.S. degrees in computer science.

MIKEL D. PETTY, Ph.D., is currently a Senior Scientist for Modeling and Simulation at the University of Alabama in Huntsville's Information Technology and Systems Center and an Associate Professor of Computer Science. Prior to joining UAH, he was Chief Scientist at Old Dominion University's Virginia Modeling, Analysis, and Simulation Center and Assistant Director at the University of Central Florida's Institute for Simulation and Training. He received a Ph.D. in Computer Science from the University of Central Florida in 1997. Dr. Petty has worked in modeling and simulation research and education since 1990 in areas that include verification and validation methods, simulation interoperability and composability, and human behavior modeling.

TRACK 6: BEST TUTORIALS • 1245 - 1400 • ROOM S320GH

Artificial Intelligence: Past, Present, Capabilities and Limitations

(1919)

Many in the political, industrial and defense communities are expecting current artificial intelligence to solve a wide array of problems in both defense and industry. This reaction is not surprising given that deep neural networks and deep learning systems have been remarkably successful at tasks long believed to require high levels of (human) intelligence. The availability of large amounts of appropriately labeled training data and the continued growth in sheer computing power permit the decades-old technologies to now reach impressive performance levels. These success stories beg answers to questions about the limits of performance and potential. The tutorial describes artificial intelligence in its historical context of boom and bust cycles. The AI discipline has a 60-year record of remarkable achievements that were followed by disillusionment ("AI Winters") when the technologies failed to satisfy popular expectations or generalize to wider application. The tutorial develops parallels between the current deep neural network requirements for success and those of previous intelligent technologies that were once inspiring but are now less widely used. The tutorial also examines the state-of-the-art of methods and tools for testing AI-enabled autonomous unmanned systems. The tutorial is open to any who would benefit from an overview of AI to develop an appreciation of the larger context surrounding current achievement. It is not intended to teach use of available deep learning utilities or to provide detailed information about constructing deep neural networks.

Presenter

ROBERT RICHBOURG, Ph.D. is a member of the Research Staff at the Institute for Defense Analyses. He is a retired Army officer with degrees in Mathematics and Computer Science (artificial intelligence). His final 10-year assignment of Army active duty was as an Academy Professor of Computer Science and Director of the Office of Artificial Intelligence Analysis and Evaluation at the United States Military Academy, West Point. He has over 20 years of M&S experience including service as chair of the I/ITSEC Tutorial Board, the I/ITSEC Simulation Subcommittee, the I/ITSEC Fellows Committee, and multiple SISO leadership positions.

ROBERT LUTZ is the Chief Engineer of the Intelligent Combat Platforms Group at the Johns Hopkins University Applied Physics Laboratory. He has 39 years of practical experience in the development, use, and management of models and simulations across all phases of the Department of Defense (DoD) systems acquisition process. Mr. Lutz currently serves in technical leadership positions on several autonomy science and technology programs. In addition, Mr. Lutz serves as the Chair of the Simulation Interoperability Standards Organization (SISO) Board of Directors and Vice Chair of the SISO Executive Committee, serves on the I/ITSEC Tutorial Board and Fellows Committee and is a guest lecturer on various M&S-related topics in The Johns Hopkins University Whiting School of Engineering.

TRACK 1: CUTTING EDGE • 1430 - 1600 • ROOM S320B

Location, Location, Location: Big data, Artificial Intelligence and Analytics in the Cloud

(1936)

Following last year's tutorial on Machines Crave Big Data that outlined Big Data, Machine Learning, and Artificial Intelligence, we continue the journey with a tutorial on developing and hosting analytics in the cloud. Cloud technology is rapidly changing the way the organizations design and operationalize their artificial intelligence projects and the DoD has begun small scale adoption with a massive enterprise cloud environment in the next year. These movements and changes will help revolutionize training, simulation, and education. In this tutorial, we will cover: options on hosting your analytic environments to include on-premise, public cloud, and private cloud; discuss advantages to adopting and operationalizing a cloud environment for your analytic needs; provide an overview of cloud architectures to support the whole life-cycle of analytics from the storage of data to abstraction layer for your analyst workforce; discuss open-source and cloud vendor analytics tool that can be deployed to help meet artificial needs around computer vision, natural language processing, and machine learning; provide real-life examples from the U.S. Army's Training and Doctrine Command (TRADOC) G-2 experiences with implementing cloud-based analytic solutions; and last but not least, we will provide an industry overview on future trends for the use of cloud technologies to enhance training, simulation and education.

Presenters

JOE ROHNER is a Director or Artificial Intelligence and Data Science and leads Booz Allen's Strategic Innovations Group on the West Coast where he is responsible for the development and application of advanced analytics solutions. In this role, Joe leads a growing team of more than 50 analytic professionals across San Diego, Los Angeles, Ventura, and Seattle. Joe has been responsible for executing efforts across the West coast in advanced analytics that have included the application of Data Science, AI, and Robotic Process Automation (RPA) for a range of Navy clients that resulted in significant insights and organization efficiencies. Additionally, Joe was recently selected to lead The Data Science Bowl®, presented by Booz Allen and Kaggle. This is the world's premier data science for social good competition. The 90-day online event brings together more than 20,000 data scientists, technologists, domain experts and organizations to generate solutions for the world's most pressing problems, such as human diseases and ocean health.

KAYE DARONE, U.S. Army Training and Doctrine Command, is the Lead for Data Science and the Deputy for Information Management at the TRADOC Directorate of Intelligence (G-2), headquartered at Ft. Eustis VA.

TRACK 2: LVC • 1430 - 1600 • ROOM S320C

A Functional Approach to Distributed Network Architectures for LVC

(1922)

Recent innovations within the networking industry are converging to greatly enhance the distributed simulation environment and set the foundation for achieving the full LVC objective state. Future distributed network architectures leverage hardware innovations that include converged compute, storage, and transport management functions and device virtualization that allows a single device to perform multiple roles i.e. routing, switching, and security appliances. Innovation in network and security operations include advances in software defined networking, development of agile identity and access management, and the incorporation of real-time network and security policy compliance and application performance visibility functions. Further, the use of National Security Agency approved Commercial Solutions for Classified voice and data transport simplify implementation of multi-level security operations inherent in distributed simulation and LVC.

Emerging network architectures and evolving operating practices create operational effects at a lower capital and operating cost. Resource utilization can be dynamically adjusted to suit the function at hand. During a simulation sequence, load surges can be distributed via to ensure quality of service required to achieve the realism demanded as hundreds, thousands, or tens of thousands of entities interact within physics-based models.

Automation and real-time security policy implementation support live, virtual, and constructive entity pairings in large-scale sessions. Automation is key to access and security policy compliance assurance that is a prerequisite for dynamically paired entity interactions taking place simultaneously on multiple levels including flight or ground path interaction, multi-spectrum signature representation, multi-spectrum detection representation, and multi-spectrum weapons and countermeasure interaction characteristics.

The future LVC network environment will effectively resemble a highly distributed high-performance computing center. Multiple networks will join together on a session basis to support high intensity, many-to-many interactions on multiple, segregated classification planes. In this environment, assuring the moment-by-moment integrity of the architecture and computational operations through multi-epoch scenarios is a must. Both are possible with visibility functions that continuously run checks and balances verifying the integrity of the simulation.

Presenters

CHUCK LOUISELL, Ph.D., is a strategic programs manager at Cisco Systems, Inc. A prior USAF Weapons School instructor and Unit Commander, Chuck works across data center and cloud product lines.

GRIMT HABTEMARIAM is the Federal Cloud Strategist for Cisco Systems Inc. She has held multiple roles throughout her career all focused on helping organizations leverage technology to transform their operation, improve their competitive posture and deliver new value. Grimt holds a BS in Computer Science from Meredith College and an MBA from Duke University.

CHUCK OTTS is a Data Center Product Specialist for the Federal-Defense Area at Cisco Systems, Inc. He primarily works with the US Air Force and System Integrators providing technical guidance on the future direction of data center architectures and software defined solutions. Chuck works with US Air Force customers helping to identify technical requirements and develop next generation modern network architecture designs that exploit the capability of converged and virtualized data center functions within a mission context. Most recently, he has guided the inclusion of distributed data center functionality in the networks that support recapitalization of unmanned aerial systems ground stations. Through his career at Cisco, Chuck has served both federal and commercial organizations.

TRACK 3: ARCHITECTURES • 1430 - 1600 • ROOM S320D

Introduction to HLA

(1916)

The High-Level Architecture (HLA) is the leading international standard for simulation interoperability. It originated in the defense communities but is increasingly used in other domains. This tutorial gives an introduction to the HLA standard. It describes the requirements for interoperability, flexibility, composability and reuse and how HLA meets them. It also describes the new features of the most recent version: HLA Evolved (IEEE-1516-2010) and the upcoming HLA version (HLA 4). Finally, it provides some recent experiences of the use of HLA in NATO M&S groups as well as an overview of recent evolution of Federation Object Models for military platform simulation. This tutorial is intended for all audiences; however, some familiarity with basic principles of distributed computing is recommended.

Presenters

BJÖRN MÖLLER is the president and co-founder of Pitch Technologies, the leading supplier of tools for HLA and other simulation standards. He received an M.S. in computer science and technology after studying at Linköping University and Imperial College, London. Mr. Möller has more than thirty years of experience in high-tech R&D companies, with an international profile in modeling and simulation. His experience includes positions in SISO and IEEE standards development groups such as vice chair for HLA, chair of the Real-time Platform Reference FOM and chair of the Space Reference FOM. Mr. Möller also served as secretary in the NATO MSG-080 group for Security in Collective Mission Training.

ROBERT LUTZ is the Chief Engineer of the Intelligent Combat Platforms Group at the Johns Hopkins University Applied Physics Laboratory in Laurel, Maryland. His background includes 39 years of practical experience in the development, use, and management of models and simulations across all phases of the Department of Defense (DoD) systems acquisition process. Mr. Lutz currently serves in technical leadership positions on several autonomy science and technology (S&T) programs, such as the Safe Testing of Autonomy in Complex Interactive Environments (TACE) project. In addition, Mr. Lutz serves as the Chair of the Simulation Interoperability Standards Organization (SISO) Board of Directors and Vice Chair of the SISO Executive Committee; serves on the Tutorial Board and Fellows Committee at the Interservice/Industry Training, Simulation, and Education Conference (I/ITSEC); and is a guest lecturer on various M&S-related topics in The Johns Hopkins University Whiting School of Engineering.

TRACK 4: THINK IT THROUGH • 1430 - 1600 • ROOM S320GH

Simulation Conceptual Modeling Theory and Use Cases

(1943)

Simulation conceptual modeling is a critical step in simulation development frequently overlooked in the rush to demonstrate program progress. A simulation conceptual model is an abstraction from either the existing or a notional physical world that serves as a frame of reference for further simulation development by documenting simulation-independent views of important entities and their key actions and interactions. A simulation conceptual model describes what the simulation will represent, the assumptions limiting those representations, and other capabilities needed to satisfy the stakeholder's requirements. It bridges between these requirements, and simulation design.This tutorial will present the theory and application of simulation conceptual modeling as documented during the research done by the NATO MSG 058. In addition, Use Cases that have been drawn from previous conference presentations will be presented to illustrate how conceptual modeling has been performed. Additional work is necessary to mature the state-of-the-art of simulation conceptual modeling before a recommended practices guide could be standardized. This tutorial has been created to continue the maturation of the simulation conceptual modeling best practices.

Presenter

JAKE BORAH is the co-owner of Borah Enterprises LLC. He is a Senior Simulations/Learning Architect for the U.S. Army PM ITTS Persistent Cyber Training Environment. Jake is a Charter Certified Modeling and Simulation Professional (CMSP). He has frequently supported U.S. and Canadian government sponsored military simulation projects because of his mastery of the M&S technology, and expertise in High Level Architecture federation development. Jake has a B.S. from the United States Air Force Academy and a Master of Aeronautical Science degree from Embry-Riddle Aeronautical University.

TRACK 5: M&S FUNDAMENTALS • 1430 - 1600 • ROOM S320E

Design of Experiments: Applications for the Simulation Profession

(1918)

The Department of Defense (DoD) is currently evaluating ways to accelerate acquisition and test and evaluation (T&E) in order to field more effective weapon systems sooner. DoD is also seeking ways to improve models of selected weapons systems in simulations for test and for training. Design of Experiments (DOE) can assist DoD in accelerating the development of combat systems, increasing precision, and improving the validity of simulations. DOE is used to calculate relatively accurate models of a system quickly, identify the most significant inputs (factors), and characterize how the system performs in the region modeled. DOE is used to improve the quality of consumer products or defense systems, find optimal solutions, and calculate settings to hit targets consistently. DOE is also used to accelerate the vulnerability scans and reduce the number of cybersecurity experts required to fully analyze a system's cyber threat landscape. DOE is a rapid modeling method that provides new types of information to simulation developers. This tutorial will discuss the upfront analysis steps for the DOE process, key benefits of using DOE, and typical use cases. These use cases include development of functional representations of systems in order to characterize how the systems perform within the region modeled. The tutorial will illustrate how DOE models can be used to define a relationship between inputs and outputs for the purpose of analysis, early prototyping, tradespace studies, simulation, evaluation, and optimization. For one radar system, DOE was shown to produce more information than any previous testing methods, while using only 10 percent of the previously-required test resources. This was truly a unique example of faster, better, and cheaper. Use cases such as model-based systems engineering, test and evaluation, cybersecurity, and validation of models will be discussed. There are no requirements for mathematical or statistical knowledge for attendees of this tutorial.

Presenter

STEVEN GORDON Ph.D., is the Orlando Field Office Manager and a Principal Research Engineer for Georgia Tech Research Institute. He served 26 years in the U.S. Air Force with tours as an F-111 Weapons Systems Officer, Instructor, and Wing Electronic Warfare Officer; Air Staff Division Chief; 13th Air Force Director of Operations and Air Operations Center Director; and Air Force Academy Department of Mathematics Professor and Head. He also served as the first Technical Director for the Air Force Agency for Modeling and Simulation. Dr. Gordon has a Bachelor's Degree in Mathematics (Marymount); Master's Degrees in Education (Peabody/Vanderbilt), Industrial Engineering/Operations Research (Purdue), and in Business (Florida); and a Ph.D. in Aero and Astro Engineering (Purdue). His research interests include return on investment for simulation-based training, tradespace tools for training systems, statistical techniques for test and evaluation, and decision support tools for military operations.

TRACK 6: BEST TUTORIALS • 1430 - 1600 • ROOM S320GH

Superforecasting: Proven Practices for Leveraging Human Ingenuity

(1921)

Those of us who work for the military in some capacity are well aware of the emphasis placed on lessons learned. There is great wisdom in the practice of reflecting on our experiences for building a better future in a complex world. When we truly learn a lesson, we incorporate it into our practices to advance our knowledge and capability, and to improve our simulation products. But what of lessons unlearned, those things we have tripped over, documented, forgotten and thus have tripped over again. Is there a role for them? What about our failures, the ones we hesitate to celebrate in papers and presentations? Are we neglecting a valuable resource? Are there other practices available to help us throughout the process of creating and using modeling and simulation for training (and other purposes as well)? Enter the notion of superforecasting. In 2010, the Intelligence Advanced Research Projects Agency (IARPA) issued a Broad Agency Announcement (BAA) entitled Aggregative Contingent Estimation (ACE) with the goal of dramatically enhancing the accuracy, precision and timeliness of intelligence forecasts for a wide range of event types. Among the participants, a newly developed program, the Good Judgment Project (GJP), aimed at harvesting the "wisdom of the crowd" while simultaneously examining the performance of participating individuals. About 2% of the 250 individuals in the "crowd" emerged as superforecasters who beat the benchmarks by as much as 30%. That result would be of little interest, except that superforecasting capability can be trained. The thrust of this tutorial is an examination of how the thought patterns for superforecasters could influence how we work as program managers, technologists and trainers to improve our products and perhaps contribute to training more effective, agile military leaders. And, yes, unlearned lessons are telltale symptoms of not thinking like superforecasters. But imagine where we could take our industry if we could improve by only 10% our ability to make better judgments and assess more accurately potential futures.

Presenter

S.K. NUMRICH (Sue), Ph.D., CMSP, has contributed to the science and technology of Modeling and Simulation for over 50 years. She began her career at the engineering level of modeling and simulation and moved gradually into parallel and distributed simulation. She was selected by the Office of Naval Research, to represent the Science and Technology (S&T) community as part of the Navy's Modeling and Simulation Management Office, a position that broadened her knowledge base to simulation used for training, acquisition, analysis and support to operations. She developed and led a panel for The Technical Cooperation Program (US, UK, CA, AUS, NZ) in distributed simulation as an area of international interest. She represented the U.S. on the NATO Studies, Analysis and Simulation (SAS) panel as the simulation expert. Her last three years as a civil servant, Sue served as the Director of Technology for the Defense Modeling and Simulation Office where she was exposed to simulation across the whole of the Department of Defense. Since 2005 she has been a research staff member at the Institute for Defense Analyses where she has contributed to studies in the use of military simulation, the incorporation of human activity and behavior into various types and levels of simulation, and the validation of a variety of simulations. Sue joined the I/ITSEC community as part of Simulation and later ECIT. She founded and was the first chair of the Tutorial Board, now a staple of I/ITSEC week. Along the way Sue became a Fellow of the Acoustical Society of America, was selected as the I/ITSEC 2018 Fellow, wrote four book chapters, over 50 technical papers and has two Academic appointments spanning twenty years.

ROOM	SESSION/CHAIR	1400	1430	1500
S320A	EC1 **Cyber: Build Once, Reuse Often** Scott Schutzmeister	A Cyberspace Electromagnetic Activities (CEMA) Framework for M&S (19193)	A Roadmap to Achieve Cyber Modeling & Simulation Interoperability (19314)	Simulate Effects of Cyberspace Electromagnetic Activities (CEMA) in Mission Command Systems (19257)
S320B	S1 **Simulation Architectures** Peter Swan	Assessing and Measuring Interoperability Between Multi-national Live Training Systems (19186)	Towards a Common Reference Architecture for Mission Training Through Distributed Simulation (19225) ✈	New Techniques for High-Fidelity Modeling and Simulation in 5G Mobile Network Environments (19322)
S320C	P1 **Collaboration: It Takes Two to Tango** Doug Parsons	A Tale of Two T's: Enabling Testing Through Reuse of Training Services (19356)	Raising The Standard – Industry And Government Working Together for Simulation Coherence (19187) ✈	With Uncertainty Comes Opportunity: Solving the DoD's Flash Problem (19305)
S320D	BP3 **Best from Around the Globe** Amanda Davies, Ph.D.	MODSIM World Best Paper: Simulation-Based Training's Incorporation of Machine Learning ✈	ITEC Best Paper: Making The Invisible Visible: Increasing Pilot Training Effectiveness By Visualizing Scan Patterns of Trainees Through AR ✈	
S320E	H1 **There's Reality and There's Virtual Reality** Scott Johnston	Optimizing Haptics within AR/VR Training Given Human Sensory Capabilities (19336)	Simulations to Train Buried Explosives Detection: A Pilot Investigation (19134)	Effects of Transparency Level, Controller Type and Visual Degradation on Performance Using Augmented Reality and Synthetic Vision (19272)
S320F	T1 **Enhanced Add-ons: Stories and Games** Robert Wallace	Game-based Learning to Enhance Post-secondary Engineering Training Effectiveness (19139)	Revolutionizing Formal School Learning with Adaptive Training (19215)	Game On: Storytelling Narrative Applied to Simulator-based Training (19363)

ROOM	SESSION/CHAIR	1600	1630	1700
S320A	EC2 **Learning Building Blocks** Tim Woodard	Building The World - Could AI Build Our Synthetic Environments? (19180)	Reinforcement Learning for Computer Generated Forces Using Open-Source Software (19197) ✈	Use of Natural Language Processing to Extract Technical Competency Frameworks from Maintenance Task Analyses (19255)
S320B	S2 **Synthetic Terrain Environments** Nina Deibler	Enhancing Situational Awareness Anywhere in the World with Geospatially Accurate Scene Simulation Using Automated "Real World" Content Generation (19112)	Reconfiguring Synthetic Environments as Inputs to Unity 3D (19277) ✈	Geospecific 3D Terrain Data Optimization Solutions for Game and Simulation Engines (19368)
S320C	P2 **What's Up in the Joint Integrated Training Environment** Steve Parrish	Overview of USMC Modeling and Simulation Office Policy Lessons Learned (19132)	Air Force Methodology for Overarching Joint Training Policy for Joint Interoperability (19262) ✈	Live-Virtual-Constructive Training Environment Analysis of Alternatives Lessons Learned (19135)

WEDNESDAY, 4 DECEMBER

ALL PAPERS ARE ELIGIBLE FOR CEU/CLP CREDITS (SEE PAGE 70)

ROOM	SESSION/CHAIR	0830	0900	0930
S320A	EC3 **Virtual Care Is Real** M. Beth Pettitt	Toward the Development of a Medical Simulation Training Architecture (MSTA) (19219)	Development and Demonstration of Augmented Reality Forward Surgical Care (19301)	The Application of Augmented Reality for Immersive TC3 Training (19379)
S320B	S3 **Autonomy in Simulation** Michael Natali	Controlling Computer-Generated Lifeforms Using Fuzzy State Machine (19126)	Simulation and Sensitivity Analysis of Mobile Proximity Stopping Distance in Unity (19152)	Simulation-based Autonomous Systems Testing – from Automotive to Defence (19166) ✈
S320C	P3 **Measure Twice, Execute Once** Marty Bink, Ph.D.	Ensuring Psychometric Validity Within an Automated Performance Measurement Standard (19170)	Measuring the Impacts of Transitioned Solutions (19234)	When Time Matters, Assessment Only and the Risk Management Framework (19118)
S320D	ED1 **Instruction; Reconstruction** Bill Gerber, Ph.D.	Implementation of a "True" Flipped Classroom Concept at the Norwegian Defense University College (19116) ✈	Avoiding Pitfalls in Undergraduate Simulation Courses (19168)	An Evidence-Based Methodology for Evaluating the Community Impacts of a Science, Technology, Engineering and Mathematics (STEM) Instructional Program (19220)
S320E	H2 **Don't Forget Your Towel: The Hitchhiker's Guide to Cognition** Gordon Gattie	Cognitive Expertise through Repetition Enhanced Simulation (CERES): Learning to Understand Topographic Maps (19258)	Cognitive Skill Assessment in a Virtual Environment (19323)	Real-Time Measurement of Team Cognitive Load during Simulation-based Training (19129)

ROOM	SESSION/CHAIR	1030	1100	1130
S320A	EC4 **See Me, Hear Me, Touch Me** John Burwell	Human-liked Auditory Capability for Intelligent Virtual Agents (19125)	Mid-air Haptics in Aviation (19184) ✈	Utilizing Augmented Reality for Air Force Maintenance Training (19329)
S320B	S4 **Adapting the Simulation Toolbox** Angela Alban	Lessons Learned in the Experimental Use of Simulated Malodors to Support Live Training (19107)	Adapting Existing Simulation Architectures to Enhance Tailored Instruction (19239)	Tactical Decision Kits for Infantry Training (19341)
S320C	P4 **Big Data** Mike Merritt	Access Control in the Era of Big-Data Driven Models and Simulations (19115)	Privacy Challenges in DoD Big Data Analytics (19210)	Cybersecurity Strategies for Accrediting Experience API (19308)
S320D	ED2 **Transforming Military Learning** Kelly Hale, Ph.D.	Implementing Change for Greater Learning, Readiness and Lethality (19289)	A Once in a Generation Opportunity to Transform RAF Training (19294) ✈	Twenty-Five Emerging Trends in Learning and Their Implications for Military Partners: An International Study (19299) ✈
S320F	T2 **Tag You're It: Team Training & Oversight** Sean Carey	Enhancing Training of Supervisory Control Skills for Automated Systems (19120)	The Development and Implementation of Speech Understanding for Medical Handoff Training (19235)	Training Teamwork Skills in an Intelligent Tutoring System (19276)
S320GH	BP1 **Best Papers** Chuck Wythe	ECIT – Reinforcement Learning for Automated Textual Reasoning (19150)	Education – Enhancing Learning Outcomes through Adaptive Remediation with GIFT (19275)	HPAE – Simulating Augmented Reality Spatial Accuracy Requirements for Target Acquisition Tasks (19343)

ROOM	SESSION/CHAIR	1400	1430	1500
S320A	EC5 **Perception Is Reality** Harry Sotomayor	Augmenting Cyber Assessment through Dynamic Malware Analysis (19249)	Visualizing Electromagnetic Spectrum Phenomena in Augmented Reality (19298)	
S320B	S5 **Engineering Simulation Solutions** Christina Bouwens, Ph.D.	Aimpoint Solutions on Complex Area Targets (19172)	Cyber Model-based Engineering (MBE) (19254)	Enhancing Wargaming Fidelity with Network Digital Twins (19269)
S320C	P5 **Emerging Approaches for Simulation In Acquisition** James Dennis	Using Design of Experiments to Improve Analyses, Simulations and Cost (19104)	A New Approach to Building Agile Simulations (19157)	Model Based Systems Engineering for Acquiring Vehicle Training Simulations (19221)
S320D	ED3 **Evaluation of XR Tools** Aaron Judy, Ed.D.	Increasing XR Technology's Return on Investment Through Media Analysis (19327) ✈	Air University Multi-modal Research Course on VR/AR and Related Technologies (19388)	Evaluation of sUAS Education and Training Tools (19136) ✈
S320F	T3 **Training, Accelerated** Nick Giannias	Simple to Complex – Evolution of Workforce Training in a Rapidly Changing Environment (19155)	Improving Assessments Using Intelligent Agents with Transient Emotional States (19251) ✈	Learning Next: Self-Improving Competency-based Training Rooted in Analytics (19302)
S320GH	BP2 **Best Papers** Jeremy Lanman, Ph.D.	PSMA – Effects of Bottlenecks within Military Training Pipelines (19145) ✈	Training – Advise When Ready for Game Plan: Adaptive Training for JTACs (19105)	Simulation – Fully Automated Photogrammetric Data Segmentation and Object Information Extraction Approach for Creating Simulation Terrain (19245) ✈

ROOM	SESSION/CHAIR	1600	1630	1700
S320A	EC6 **AI in the Kill Chain** Marcus Boyd	The Value of Cognitive Workload in Machine Learning Predictive Analytics (19147)	Emerging Innovations for Next Generation Mission Planning and Debrief (19253)	Man-Machine Interoperation in Training for Large Force Exercise Air Missions (19372)
S320B	S6 **Improving Computer Generated Forces** Jimmy Moore, CMSP	Demonstrating the Effects of Human Behavior in Simulation Using the RAND Will to Fight Model (19111)	Reusability and Efficiency in Behaviour Modelling for Computer Generated Forces (19211) ✈	Exploring Game Industry Technological Solutions to Simulate Large-scale Autonomous Entities within a Virtual Battlespace (19328) ✈
S320C	P6 **Acquisition: Streamlining Standards and New Approaches** Michelle Wright	Government - Industry Collaboration: Essential to Training Evolution and Relevancy (19347)	Application of the M&S Community of Interest Discovery Metadata Specification to Standards Profiles for Acquisition and Air Force Training (19270)	Tailoring Acquisition to Deliver at the Speed of Commercial Industry (19315)
S320D	ED4 **Tools for M&S Educators** Anastacia MacAllister, Ph.D.	Track Mobile Learning with Secure Access Using xAPI and CAC (19102)	Conducting Training and Simulation Research: A Primer for Practitioners (19179) ✈	Neuro-Designer: Informing the Development of Learning Solutions Through Application of Neuro Metrics (19266)

THURSDAY, 5 DECEMBER

ALL PAPERS ARE ELIGIBLE FOR CEU/CLP CREDITS (SEE PAGE 70)

ROOM	SESSION/CHAIR	0830	0900	0930
S320A	EC7 **Emerging Models for Training Value and Infrastructure** Gordon King	The Foothold in the War of Cognition: The Operational Training Infrastructure Enterprise System Model (19226)	Towards a Rationalization and Valuation Methodology for Training & Simulation Capabilities (19292) ✈	LVC-Enabled Range Technology: Supporting Training for Next-Gen Weapons Systems (19332)
S320B	S7 **Advancing Virtual Reality and Training** Kenny Hebert	Designing Virtual Reality Tools: Making Simulated Interventions Feel and Act Like Their Real Counterparts (19190) ✈	Toolset 3D Position Tracking for a Visio-Haptic Mixed Reality System (19279) ✈	Utilizing Commodity Virtual Reality Devices for Multi-user Training Simulations (19262)
S320C	P7 **Novel Applications: Back to the Future** Janet Weisenford	A Proposal Standard for Distributed Aerial Refueling with Probe-and-Drogue System (19127)	Medical Simulation for the Future of the Joint Training Community (19385)	The Flying Car – Emergent Modeling & Simulation (M&S) Policies and Standards Concerns (19140) ✈
S320E	H3 **What Gets Measured, Gets Done** Perry McDowell	Situational Awareness Measuring Method In Simulated Combat – A Case Study (19153) ✈	Developing a Scaled Performance Evaluation Measurement System (19133)	Rethinking Effectiveness Evaluations: Measuring the Effectiveness of a Mobile Performance Support Application Using xAPI (19162)

ROOM	SESSION/CHAIR	1030	1100	1130
S320A	EC8 **Lean Mean Learning Machine** Kendy Vierling, Ph.D.	Persistent Machine Learning for Government Applications (19160)	Approaches for Deep Learning in Data Sparse Environments (19333)	Lean Scenes: Variable-fidelity Models Reduce Machine-learning Training Requirements (19349)
S320B	S8 **Wargaming and Planning** John Huddlestone, Ph.D.	Wargaming Evolved: Methodology and Best Practices for Simulation-Supported Wargaming (19182) ✈	Supporting Military Planning with Simulation (19212) ✈	Using LVC Technology for the Military Planning Process (19290)
S320C	P8 **Concepts In Agility and Risk** Jeremiah Folsom-Kovarik, Ph.D.	Executive Risk Assessments for the Age of Algorithms (19110)	Air Force Agile Development Methodology for Addressing Future Air Operations Capabilities (19268) ✈	Requirements Engineering Innovations for Agile-based Programs (19247)
S320D	ED5 **21st Century Learning** Sae Schatz, Ph.D.	Cognitive Weaponry: Optimizing the Mind (19380)	Establishing Engaged Social Learning Communities: Formation and Sense Making (19326) ✈	Transforming the Operational Mindset: Self-regulating Cognitive Performance Enhancement Strategies (19310)
S320E	H4 **Human Performance Pot Pie** Aerial Kreiner, Ph.D.	Psychomotor Skills Assessment via Human Experts, Simulators and Artificial Intelligence (19108)	"#CGHowTo" – "Help Right Now" for Coast Guardsmen in the Field (19203)	Wearable Stress Monitoring During Live Training (19237)
S320F	T4 **Improving Training through Realistic Environments and Architectures** Thomas Yanoschik, CMSP	Impact of Malodors on Tourniquet Application: A Longitudual Study (19169)	Driving Digitally-aided Close Air Support Capabilities in Simulation: Lessons Learned (19320)	Adaptive Network Planning for Infrastructure Networks for Test and Training Events (19337)

ROOM	SESSION/CHAIR	1330	1400	1430
S320A	EC9 **New Thinking About How Machines "Think"** Byron Harder, Ph.D.	Adaptive Nonconvex Optimization for Artificial Intelligence, Machine Learning and Quantum Computing (19109)	Interpretable Network Architectures for Machine Learning (19149)	Prognostic Health Management Using Semi-supervised Machine Learning (19164)
S320B	S9 **Radio Frequencies** Nina Deibler	Jamming Techniques 2.0 (19224)	Radio Network Automation for Operational Testing: A Practical Resource for Radio Networks Planning (19366)	
S320D	ED6 **Start Making Sense: Strengthing Interpersonal Communication** Annette Robinson	Communication Skills Development for Non-Commissioned Officers (NCOs) (19293)	LEGO Serious Play: A Powerful Sense-Making Tool in Military Contexts (19267)	

Best Papers

BP1 WEDNESDAY • 4 DECEMBER • 1030 • ROOM S320GH

Best Papers

Session Chair: Chuck Wythe, Cape Henry Associates

Emerging Concepts & Innovative Technologies – Reinforcement Learning for Automated Textual Reasoning (19150)
David Noever, Joseph Regian, PeopleTec, Inc.

Education – Enhancing Learning Outcomes through Adaptive Remediation with GIFT (19275)
Randall Spain, Jonathan Rowe, James Lester, North Carolina State University; Benjamin Goldberg, Ph.D., CCDC - Soldier Center, Simulation and Training Technology Center; Bob Pokorny, Ph.D., Intelligent Automation, Inc.

Human Performance, Anaylsis and Engineering – Simulating Augmented Reality Spatial Accuracy Requirements for Target Acquisition Tasks (19343)
John Graybeal, Ph.D., Todd Du Bosq, U.S. Army CCDC C5ISR Center Night Vision and Electronic Sensors Directorate; Rachel Nguyen, KINEX, Inc.

BP2 WEDNESDAY • 4 DECEMBER • 1400 • ROOM S320GH

Best Papers

Session Chair: Jeremy Lanman, Ph.D., U.S. Army PEO STRI

Policy, Standards, Management and Acquisition – Effects of Bottlenecks within Military Training Pipelines (19145)
Robert Floyd, Royal Navy ✈

Training – Advise When Ready for Game Plan: Adaptive Training for JTACs (19105)
Matthew Marraffino, Ph.D., Cheryl Johnson, Ph.D., Natalie Steinhauser, NAWCTSD; Daphne Whitmer, Zenetex, LLC; Adam Clement, EWTGPAC N75C

Simulation – Fully Automated Photogrammetric Data Segmentation and Object Information Extraction Approach for Creating Simulation Terrain (19245) ✈
Meida Chen, Andrew Feng, Kyle McCullough, Pratusha Bhuvana-Prasad, Ryan McAlinden, University of Southern California Institute for Creative Technologies; Lucio Soibelman, University of Southern California Civil and Environmental and Engineering Department

BP3 TUESDAY • 3 DECEMBER • 1400 • ROOM S320D

Best from Around the Globe

Session Chair: Amanda Davies, Ph.D.

MODSIM World Best Paper: Simulation-Based Training's Incorporation of Machine Learning ✈
Ivar Oswalt, Ph.D., CMSP, The MIL Corporation; Tim Cooley, Ph.D., DynamX Consulting

ITEC Best Paper: Making The Invisible Visible: Increasing Pilot Training Effectiveness By Visualizing Scan Patterns of Trainees Through AR ✈
Jeanine Vlasblom, Netherlands Aerospace Centre NLR

Emerging Concepts & Innovative Technologies

EC1 TUESDAY • 3 DECEMBER • 1400 • ROOM S320A

Cyber: Build Once, Reuse Often

Session Chair: Scott Schutzmeister, Institute for Defense Analyses
Session Deputy: David "Fuzzy" Wells, Ph.D., CMSP, UCF/IST

A Cyberspace Electromagnetic Activities (CEMA) Framework for M&S (19193)
Clark Heidelbaugh, Trideum Corporation; Nathan Vey, U.S. Army CCDC-SC; Chad Bates LTC, Ph.D., U.S. Army Cyber Command; Jim Ruth, Mark Riecken, Tim Friest, Trideum Corporation

A Roadmap to Achieve Cyber Modeling & Simulation Interoperability (19314)
Derek Bryan, Ingenia Services, Inc.; David "Fuzzy" Wells, Ph.D., CMSP, UCF/IST; Jim Ruth, Trideum Corporation; Sara Meyer, 453d Electronic Warfare Squadron; Katherine Morse, Ph.D., CMSP, JHU/APL

Simulate Effects of Cyberspace Electromagnetic Activities (CEMA) in Mission Command Systems (19257)
Nathan Vey, U.S. Army CCDC-SC; Allen Geddes, Lawrence Elliott, Paul Tucker, Dynamic Animation Systems

EC2 TUESDAY • 3 DECEMBER • 1600 • ROOM S320A

Learning Building Blocks

Session Chair: Tim Woodard, NVIDIA
Session Deputy: Wendy Johnson, Ph.D., USAF HQ AETC

Building the World - Could AI Build Our Synthetic Environments? (19180)
Graham Long, Thales

Reinforcement Learning for Computer Generated Forces Using Open-Source Software (19197) ✈
Johan Källström, Saab; Fredrik Heintz, Linköping University

Use of Natural Language Processing to Extract Technical Competency Frameworks from Maintenance Task Analyses (19255)
Wayne Gafford, Department of Defense, U.S. Navy; Jeanne Kitchens, Southern Illinois University Center for Workforce Development; Fritz Ray, Eduworks Corporation

EC3 WEDNESDAY • 4 DECEMBER • 0830 • ROOM S320A

Virtual Care Is Real

Session Chair: M. Beth Pettitt, Army
Session Deputy: Tyson Kackley, MCSC DC, SEAL, M&S Division

Toward the Development of a Medical Simulation Training Architecture (MSTA) (19219)
Harald Scheirich, SimQuest LLC; Jeffrey Beaubien, Ph.D., Aptima, Inc.; Rodney Metoyer, BioMojo; Gianluca De Novi, Ph.D., Massachusetts General Hospital/Harvard Medical School; Timothy Kelliher, SimQuest

Development and Demonstration of Augmented Reality Forward Surgical Care (19301)
Brandon Conover, Ph.D., Jerry Heneghan, BioMojo LLC; Tyler Harris, Womack Army Medical Center; Geoffrey Miller, Telemedicine & Advanced Technology Research Center (TATRC)

The Application of Augmented Reality for Immersive TC3 Training (19379)
Alyssa Tanaka, Jeffrey Craighead, Ph.D., Glenn Taylor, Soar Technology

EC4 WEDNESDAY • 4 DECEMBER • 1030 • ROOM S320A

See Me, Hear Me, Touch Me

Session Chair: John Burwell, Varjo Technologies
Session Deputy: Joseph Mercado, NAWCTSD

Human-liked Auditory Capability for Intelligent Virtual Agents (19125)
Hung Tran, CAE USA

Mid-air Haptics in Aviation (19184)
Alex Girdler, Collins Aerospace; Orestis Georgiou, Ultrahaptics

Utilizing Augmented Reality for Air Force Maintenance Training (19329)
Charis Horner, Christina Padron, Design Interactive, Inc.; Troy Westbrook, Josh Davidson, USAF AETC 367 TRSS

EC5 WEDNESDAY • 4 DECEMBER • 1400 • ROOM S320A

Perception Is Reality

Session Chair: Harry Sotomayor, U.S. Army PEO STRI
Session Deputy: Paul Bogard, USAF AFLCMC

Augmenting Cyber Assessment through Dynamic Malware Analysis (19249)
Ambrose Kam, Lockheed Martin; Charles Johnson-Bey, Michael Nance, Lockheed Martin Cyber Innovations; Wenke Lee, Kyuhong Park, Carter Yagemann, Georgia Tech

Visualizing Electromagnetic Spectrum Phenomena in Augmented Reality (19298)
Michael Longtin, Robert Hernandez, Richard Schaffer, sMark Wager, Lockheed Martin

EC6 WEDNESDAY • 4 DECEMBER • 1600 • ROOM S320A

AI in the Kill Chain

Session Chair: Marcus Boyd, L3Harris Technologies, Inc., Link Training & Simulation
Session Deputy: Chuck Breed, Ed.D., Zenetex LLC – Training Division

The Value of Cognitive Workload in Machine Learning Predictive Analytics (19147)
Amy Dideriksen, Joseph Williams, Avdic-McIntire Gianna, Collins Aerospace; Thomas Schnell, University of Iowa Operator Performance Lab

Emerging Innovations for Next Generation Mission Planning and Debrief (19253)
Joshua Ziegler, Kevin Gluck, Ph.D., Air Force Research Laboratory

Man-Machine Interoperation in Training for Large Force Exercise Air Missions (19372)
Patrick Craven, Ph.D., Kevin Oden, Kevin Landers, Lockheed Martin; Ankit Shah, Julie Shah, MIT CSAIL

EC7 THURSDAY • 5 DECEMBER • 0830 • ROOM S320A

Emerging Models for Training Value and Infrastructure

Session Chair: Gordon King, RSI Visual Systems
Session Deputy: Brian Stensrud, Soar Technology

The Foothold in the War of Cognition: The Operational Training Infrastructure Enterprise System Model (19226)
Christopher Reed, U.S. Air Force

Towards a Rationalization and Valuation Methodology for Training & Simulation Capabilities (19292)
Manfred Roza, Jelke Van der Pal, Michel Van Eenige, Netherlands Aerospace Center NLR

LVC-Enabled Range Technology: Supporting Training for Next-Gen Weapons Systems (19332)
Craig Smith, Angus McLean, Ryan Littler, Collins Aerospace

EC8 THURSDAY • 5 DECEMBER • 1030 • ROOM S320A

Lean Mean Learning Machine

Session Chair: Kendy Vierling, Ph.D., USMC, TECOM / Future Learning Group
Session Deputy: Randal Allen, Ph.D., CMSP, Lone Star Analysis

Persistent Machine Learning for Government Applications (19160)
Joshua Haley, Chad Dettmering, Ryan Barrett, Ali Mizan, Brian Stensrud, Alyssa Tanaka, Ross Hoehn, Soar Technology

Approaches for Deep Learning in Data Sparse Environments (19333)
Joshua Haley, Richard Pazda, Jeremiah Folsom-Kovarik, Brian Stensrud, Ross Hoehn, Robert Wray, Soar Technology

Lean Scenes: Variable-fidelity Models Reduce Machine-learning Training Requirements (19349)
Blake Anderton, Ph.D., Torch Technologies

EC9 THURSDAY • 5 DECEMBER • 1330 • ROOM S320A

New Thinking about How Machines "Think"

Session Chair: Byron Harder, Ph.D., TECOM (RTPD)
Session Deputy: Diane Justice, USAF AFLCMC

Adaptive Nonconvex Optimization for Artificial Intelligence, Machine Learning and Quantum Computing (19109)
Randal Allen, Ph.D., CMSP, Lone Star Analysis

Interpretable Network Architectures for Machine Learning (19149)
Randal Allen, Ph.D., CMSP, Lone Star Analysis

Prognostic Health Management Using Semi-supervised Machine Learning (19164)
George Hellstern, Anastacia MacAllister, Ph.D., Jordan Belknap, Danielle Clement, Ph.D., Stephen Summers, Lockheed Martin Corporation

Education

ED1 WEDNESDAY • 4 DECEMBER • 0830 • ROOM S320D

Instruction; Reconstruction

Session Chair: Bill Gerber, Ph.D., Institute for Defense Analyses (IDA)
Session Deputy: Colleen Matthews, U.S. Army PEO STRI

Implementation of a "True" Flipped Classroom Concept at the Norwegian Defense University College (19116)
Geir Isaksen, Norwegian Defense University College / Advanced Distributed Learning Office

Avoiding Pitfalls in Undergraduate Simulation Courses (19168)
Vikram Mittal, Gene Lesinski, Matthew Dabkowski, United States Military Academy

An Evidence-Based Methodology for Evaluating the Community Impacts of a Science, Technology, Engineering and Mathematics (STEM) Instructional Program (19220)
Jessica Cortez, Ph.D., Cubic Corporation; John Kegley, Aptima; Wink Bennett, Airman Systems Directorate, Warfighter Readiness Research Division

ED2 WEDNESDAY • 4 DECEMBER • 1030 • ROOM S320D

Transforming Military Learning

Session Chair: Kelly Hale, Ph.D., Draper Laboratory
Session Deputy: Brian Overy, Aechelon Technolgy

Implementing Change for Greater Learning, Readiness and Lethality (19289)
Kendy Vierling, Ph.D., USMC, TECOM / Future Learning Group

A Once in a Generation Opportunity to Transform RAF Training (19294)
Audrey Caldeira-Hankey, Defence Science Technology Laboratory (Dstl) UK MOD; Helen Dudfield, QinetiQ; Lindsay Sargent, HQ Air Command

Twenty-Five Emerging Trends in Learning and their Implications for Military Partners: An International Study (19299)
Sae Schatz, Ph.D., Advanced Distributed Learning (ADL) Initiative

ED3 WEDNESDAY • 4 DECEMBER • 1400 • ROOM S320D

Evaluation of XR Tools

Session Chair: Aaron Judy, NAWCTSD
Session Deputy: Kevin Oakes, SAIC

Increasing XR Technology's Return on Investment Through Media Analysis (19327)
Martin Bogan, Scott Bybee, CAE USA; Jay Bahlis, BNH Software

Air University Multi-modal Research Course on VR/AR and Related Technologies (19388)
Col Tony Millican, Ph.D., Dennis Armstrong, Ph.D., Air University

Evaluation of sUAS Education and Training Tools (19136)
Brent Terwilliger, Ph.D., Christian Janke, Kristy Kiernan, Joseph Cerreta, Embry-Riddle Aeronautical University; Andrew Shepherd, Ph.D, Sinclair College National UAS Training and Certification Center

ED4 WEDNESDAY • 4 DECEMBER • 1600 • ROOM S320D

Tools for M&S Educators

Session Chair: Anastacia MacAllister, Ph.D., Lockheed Martin Corporation
Session Deputy: Angie White, Integration Innovation, Inc.

Track Mobile Learning with Secure Access Using xAPI and CAC (19102)
Paul Miller, Ilya Voloshin, LSI, Inc.

Conducting Training and Simulation Research: A Primer for Practitioners (19179)
Philip Temby, Susannah Whitney, Defence Science and Technology

Neuro-Designer: Informing The Development of Learning Solutions Through Application of Neuro Metrics (19266)
Adam Hall, Nervanix, LLC; Stephen J. Kenton

ED5 THURSDAY • 5 DECEMBER • 1030 • ROOM S320D

21st Century Learning

Session Chair: Sae Schatz, Ph.D., Advanced Distributed Learning (ADL) Initiative
Session Deputy: Christina Welch, Naval Air Warfare Center Training Systems Division

Cognitive Weaponry: Optimizing the Mind (19380)
JJ Walcutt, Ph.D.

Establishing Engaged Social Learning Communities: Formation and Sense Making (19326)
Julian Stodd, Sea Salt Learning

Transforming the Operational Mindset: Self-regulating Cognitive Performance Enhancement Strategies (19310)
Denise Stevens, Heather Seiser, Karen Tovar, Christa Bohannon, Dennis Lyons, General Dynamics Information Technology

ED6 THURSDAY • 5 DECEMBER • 1330 • ROOM S320D

Start Making Sense: Strengthing Interpersonal Communication

Session Chair: Annette Robinson, Magic Leap Horizons
Session Deputy: Alysson Hursey, SAIC

Communication Skills Development for Non-Commissioned Officers (NCOs) (19293)
Kara Orvis, Jessica Shenberger-Trujillo, Kristy Kay, Krista Ratwani, Aptima, Inc.; April Sanders, U.S. Army Research Institute, Fort Hood Unit

LEGO Serious Play: A Powerful Sense-Making Tool in Military Contexts (19267)
Kevin Thorn, NuggetHead Studioz

Human Performance, Analysis and Engineering

H1 TUESDAY • 3 DECEMBER • 1400 • ROOM S320E

There's Reality and There's Virtual Reality

Session Chair: Scott Johnston, Booz Allen Hamilton
Session Deputy: Sophia Moshasha, Brightline Interactive

Optimizing Haptics within AR/VR Training Given Human Sensory Capabilities (19336)
Kelly Hale, Ph.D., Draper Laboratory; Claire Hughes, Christina Padron, Design Interactive, Inc.

Simulations to Train Buried Explosives Detection: A Pilot Investigation (19134)
Dean Reed, Crystal Maraj, Jonathan Hurter, University of Central Florida Institute for Simulation and Training; Latika Eifert, CCDC – Soldier Center, Simulation and Training Technology Center

Effects of Transparency Level, Controller Type and Visual Degradation on Performance Using Augmented Reality and Synthetic Vision (19272)
Alex Proaps, Sarah Leibner, Old Dominion University; James Bliss, Ph.D., Leidos, Inc.

H2 WEDNESDAY • 4 DECEMBER • 0830 • ROOM S320E

Don't Forget Your Towel: The Hitchhiker's Guide to Cognition

Session Chair: Gordon Gattie, NSWC Dahlgren
Session Deputy: Benjamin Goldberg, Ph.D., CCDC – Soldier Center, Simulation and Training Technology Center

Cognitive Expertise through Repetition Enhanced Simulation (CERES): Learning to Understand Topographic Maps (19258)
Kevin Schmidt, The Air Force Research Laboratory; Brooke Feinstein, Marcia Grabowecky, Ph.D., Paul J. Reber, Ph.D., Northwestern University

Cognitive Skill Assessment in a Virtual Environment (19323)
Allison Hancock, Ph.D., Jennifer Phillips, Cognitive Performance Group; Natalie Steinhauser, NAWCTSD; James Niehaus, Ph.D., Charles River Analytics

Real-Time Measurement of Team Cognitive Load during Simulation-based Training (19129)
Jeffrey Beaubien, Ph.D., Sterling Wiggins, William DePriest, Aptima, Inc.

H3 THURSDAY • 5 DECEMBER • 0830 • ROOM S320E

What Gets Measured, Gets Done

Session Chair: Perry McDowell, MOVES Institute, Naval Postgraduate School
Session Deputy: Jason Bewley, ATS

Situational Awareness Measuring Method in Simulated Combat – A Case Study (19153) ✈
Uriel Huri, Yisachar Shapira, Yoav Yulis, IDF Ground Forces Command Battle Laboratory

Developing a Scaled Performance Evaluation Measurement System (19133)
Garrett Loeffelman, TECOM (RTPD); Quinn Kennedy, Ph.D., Naval Postgraduate School; Glenn Hodges, Ph.D., U.S. Army

Rethinking Effectiveness Evaluations: Measuring the Effectiveness of a Mobile Performance Support Application Using xAPI (19162)
Jennifer Murphy, Ph.D., Frank Hannigan, Tarah Daly, Quantum Improvements Consulting; Chad Udell, Float

H4 THURSDAY • 5 DECEMBER • 1030 • ROOM S320E

Human Performance Pot Pie

Session Chair: Aerial Kreiner, Ph.D., USAF AFRL
Session Deputy: Jenifer Wheeler, Southwest Research Institute

Psychomotor Skills Assessment via Human Experts, Simulators and Artificial Intelligence (19108)
Roger Smith, Ph.D., Danielle Julian, AdventHealth Nicholson Center

"#CGHowTo" – "Help Right Now" for Coast Guardsmen in the Field (19203)
Timothy Quiram, LCDR Rachel Stutt, Ronald Stark, U.S. Coast Guard

Wearable Stress Monitoring During Live Training (19237)
James Pharmer, Ph.D., Richard Plumlee, NAWCTSD; Kelly Hale, Ph.D., Draper Laboratory; Zach Huber, Design Interactive

Policy, Standards, Management and Acquisition

P1 TUESDAY • 3 DECEMBER • 1400 • ROOM S320C

Collaboration: It Takes Two to Tango

Session Chair: Doug Parsons, CCDC Aviation & Missile Center
Session Deputy: Phil Brown, Ph.D., Joint Resources and Readiness Division, NORAD-USNORTHCOM J74

A Tale of Two T's: Enabling Testing Through Reuse of Training Services (19356)
Thomas Kehr, CMSP, University of Central Florida; Robert Cox, U.S. Army PEO STRI; Scott Nix, General Dynamics Mission Systems

Raising the Standard – Industry and Government Working Together for Simulation Coherence (19187) ✈
Simon Skinner, Thales UK Ltd.; Grant Bailey, UK Ministry of Defence

With Uncertainty Comes Opportunity: Solving the DoD's Flash Problem (19305)
Trey Hayden, Yihua Liu, Advanced Distributed Learning (ADL) Initiative

P2 TUESDAY • 3 DECEMBER • 1600 • ROOM S320C

What's Up in the Joint Integrated Training Environment

Session Chair: Steve Parris, Laerdal Medical & Simulations
Session Deputy: Shauna Stokes, PM TRASYS

Overview of USMC Modeling and Simulation Office Policy Lessons Learned (19132)
Eric Whittington, JHU/APL; Brett Telford, MCMSO (USMC)

Air Force Methodology for Overarching Joint Training Policy for Joint Interoperability (19262) ✈
Lillian Campbell-Wynn, Ph.D., AFAMS

Live-Virtual-Constructive Training Environment Analysis of Alternatives Lessons Learned (19135)
Eric Whittington, William Brobst, JHU/APL; Byron Harder, Ph.D., TECOM (TECD)

P3 WEDNESDAY • 4 DECEMBER • 0830 • ROOM S320C

Measure Twice, Execute Once

Session Chair: Marty Bink, Ph.D., University of Georgia
Session Deputy: Mindy Hoover, Iowa State University

Ensuring Psychometric Validity Within an Automated Performance Measurement Standard (19170)
Mitchell Tindall, Ph.D., Beth Atkinson, NAWCTSD

Measuring the Impacts of Transitioned Solutions (19234)
Jesse Flint, Design Interactive, Inc.; Darren Wilson, Department of Homeland Security Science and Technology

When Time Matters, Assessment Only and the Risk Management Framework (19118)
Douglas Wedel, AFLCMC/WLZ; Demica Robinson, AFLCMC/WNS

P4 WEDNESDAY • 4 DECEMBER • 1030 • ROOM S320C

Big Data

Session Chair: Mike Merritt, NAWCTSD
Session Deputy: Aaron Presnall, Jefferson Institute

Access Control in the Era of Big-Data Driven Models and Simulations (19115)
Anne Tall, Cliff Zou, Jun Wang, University of Central Florida

Privacy Challenges in DoD Big Data Analytics (19210)
Mariusz Balaban, U.S. Army

Cybersecurity Strategies for Accrediting Experience API (19308)
Miguel Hernandez, Michael Neeley, Andy Johnson, Advanced Distributed Learning (ADL) Initiative

P5 WEDNESDAY • 4 DECEMBER • 1400 • ROOM S320C

Emerging Approaches for Simulation in Acquisition

Session Chair: James Dennis, General Dynamics Information Technology
Session Deputy: Keith Henry, USAF AFAMS

Using Design of Experiments to Improve Analyses, Simulations and Cost (19104)
Steven Gordon, Ph.D., Karen Dillard, Ph.D., GTRI

A New Approach to Building Agile Simulations (19157)
Charles Sanders, Edge 360 LLC

Model Based Systems Engineering for Acquiring Vehicle Training Simulations (19221)
Richard Cope, Devarshi Desai, Cattien Nguyen, Naomi Acosta, NAWCTSD

P6 WEDNESDAY • 4 DECEMBER • 1600 • ROOM S320C

Acquisition: Streamlining Standards and New Approaches

Session Chair: Michelle Wright, Navy
Session Deputy: Holley Hagerman, JTIEC

Government - Industry Collaboration: Essential to Training Evolution and Relevancy (19347)
Michael Rambo, Textron Aviation Defense

Application of the M&S Community of Interest Discovery Metadata Specification to Standards Profiles for Acquisition and Air Force Training (19270)
James Coolahan, Ph.D., Coolahan Associates, LLC; William Oates, AFAMS; Peggy Gravitz, Huntington Ingalls Industries Mission Driven Innovative Solutions; Kenneth Konwin, Booz Allen Hamilton

Tailoring Acquisition to Deliver at the Speed of Commercial Industry (19315)
Graham Fleener, U.S. Army PEO STRI; Julio Villalaba, ECS Federal

P7 THURSDAY • 5 DECEMBER • 0830 • ROOM S320C

Novel Applications: Back to the Future

Session Chair: Janet Weisenford, ICF
Session Deputy: Rachael MacKenzie, USAF AFLCMC

A Proposal Standard for Distributed Aerial Refueling with Probe-and-Drogue System (19127)
Michael Tillett, Hung Tran, CAE USA

Medical Simulation for the Future of the Joint Training Community (19385)
M. Beth Pettit, STTC and David Thompson, JPC-1/MSISRP, Army

The Flying Car – Emergent Modeling & Simulation (M&S) Policies and Standards Concerns (19140)
Kevin Hulme, Ph.D., CMSP, Panagiotis Anastasopoulos, Stephen Still, Sarvani Pantangi, Ugur Eker, Sheikh Ahmed, University at Buffalo; Grigorios Fountas, Edinburgh Napier University

P8 THURSDAY • 5 DECEMBER • 1030 • ROOM S320C

Concepts In Agility and Risk

Session Chair: Jeremiah Folsom-Kovarik, Soar Technology
Session Deputy: Sharon Tabori, Collins Aerospace

Executive Risk Assessments for the Age of Algorithms (19110)
Randal Allen, Ph.D., CMSP, Steven Roemerman, Eric Haney, Ph.D., Lone Star Analysis

Air Force Agile Development Methodology for Addressing Future Air Operations Capabilities (19268)
Lillian Campbell-Wynn, Ph.D., AFAMS

Requirements Engineering Innovations for Agile-based Programs (19247)
Paul Butler, Bill Fetech, Devin Hobby, Amy Lim, MITRE Corporation; Cynthia Harrison, Barbara Pemberton, U.S. Army PEO STRI

Simulation

S1 TUESDAY • 3 DECEMBER • 1400 • ROOM S320B

Simulation Architectures

Session Chair: Peter Swan, VT MAK
Session Deputy: Brian Vogt, SAIC

Assessing and Measuring Interoperability Between Multi-national Live Training Systems (19186)
James Benslay Jr., Greg Carrier, MITRE Corporation; LTC Rhea Pritchett, U.S. Army PEO STRI; W. Bogler, Combat Capabilities Development Center

Towards a Common Reference Architecture for Mission Training Through Distributed Simulation (19225)
Tom van den Berg, Wim Huiskamp, TNO Defence Research

New Techniques for High-Fidelity Modeling and Simulation in 5G Mobile Network Environments (19322)
Steven Kropac, LGS Innovations, LLC; Jeff Weaver, SCALABLE Network Technologies

S2 TUESDAY • 3 DECEMBER • 1600 • ROOM S320B

Synthetic Terrain Environments

Session Chair: Nina Deibler, Serco, Inc.
Session Deputy: Mike Lokuta, CAE

Enhancing Situational Awareness Anywhere in the World with Geospatially Accurate Scene Simulation Using Automated "Real World" Content Generation (19112)
Brian Miles, OSC; Thomas Creel; Kathy Wilder; Arthur Kenton; Mark Abrams, EGS

Reconfiguring Synthetic Environments as Inputs to Unity 3D (19277)
Abhishek Verma, Triston Thorpe, Collins Aerospace

Geospecific 3D Terrain Data Optimization Solutions for Game and Simulation Engines (19368)
Lathin Liles, Jorge Ortiz, Chris Caruthers, GameSim

S3 WEDNESDAY • 4 DECEMBER • 0830 • ROOM S320B

Autonomy in Simulation

Session Chair: Michael Natali, CNATRA
Session Deputy: Edward Degnan, Ph.D., USAF AFAMS

Controlling Computer-Generated Lifeforms Using Fuzzy State Machine (19126)
Hung Tran, Nguyen Tran, CAE USA

Simulation and Sensitivity Analysis of Mobile Proximity Stopping Distance in Unity (19152)
William Helfrich, Jennica Bellanca, Brendan Macdonald, Jacob Carr, Timothy Orr, CDC/NIOSH

Simulation-Based Autonomous Systems Testing – from Automotive to Defense (19166)
Timothy Coley, Dave Fulker, XPI Simulation; Rob McConachie, Thales

S4 WEDNESDAY • 4 DECEMBER • 1030 • ROOM S320B

Adapting the Simulation Toolbox

Session Chair: Angela Alban, SIMETRI, Inc
Session Deputy: Capt Kathleen Haggard, PM TRASYS M&S Officer

Lessons Learned in the Experimental Use of Simulated Malodors to Support Live Training (19107)
William Pike, Ph.D., US Army CCDC-SC STTC; Michael Proctor, CMSP, University of Central Florida; Deborah Burgess, The SALUD Group, Inc.

Adapting Existing Simulation Architectures to Enhance Tailored Instruction (19239)
Robert Sottilare, Alyssa Tanaka, Ross Hoehn, Soar Technology

Tactical Decision Kits for Infantry Training (19341)
Christopher Young, Lockheed Martin Rotary and Mission Systems; Richard Schaffer, Michael Longtin, Lockheed Martin; Brian Stensrud, Soar Technology; Marcus Mainz, United States Marine Corps

S5 WEDNESDAY • 4 DECEMBER • 1400 • ROOM S320B

Engineering Simulation Solutions

Session Chair: Christina Bouwens, Ph.D., University of Central Florida
Session Deputy: Klainie Nedoroscik, American Systems

Aimpoint Solutions on Complex Area Targets (19172)
Matthew McLaughlin, Fires Battle Lab

Cyber Model-based Engineering (MBE) (19254)
Ambrose Kam, Matthew Curreri, Lockheed Martin; Carl Hein, Michael Stebnisky, XSIM

Enhancing Wargaming Fidelity with Network Digital Twins (19269)
Jeff Hoyle, Dr. Rajive Bagrodia, Ha Duong, Jeff Weaver, Ung-Hee Lee, SCALABLE Network Technologies

S6 WEDNESDAY • 4 DECEMBER • 1600 • ROOM S320B

Improving Computer Generated Forces

Session Chair: Jimmy Moore, CMSP, PeopleTec
Session Deputy: Paul Andrzejewski, HigherEchelon

Demonstrating the Effects of Human Behavior in Simulation Using the RAND Will to Fight Model (19111)
Glenn Hodges, Ph.D., U.S. Army; Alfred Connable, Ph.D., Aaron Frank, Ph.D., Henry Hargrove, RAND

Reusability and Efficiency in Behaviour Modelling for Computer Generated Forces (19211)
Joost van Oijen, Armon Toubman, Gerald Poppinga, Netherlands Aerospace Centre NLR

Exploring Game Industry Technological Solutions to Simulate Large-scale Autonomous Entities within a Virtual Battlespace (19328)
Raymond New, Kyle McCullough, Noah Nam, Ryan McAlinden, University of Southern California Institute for Creative Technologies

S7 THURSDAY • 5 DECEMBER • 0830 • ROOM S320B

Advancing Virtual Reality and Training

Session Chair: Kenny Hebert, Quantum3D
Session Deputy: Monique Brisson, USAF AFRL

Designing Virtual Reality Tools: Making Simulated Interventions Feel and Act Like Their Real Counterparts (19190)
Megan Smith, University of Regina; John Desnoyers-Stewart, Simon Fraser University; Gregory Kratzig, Royal Canadian Mounted Police

Toolset 3D Position Tracking For A Visio-Haptic Mixed Reality System (19279)
Mehmet Aygun, Mehmet Nacar, Mehmet Guler, Eren Celk, Hulusi Baysal, Hacı Yuksel, Havelsan; Yigit Tascioglu, Tobb University of Economics & Technology

Utilizing Commodity Virtual Reality Devices for Multi-user Training Simulations (19361)
Jack Miller, Austin Hanus, Eliot Winer, Ph.D., Iowa State University

S8 THURSDAY • 5 DECEMBER • 1030 • ROOM S320B

Wargaming and Planning

Session Chair: John Huddlestone, Ph.D., Coventry University
Session Deputy: Todd Glenn, FAAC Incorporated

Wargaming Evolved: Methodology and Best Practices for Simulation-Supported Wargaming (19182)
Per-Idar Evensen, Dan Helge Bentsen, Marius Halsør, Norwegian Defence Research Establishment (FFI); Svein Erlend Martinussen, Norwegian Defence University College (NDUC)

Supporting Military Planning with Simulation (19212)
Rikke Amilde Seehuus, Jo Hannay, Ørjan Rise, Norwegian Defence Research Establishment (FFI); Roar Wold, Philip Matlary, Norwegian Defence University College (NDUC)

Using LVC Technology for the Military Planning Process (19290)
Perry McDowell, MOVES Institute, Naval Postgraduate School; Ryan Lee, Naval Postgraduate School

S9 THURSDAY • 5 DECEMBER • 1330 • ROOM S320B

Radio Frequencies

Session Chair: Nina Deibler, Serco, Inc.
Session Deputy: Eric Jarabak, PM TRASYS ENG

Jamming Techniques 2.0 (19224)
David Haber, Collins Aerospace; Patrick Merlet, Parsons Corporation; Charles Brooks, SRC Inc.

Radio Network Automation for Operational Testing: A Practical Resource for Radio Networks Planning (19366)
Carlos Leon-Barth, Patricia Wright, Athena-Tek; Thomas Mitro, AIT Engineering; Robert Cox, U.S. Army PEO STRI; Scott Nix, General Dynamics Mission Systems; Robert Carpenter, General Dynamics

Training

T1 TUESDAY • 3 DECEMBER • 1400 • ROOM S320F

Enhanced Add-ons: Stories and Games

Session Chair: Robert Wallace, USAF ACC 29TSS
Session Deputy: Chuck Wythe, Cape Henry Associates

Game-based Learning to Enhance Post-secondary Engineering Training Effectiveness (19139)
Kevin Hulme, Ph.D., CMSP, Aaron Estes, Mark Schiferle, Rachel Su Ann Lim, University at Buffalo

Revolutionizing Formal School Learning with Adaptive Training (19215)
Amanda Bond, Brian Stensrud, Soar Technology; Natalie Steinhauser, NAWCTSD; Jennifer Phillips, Cognitive Performance Group

Game On: Storytelling Narrative Applied to Simulator-based Training (19363)
Margaret Merkle, Tara Browne, Ph.D., USAF

T2 WEDNESDAY • 4 DECEMBER • 1030 • ROOM S320F

Tag You're It: Team Training & Oversight

Session Chair: Sean Carey, USAF HQ AMC
Session Deputy: Maureen Holbert, Booz Allen Hamilton

Enhancing Training of Supervisory Control Skills for Automated Systems (19120)
Natalie Drzymala, Natim Research; Thomas Graves, Army Research Institute; Tim Buehner, Natim Research; Steven Aude, ICF

The Development and Implementation of Speech Understanding for Medical Handoff Training (19235)
Alyssa Tanaka, Ph.D., Brian Stensrud, Ph.D., Soar Technology; Gregory Welch, Ph.D., Francisco Guido-Sanz, R.N., Ph.D., University of Central Florida; LCDR Lee Sciarini, Ph.D., Naval Survival Training Institute; CDR Henry Phillips, Ph.D., NAWCTSD

Training Teamwork Skills in an Intelligent Tutoring System (19276)
Robert McCormack, Ph.D., Tara Kilcullen, Alexander Wade, Tara Brown, Ph.D., Alexander Case, Dan Howard, Aptima, Inc.; Anne Sinatra, U.S. Army Combat Capabilities Development Command Soldier Center SFC Paul Ray Smith Simulation & Training Technology Center

T3 WEDNESDAY • 4 DECEMBER • 1400 • ROOM S320F

Training, Accelerated

Session Chair: Nick Giannias, CAE
Session Deputy: Stu Armstrong, Cole Engineering Services, Inc.

Simple to Complex – Evolution of Workforce Training in a Rapidly Changing Environment (19155)
Mike Thorpe, Serco, Inc.

Improving Assessments Using Intelligent Agents with Transient Emotional States (19251)
Angie Dowdell, Army Research Institute, Columbus State University; Rania Hodhod, Columbus State University; Suleyman Pölat, University of North Texas; Randy Brou, Army Research Institute; Julia Grove, Consortium Research Fellows Program

Learning Next: Self-Improving Competency-based Training Rooted in Analytics (19302)
Jennifer Lewis, CMSP, Kathryn Thompson, Tobie Smith, SAIC

T4 THURSDAY • 5 DECEMBER • 1030 • ROOM S320F

Improving Training through Realistic Environments and Architectures

Session Chair: Thomas Yanoschik, CMSP, SAIC
Session Deputy: Capt J. Garrick Sheatzley, EWTGLANT M&S Officer

Impact of Malodors on Tourniquet Application: A Longitudual Study (19169)
Christine Allen, Ph.D., CMSP, Claudia Hernandez, Sasha Willis, Brian Goldiez, Ph.D., Grace Teo, Ph.D., Lauren Reinerman-Jones, Ph.D., University of Central Florida Institute for Simulation and Training; Mark Mazzeo, U.S. Army Combat Capabilities Development Command; William Pike, Ph.D., U.S. Army CCDC-SC STTC

Driving Digitally-Aided Close Air Support Capabilities in Simulation: Lessons Learned (19320)
Emilie Reitz, Joint Staff, J6; Kevin Seavey, Alion S&T

Adaptive Network Planning for Infrastructure Networks for Test and Training Events (19337)
Rajive Bagrodia, Ph.D., Jeff Weaver, Wei Liu, Defeng Xu, SCALABLE Network Technologies; Gil Torres, Kent Pickett, TRMC S&T C4T; Jason Richardson, David McClung, U.S. Army Operational Test Command

Continuing Education Units: An I/ITSEC Opportunity

Continuing Education Units (CEU) were established in 1970 to create a unit of measurement to quantify continuing education and training activities. CEUs apply to technical and educational settings such as I/ITSEC. The primary focus of I/ITSEC is to highlight innovative implementation of simulation and education technologies as tools to achieve cost efficient training and increased military readiness. Therefore, CEUs are offered for all **Tutorials, Paper Sessions, and the Professional Development Workshops**. CEUs are being sponsored and maintained by the University of Central Florida, Division of Continuing Education.

WHY SHOULD I EARN CEUs AT I/ITSEC?

- Participation in the tutorials, papers and Professional Development Workshops for CEU credit reinforces your commitment to remain current in the evolving technologies relating to training and simulation.
- The CEU transcript indicates your active participation in the technical program of the conference to your employer.
- Previous attendees have indicated that CEUs have assisted them in securing approval to attend the conference.

WHAT SESSIONS ARE CEU-ELIGIBLE?

- All Tutorials, Papers, and Professional Development Workshops are CEU-eligible.

WHO MAY ATTEND THESE EVENTS?

- Tutorials and Professional Development Workshops are open to everyone. The Paper Sessions are limited to registered conference attendees.
- Does attending mean I automatically receive CEU credits? No. You have to let us know, via your registration, that you are interested in the credits. There is no charge for Paid Conference Attendees. However, if you are in an unpaid category (i.e., Exhibitor Personnel) there is a $45 charge, payable during registration. You may also register separately for the CEUs if you missed this step in your conference registration process.

HOW DO I RECEIVE CEUs AT I/ITSEC?

1. Be sure you are appropriately registered (you can confirm when you check in onsite) for CEU credits.
2. Be sure to have your conference badge scanned by a conference volunteer at each session you attend. Attendance is recorded electronically and required for CEU credit.
3. Your CEU transcript will come to you via the University of Central Florida, Division of Continuing Education. Ten contact hours equate to one CEU credit.

Contact Jana Breburdova at jana.breburdova@ucf.edu or 407-882-0247 for additional information.

Continuous Learning Points (CLPs)

The U.S. Department of Defense (DoD) acquisition workforce members are expected to earn Continuous Learning Points (CLPs) to stay current in leadership and functional acquisition skills that augment the minimum education, training, and experience standards established for certification purposes within their acquisition career fields. It is each acquisition member's responsibility to meet the goal of 40 CLPs each year and to meet the mandatory requirement of 80 CLPs every two years. Acquisition Professional Activities are allowed to count toward CLPs. CLPs are awarded in accordance with DoD-wide guidelines as augmented by Service-specific policies. I/ITSEC provides an excellent opportunity for the DoD acquisition workforce members to earn mandatory CLPs.

Certified Modeling and Simulation Professional

EVENTS AT I/ITSEC

STATE OF THE CMSP NATION MEETING

Wednesday, December 4, 1000 – 1100, Room S210D

Join the CMSP discussion with a newly formed CMSP 3.0 review committee.

CMSP WORKSHOP

Friday, December 6, 0800 – 1200 , Room S331A

This workshop describes the CMSP application, philosophy behind the exam and delves into sample exam questions.

CMSP CERTIFICATION

Requirements: 3-8 years work experience, CMSP application, resume, 3 letters of recommendation, and successful completion of the CMSP exam. Certification is good for 4 years after which recertification is required.

For more information, visit **SimProfessional.org** or contact **Carol Dwyer** at cdwyer@NDIA.org

Friday — Professional Development Workshops

Location:	Orange County Convention Center, South Concourse, Rooms S330 A-H and S331 A-D
Date:	Friday, 6 December
Times:	0700 Limited Continental Breakfast and Registration AM Sessions 0800 – 1200 • FULL DAY Session 0800 – 1630 • PM Session 1300 – 1600
Who may attend?	All registrants of I/ITSEC are welcome to attend.
Fees:	There is no fee for I/ITSEC Conference Registrants/Exhibitors – I/ITSEC badge required for entry.
CEU/CLP:	Paid I/ITSEC Conference registrants are eligible to receive CEU/CLP credits. If not a paid attendee, a $45 fee will be charged only if you wish to receive the CEU credits.
Registration:	Registration for individual workshops is not required. Workshops fill on a first-come, first-serve basis. Please arrive early for topics that interest you the most — **seating is limited**. If you wish to receive CEU credits, be sure to request CEUs during your conference registration. You may update your registration to include CEUs at any time at http://www.iitsec.org/attend/registration-fees
Lunch:	On own

UCF Division of Continuing Education
UNIVERSITY OF CENTRAL FLORIDA

Coordinated by University of Central Florida Division of Continuing Education. For more information about available programs and services, please visit us at www.ce.ucf.edu

UCF Division of Continuing Education • 3280 Progress Drive, Suite 700, Orlando, FL 32826 • (407) 882-0260 or ceprograms@ucf.edu

ALL PROFESSIONAL DEVELOPMENT WORKSHOPS ARE ELIGIBLE FOR CEU/CLP CREDITS (SEE PAGE 70)

PDW1 • Room S330EF • 0800 – 1630

CyberTRAINsitions

Presenters David Metcalf, Ph.D., Director, Mixed Emerging Technology Lab, David "Fuzzy" Wells, Ph.D., CMSP, Deputy Director, Lauren Reinerman-Jones, Ph.D., Director of Prodigy Lab, Matthew Canham, Ph.D., Research Assistant Professor, Cyber Security, Institute for Simulation and Training, University of Central Florida

The accelerating pace of technological innovation and development is outpacing both employees' and employers' ability to maintain the minimum requisite knowledge, skills and abilities (KSAs) to operate effectively. Future cyber workforce development and the continuous training of existing employees will require new and innovative methods for the creation of vehicles for recruitment and engagement of the broadest possible impact. The CyberTRAINsitions workshop, will bring together representatives from the Department of Defense, academia and private industry to discuss these challenges and consider potential solutions. Building from the TRAINsitions workshop hosted by the Institute of Simulation and Training in January 2019, CyberTRAINsitions will feature a keynote presentation by VADM Nancy Norton, a lunchtime student cyber-project poster session, three breakout special-topic focus tracks covering Cyber Strategy and Policy (Room S330B), Human Aspects of Cybersecurity (HACS) (Room S330C) and Integrating Women & Underrepresented Communities into the Cyber Workforce (Room S330D).

PDW1.1 • Room S330EF • 0800 – 1130

Cyberspace Training: Is This Even Legal?

Presenters David "Fuzzy" Wells, Ph.D., CMSP, Deputy Director, Institute for Simulation and Training, University of Central Florida; Derek Bryan, Support Contractor for the U.S. Pacific Command Cyber War Innovation Center

Although mandated at the highest levels of government, cyberspace training remains a largely undocumented and misunderstood training domain. Who are we training? How can we ensure that cyberspace training events do not negatively impact the rest of the training audience? What cyberspace training capabilities exist and how can we best integrate and employ them? Where can I get help? This workshop provides answers to the above questions including defining your training audience and objectives, identifying supportive programs, venues and processes and detailing and demonstrating the plethora of available cyberspace training solutions. It provides a foundation to help organizations define, plan and execute cyberspace training events and will aid individuals – leaders, planners, cyber warriors, service providers and general users – who provide or rely on cyberspace capabilities to accomplish their mission.

Workshop Schedule:

0800 – 0845	Plenary Session
0845 – 0900	Networking Break
0900 – 1130	Break-out Sessions Cyber Strategy and Policy Human Aspects of Cybersecurity (HACS) Integrating Women & Underrepresented Communities into the Cyber Workforce
1130 – 1300	Lunch, Student Posters, and Demos
1300 – 1530	Break-out Sessions Cyber Strategy and Policy Human Aspects of Cybersecurity (HACS) Integrating Women & Underrepresented Communities into the Cyber Workforce
1530 - 1545	Networking Break
1545 – 1630	Closing Remarks and Discussion

PDW1.2 • Room S330EF • 1300 – 1530

Blockchain, Cyber Security, and Simulation

Presenter David Metcalf, Ph.D., Director, Mixed Emerging Technology Lab, UCF Institute for Simulation and Training

Come explore the latest examples and ideas of Blockchain's potential to reshape training and simulation. The power of Blockchain goes beyond cryptocurrencies to unlock the potential for combining technologies that reshape industries. Whether AI, IoT, games, or smart contracts, understanding how these technologies may disrupt traditional industry, academic and government solutions is essential. In this session, you will get an overview, followed by industry specific examples in games/sims, health and enterprise systems as well as a proven framework for evaluating the potential for Blockchain and emerging technologies.

PDW2 • Room S331A • 0800 – 1200

Certified Modeling & Simulation Professional (CMSP)

Presenter Ivar Oswalt, Ph.D., CMSP, NET + , Senior M&S Analyst, The MIL Corporation

This workshop describes the CMSP program, with an emphasis on characterizing the requirements for achieving this valuable certification. It describes the application and examination processes (e.g., education and work experience, application, and reference requirements; how the exam is administered; and the role of continuing education). In addition, it summarizes the philosophy behind the examination approach employed, describes the two examination tracks offered (Technical and User/Manager), and delves into some detail regarding sample exam questions. This workshop is being taught by a recent CMSP recipient, and thus includes timely insights into preparing for and achieving this certification. Finally, after providing an overview of the exam and summarizing strategies for self-study, this workshop concludes with a round-table discussion regarding evolving this certification for future success.

THE DISTINCTION OF A COMMITTED M&S PROFESSIONAL EARNING YOUR CMSP DESIGNATION DELIVERS:

- **RECOGNITION** as a leader in the M&S Profession
- **VALIDATION** of your skills, knowledge, and abilities
- **MEMBERSHIP** in a vibrant community, with associated professional opportunities

PDW3 • Room S331B • 0800 – 1200

Harnessing the Power of Data Analytics to Optimize Training

Presenters Liz Gehr, Ph.D., Chief Learning Scientist, The Boeing Company; Barb Buck, Ph.D., Research Psychologist, The Boeing Company

Data analytics offers a principled approach to managing data and making it a valuable resource for understanding complex interactions and improving operations. The training community has unique needs and obstacles when attempting to implement a standard data analytics approach. New technology and emerging standards such as xAPI enable the collection of data from a variety of training sources, including student records, training devices, student performance during training and student daily activities. The collection, preparation, integration and understanding of this wealth of data present many obstacles as well as opportunities. This workshop will provide an overview of common and emerging data analytics methods as they relate to training data, as well as how they can be applied to enable and support competency-based learning and adaptive learning. One main focus will be the challenges associated with applying standard data analytics methods in a military training environment. Other topics covered will include how to prepare, transform and store data for analysis, opportunities in data visualization and privacy issues. The format of the workshop will involve lecture and interactive question-and-answer sessions for each topic addressed. Participants are encouraged to bring up additional topics or examples of training data analytics applications.

PDW4 • Room S331C • 0800 – 1200

Live-Virtual-Constructive (LVC) Interoperability Techniques

Presenters Ed Powell, Ph.D., Principal at Edward Powell Consulting; Randy Saunders, The Johns Hopkins University Applied Physics Lab

This workshop will provide an overview of the systems engineering issues with regard to integrating disparate military simulations for analysis, training, testing and other purposes. We will discuss the three major interoperability techniques, the Distributed Interactive Simulation (DIS) standards, the High Level Architecture (HLA) for Modeling and Simulation and the Test and Training Enabling Architecture (TENA), including descriptions of their architectures and some of their use cases. Recent and planned evolution of each architecture will be explained. A discussion of how these architectures are actually used in the real world and the process for integrating disparate systems in a multi-architecture environment will be discussed. The format of the workshop will be part lecture and part informal discussion/question answer. Participants are encouraged to raise specific topics any time during the workshop.

PDW5 • Room S331D • 0800 – 1200

Serious Game Design Workshop

Presenters Peter Smith, Ph.D., Assistant Professor, University of Central Florida; Kishan Shetty, Producer, Janus Research

During this accelerated half-day workshop, participants will be introduced to key concepts, steps and processes involved in designing a serious game for learning. Through hands-on activities and working together in groups, participants will design a learning game. Participants will experience each phase of the design process, including identifying the training requirements and learning objectives, creating an effective story, determining instructional and gaming strategies and designing key game and instructional mechanics. Central to our approach will be ensuring that that any key design decision addresses both gaming and instructional considerations. During the workshop, participants will be introduced to key methods to use and issues to consider when designing a learning game. Groups will share their design decisions along the way.

PDW6 • Room S330G • 0800 – 1200

Team and Collective Training Needs Analysis (TCTNA)

Presenter John Huddlestone, Ph.D., Senior Research Fellow in the Human Systems Integration Group, Institute for Transport and Future Cities, Coventry University, England

Effective team training is a significant precursor to the delivery of team performance at the level required for organizational success in the military context (and elsewhere). The front end analysis techniques required to identify team training requirements, specify training solutions and evaluate training options must address complexities of team task, environment and delivery methods. Team and Collective Training Needs Analysis (TCTNA) is a methodology that has been developed for the UK MOD specifically to address this front end analysis challenge. The TCTNA method is built upon a set of simple models which facilitate structured thinking about team and collective training problems. The purpose of this workshop is to provide an understanding of how analysis and design concepts familiar from Instructional Systems Design / the Systems Approach to Training have been extended within TCTNA to address the complexities of team and collective training. The focus of the workshop will be on the application of the underpinning models to guide structured thought to deliver effective analysis, rather than rigid procedural detail. Its application will be demonstrated by means of a Maritime Force Protection case study and further illustrated by examples form the underpinning research. The workshop will reflect the latest enhancements to the methodology developed in 2018/19. The iterative application of TCTNA to support key stages in the acquisition process will also be discussed. The workshop will include short elements of presentation, group discussions and break out activities to explore the application of the principles of the method.

PDW7 • Room S330H • 0800 – 1200

Using ROI-Focused Design Thinking to Deliver Impact Results

Presenter Timothy R. Brock, Ph.D., CPT, CRP, ID (S&L+), Director of Consulting Services, ROI Institute

Training and education programs that use simulation as a learning medium offer significant value to improve military preparedness and mission outcomes. Yet, it is now necessary to add bottom line and ROI funding justifications to support three government mandates to (1) decrease costs, (2) increase value through improved efficiencies and outcomes and (3) expand sustainable capabilities to compensate for continuing funding decreases. This workshop introduces the ROI Methodology that applies design thinking principles to demonstrate the value of using simulation in training and education programs in terms that government, military and corporate executives understand and desire to make initial and ongoing funding decisions.

NOTES

STEM


AIR FORCE
ARMY
NAVY USMC
'19
INDUSTRY


WINNING THE WAR OF COGNITION
BY PUSHING READINESS & LETHALITY BOUNDARIES

NTSA STEM Workforce Initiative

AIR FORCE '19 ARMY NAVY USMC INDUSTRY

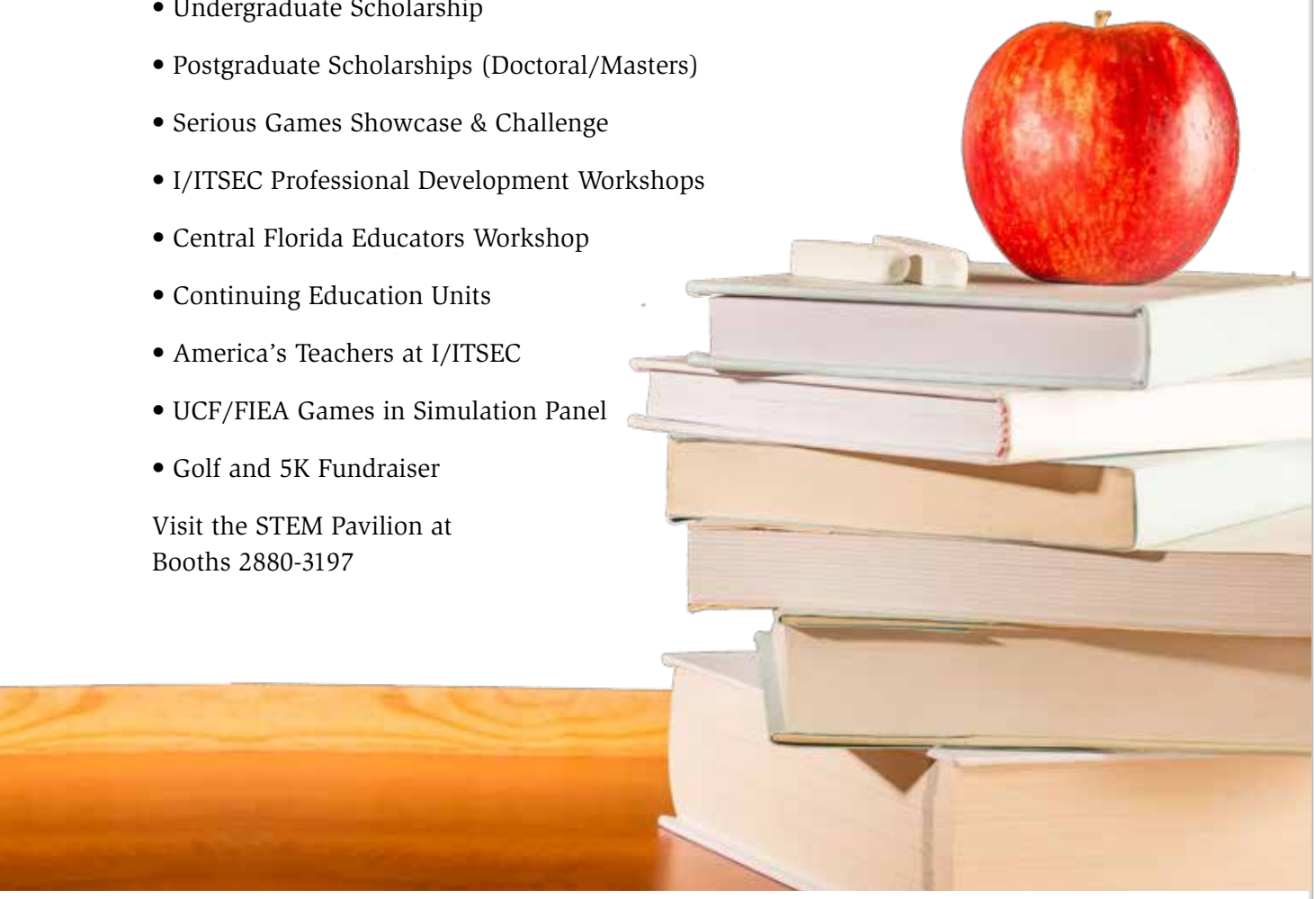
STEM supports and promotes activities encouraging students' interest and pursuit in Science, Technology, Engineering and Mathematics.

STEM Today = Prepared Workforce for Tomorrow

In support of STEM and Workforce Development, I/ITSEC sponsors the following programs:

- Future Leaders Pavilion
- Students at I/ITSEC
- Florida High Tech Corridor Council's stemCONNECT
- Undergraduate Scholarship
- Postgraduate Scholarships (Doctoral/Masters)
- Serious Games Showcase & Challenge
- I/ITSEC Professional Development Workshops
- Central Florida Educators Workshop
- Continuing Education Units
- America's Teachers at I/ITSEC
- UCF/FIEA Games in Simulation Panel
- Golf and 5K Fundraiser

Visit the STEM Pavilion at
Booths 2880-3197



STOP!
SEE THE FUTURE

Future Leaders Pavilion

Booth 2980

Tuesday, 3 December
1200 – 1730

Wednesday, 4 December
0930 – 1730

PRESENTATION SESSION
1600 – 1730
ROOM 320F

Thursday, 5 December
0930 – 1500

AWARDS CEREMONY
1415 • BOOTH 2588
Innovation Showcase

Learning and *Leadership* are indispensable to each other.

The National Training and Simulation Association and the members of I/ITSEC take great pleasure in welcoming you to the Thirteenth Annual Future Leaders Pavilion and Special Session.

We are delighted to host secondary students from such diverse areas as:

- New Orleans, LA
- Orlando, FL
- Philadelphia, PA
- Dallas, TX
- Latham, NY

The students who participate in the Future Leaders Pavilion (FLP) are committed to excellence and are enrolled in engineering, computer sciences, mathematics, or modeling and simulation tracks. Projects presented this year will continue the legacy of excellence built by previous FLP participants.

Please remember to stop by FLP, located in Booth 2980, during your visits to the exhibit floor.

On Wednesday at 1600 in Room S320F, please lend support to our Future Leaders as they present their projects during their Special Session – "The Future is Now!"

Join us again at 1415 at the Innovation Showcase, Booth 2588 for an award ceremony acknowledging the work of our Future Leaders. *FLP sponsored by: IAI, SAIC, Trideum Corporation, and Wittenstein*

Students at I/ITSEC

Thursday, 5 December • 0900 – 1400

Over the years, thousands of Central Florida high school students have participated in a unique learning experience by visiting the Exhibitors/Exhibits. The purpose of the I/ITSEC Student Tours is to allow students to experience first-hand, real-world training, simulation and education solutions that will help bridge the gap between classroom theory and the applied use of Science, Technology, Engineering and Mathematics (STEM) subjects. Annually, over 600 students, along with 200 school chaperones and volunteer I/ITSEC member escorts, are exposed to special demonstrations and static displays of the training, simulation and education industry. Students are able to learn about the basic building blocks required to deliver high fidelity modeling and simulation products across a broad range of training environments. Participating in the I/ITSEC Student Tours on Thursday, 5 December 2019, will give students a complete understanding of how they can apply the STEM related skills they learn in the classroom to highly successful careers in our industry. For the first time in 2016, through a partnership with NTSA, the Florida High Tech Corridor Council and other "STEM-U-Lators," we are making it possible to bring I/ITSEC to the classroom through the stem-

CONNECT program. This virtual tour is broadcast live and recorded for use in the classroom at a later time.

To learn more about the I/ITSEC Conference and Student Tours, please contact Bill "Roto" Reuter, I/ITSEC Student Tours Coordinator, at **roto@r-squaredsolutions.net** or **renita.ketchen@technologytap.com**.

America's Teachers @ I/ITSEC

I/ITSEC has a long history of supporting the education of students and teachers through visits to the conference. Since the America's Teachers at I/ITSEC program began in 2008, we have hosted teachers from Arizona, California, Florida, Georgia, Maryland, Montana, New York, Ohio, Rhode Island, Tennessee, Texas and Virginia. As part of I/ITSEC's efforts to further education in Science, Technology, Engineering and Mathematics (STEM), teachers and administrators from across the country have been invited to attend the conference. The America's Teachers at I/ITSEC Program consists of an orientation session, attendance at the Modeling and Simulation stemCONNECT, guided tours of the Exhibit Hall and attendance at tutorials, paper sessions and special events. The teachers will be in sessions and visiting the Exhibit Floor on Monday through Wednesday. Please watch for their red, white and blue ribbons and be ready to engage in conversations about STEM and future workforce initiatives. This program is supported by the National Training and Simulation Association and its industry members.

Educators

Workshop to Introduce Simulation into the Physics Classroom

stemCONNECT

A program of the Florida High Tech Corridor

The Florida High Tech Corridor (The Corridor) is proud to partner with I/ITSEC once again to highlight the 23-county Corridor region's thriving Modeling, Simulation and Training (MS&T) sector.

The evolution of technology has enabled Corridor programs to transform in ways unimaginable more than 20 years ago, specifically stemCONNECT. This program truly does make the connection between academia and private industry by bringing together students and teachers in classrooms with experts in science, technology, engineering and math (STEM) for engaging presentations through video conferencing tools. Indeed, since the first virtual session in 2013, stemCONNECT has already introduced high-tech careers in MS&T and other sectors to nearly 13,000 students and teachers.

The Corridor's stemCONNECT team is excited to host two programs during I/ITSEC – one for educators and one for students – to showcase MS&T technology and related career opportunities. Educators will join stemCONNECT for guided tours of industry exhibits and presentations from well-known experts in the field, including representatives from the Institute for Simulation and Training at the University of Central Florida, the National Center for Simulation and the Florida Advanced Technological Education Center (FLATE) – an initiative of the University of South Florida, Hillsborough Community College and St. Petersburg College funded by the National Science Foundation. Students will learn about the role of robotics in MS&T by programming a LEGO™ robot and interacting with an NAO™ robot. stemCONNECT will also guide students on a tour of industry exhibits with robotics demonstrations.

For those who cannot attend, stemCONNECT will be live-streaming a tour of the I/ITSEC convention floor.


SERIOUS GAMES
SHOWCASE & CHALLENGE
Great excitement awaits you in Booth #2880 at the 14th annual Serious Games Showcase & Challenge (SGS&C)!
The SGS&C provides a showcase of best-in-class learning games submitted by business, government, and student developers and awards noteworthy games to recognize their achievements. The true uniqueness of the SGS&C is that every I/ITSEC attendee has the chance to play the games, talk with the developers, and cast a vote for the coveted SGS&C People's Choice Award.
The SGS&C brings international award-winning games to you through partnership with Simulation Australasia host of the Australasian Simulation Congress (ASC) SGS&C. These international winners automatically earn spots as finalists in the SGS&C, are eligible for awards, and are featured at I/ITSEC on the exhibit floor.
This year will once again highlight games that employ characteristics or techniques that enhance the game in a new or different way through the competition for the Innovation Award. The innovative technique can be hardware integration, instructional design, game design, content topic, or a combination thereof. Drop by the booth to see these innovative technologies in action!
The seven categories of SGS&C winners are announced at the Awards Ceremony on Thursday, December 5th at 1300 in the Innovation Showcase, Booth 2588: Best Business-Developed Serious Game; Best Government-Developed Serious Game; Best Student-Developed Serious Game; Best XR Serious Game; Innovation Award; Students' Choice Award; and finally, what some might consider the most prestigious award, the People's Choice Award. And remember, the People's Choice Award is based on votes from you! Your I/ITSEC badge includes a special SGS&C ballot that allows you to vote for the winner. Be sure to vote before the deadline on Wednesday, December 4th!
Check out the Serious Games Showcase & Challenge to experience how games can address your serious learning needs.
For more information, contact Jenn McNamara:
jmcnamara@breakawayltd.com
7 Awards!
Students' Choice
Innovation
Business
Student
Government
XR (AR/VR/MR)
People's Choice
sgschallenge
@sgschallenge
sgschallenge.com
Booth #2880

STEM
Tomorrow's Workforce, Today!

STEM Pavilion: Near the Exhibit Hall Lunch Entrance
Project-based Learning Exhibitors

www.centralfloridaSTEM.org

STEM Pavilion

Keeping the workforce pipeline filled with students pursuing STEM degrees is vital to the modeling, simulation, and training (MS&T) industry. It takes all of us to accomplish that. Each year the STEM Pavilion showcases organizations and programs that are successfully inspiring students and are preparing educators to teach and motivate them to pursue STEM degrees. We invite you to visit the Pavilion to learn more about the organizations and agencies active in the local community and across the country that you can support as a business or parent or community leader. Learn about programs available for students and how you can engage, mentor and help prepare them for future careers. Engage with educators who want to learn from you about the MS&T industry. Find ways to volunteer. Get involved! Your experience is needed.

Visit www.centralfloridaSTEM.org/parents for more Parent resources

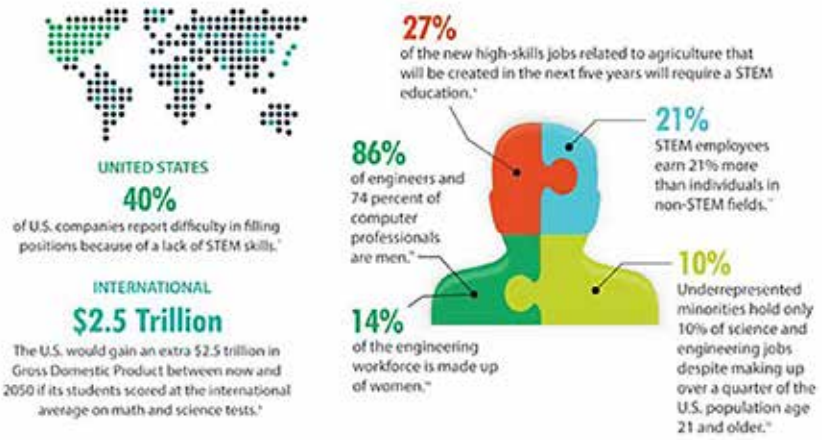
Visit www.centralfloridaSTEM.org/student for more Student resources

Teacher Workshop

The annual I/ITSEC Teacher Workshop gives teachers a chance to be students and engages teachers in hands-on learning by letting them try new ideas for their classroom. It facilitates dialogue between project-based learning (PBL) and industry professionals, while providing a set of relevant and accessible resources for teachers to use throughout the year. Teachers representing counties throughout Florida participate. This year the educators will be on the exhibit floor with tour guides visiting key local MS&T exhibitors to learn about the industry, STEM skills needed and career opportunities available. If you see one of our teacher tour groups on Wednesday, stop and introduce yourself!

Visit www.centralfloridaSTEM.org/educators for more Educator resources

The State of America's Workforce



The Central Florida STEM Education Council mission is to collaboratively coordinate and plan STEM education efforts preparing and encouraging pre-college students to enter technical fields of study and to pursue employment in the Central Florida high-tech workforce.

Building a Brighter Future
TODAY!

Over $500,000 in scholarship awards distributed to date

29th Annual RADM Fred Lewis Postgraduate Scholarship Recipients

In honor of RADM Fred Lewis, the former President of NTSA, these scholarships are offered to stimulate student interest and university participation in preparing individuals for leadership in the Modeling & Simulation, Training and Education communities. By investing in our future workforce, the scholarships encourage expansion of the I/ITSEC community and promote innovation through direct investment in our community's future leaders. The awards are offered at a Masters level in the amount $5,000, and at a Doctoral level in the amount $10,000.

Sara Beadle
Clemson University
Human Factors Psychology

Adam Kohl
Iowa State University,
Mechanical Engineering & HCI

Emily Rickel
Embry-Riddle University
Human Factors

Alexandra Kaplan
University of Central Florida
Human Factors & Cognitive Psychology

Lee Lisle
Virginia Tech
Computer Science

Mark Schiferle
SUNY Buffalo
Mechanical Engineering

Julie Kent
University of Central Florida
Modeling & Simulation

Jack Miller
Iowa State University
Mechanical Engineering

New Program

Inaugural Barbara McDaniel Undergraduate Scholarship

NTSA has established the inaugural **Barbara McDaniel Undergraduate Scholarship** program this year to acknowledge the substantial contributions of a long-time I/ITSEC leader. Mrs. McDaniel, the recipient of the I/ITSEC 2017 Lifetime Achievement Award, tirelessly supported all aspects of I/ITSEC since 1993. She began her career as an educator, so these awards will honor her life-long passion in the education of our youth. NTSA understands the importance of students pursuing Modeling & Simulation degrees and how vital it is to the modeling, simulation, and training (MS&T) industry. These new scholarship awards will keep the MS&T workforce pipeline filled, now starting at the Undergraduate level.

In its inaugural year, NTSA awarded $10,000 to each of three universities:

- **Full Sail University** in Orlando, FL
- **Wright State University** in Dayton, OH
- **Auburn University** in Auburn, AL

3rd Annual Leonard P. Gollobin Post-Graduate Scholarship Recipients

Elisa Torres
George Mason University

I/O Psychology

Morgan McCombs
Massachusetts Institute of Technology

Computation for Design and Optimization

Leonard P. Gollobin Graduate Scholarship program was generously bequeathed by Mr. Gollobin to direct students developing their technical talents into the defense industry. Throughout his career, Mr. Gollobin led scientific initiatives that improved our defense systems and strategically shaped our military capabilities. NTSA administers this scholarship with the intent to provide financial support for those seeking advanced degrees and a path to leverage their commitment to strengthen our nation's security.

IMPORTANT DATES FOR 2020

When to Apply Applications must be postmarked by 26 June 2020. (Don't Delay!)

How to Apply See **http://www.iitsec.org/education/students-and-teachers/scholarships** for complete application details.

Award Announcement 7 August 2020

Post Graduate Scholarships

Looking for Future Leaders in the Simulation, Training and Education Community. Learn more about the I/ITSEC community at **www.iitsec.org**.

Eligibility U.S. Citizens • Full-time Masters or Doctoral students (complete undergraduate work by Spring 2020).

See Study Disciplines at **http://www.iitsec.org/education/students-and-teachers/scholarships**

Award Amounts Available for Fall 2020
$10,000 (Doctoral Candidates)
$5,000 (Masters Candidates)
Be our guest at I/ITSEC
November 30 – December 4, 2020

Direct Further Inquiries and Provide Submissions
I/ITSEC Scholarship Program
c/o The National Training and Simulation Association
2101 Wilson Boulevard, Suite 700
Arlington, VA 22201
(703) 247-9480 or **dlangelier@ndia.org**

Scholarship Chair
Janet Spruill, Aptima, Inc.

Exhibit Hall

Attendee Luncheon

Lunch will be served Tuesday – Thursday at 1200. You must enter & exit luncheon through the Exhibit Hall. Full Conference registrants will receive lunch tickets with their registration materials. Exhibitors and Visitors may purchase a ticket for $35.00 at the main Registration Station. Lunch tickets are dated; you must present the current day's lunch ticket for entry.

Connections Lounge & Grill

Stop by and relax in the Connections Lounge & Grill for a bite to eat or a refreshing drink and then connect to your email or review the I/ITSEC program online to plan your next move at the conference. Connections Lounge & Grill will be located in Booth 100, South Exhibit Hall.

Show Management Office

S220B • The Show Management Office will be staffed during show hours for all questions regarding booth space, rules, regulations, exhibitor locators, security and late/early passes. Registration will not be made available at the Show Management Office.

National Training & Simulation Association (NTSA)

Booth 2810 • The National Training and Simulation Association (NTSA) is America's premier organization representing the interests of the modeling and simulation community. As such, it serves as a constant point of contact for government, academia, industry, research organizations and the military to exchange information, share knowledge, align business interests and in general stimulate the growth and overall dynamism of the industry.

Service Booths

PEO STRI	339/1533
PM TRASYS	1433
NAWCTSD	249/1439
USAF	1539
U.S. Army CCDC	329

International Pavilions

Canada	1871
Australia	2360

Healthcare Pavilion

Pavilion Location	2181, 2185, 2281, 2283, 2381

Recognizing that simulation represents a paradigm shift in health care education, SSH promotes improvements in simulation technology, educational methods, practitioner assessment and patient safety that promote better patient care and can improve patient outcome.

Innovation Showcase

Exhibit Hall – Booth 2588

Presentations within the Innovation Showcase are led by cutting-edge exhibiting companies and government agencies that are knowledgeable on the various subject matter within the M&S Industry. Be sure to stop by one of the 30-minutes sessions to hear what is new and exciting in M&S! Be sure to check the onsite schedule for any changes or updates to the Innovation Showcase schedule.

Most up-to-date information will be available on the mobile app, website and onsite during I/ITSEC. (As of 31 October 2019)

Monday, 2 December • International Spotlight		
1430	Full-Body Multiplayer VR by Manus	Manus VR
1445	3D Content and Geographic Visual Database Creation for Training and Simulation Systems	B-Design3D Ltd.
1500	Unique Light Field Displays for Natural 3D Visualization	Avalon Holographics
1515	An Alternative to Enforcing "Common" Standards in Modeling: Publishing Interoperability and Promoting Functionality	SIMTHETIQ Inc.
1530	Training Management System – The Missing Link	BNH Expert Software Inc.
1600	Impact of Virtual Reality on Enterprise Training	inlusion Netforms UAB
1615	Optical Blending for projection display – maximise your Dynamic range; from NVG to daylight	Gbvi
1630	New Electronic Blanks, E-blanks by GREEN AMMO	Green Ammo AS
1645	Human Eye Resolution in AR and VR for Simulation and Training	Varjo Technologies
1700	C4ISR: Reducing Cognitive Load in Mission Planning with True 3D Image Visualization	3D Planeta
1715	Futures Technology Forecasting in Action	Noetic Group
1730	IT^{2}EC 2020: Are you ready for your Digital Twin?	IT^{2}EC
Tuesday, 3 December		
1245	Chiron-X1™ Armor and Close-Quarter Combat Training and XR Simulation	Chiron Global Technologies / Kinetic XR
1330	Improve Efficiency with Training Life Cycle	BNH Expert Software Inc.
1415	Agile Learning for a Competitive Edge	Deloitte
1500	Google Cloud Presentation by Christian Burbach	Google Cloud
1545	Remote Light Source and Projector Head: Making 8K Resolution and High Frame Rate More Compact	Digital Projection
1630	Unique Light Field Displays for Natural 3D Visualization	Avalon Holographics
Wednesday, 4 December		
0930	MAK One in STE	VT MAK
1015	Simulation Configuration and Environment Control (SimChEC)	Trideum Corporation
1100	Futures Technology Forecasting in Action	Noetic Solutions
1145	Using Virtual Environments for Real-world Autonomous Vehicle Training	ForgetFX Simulations
1230	Advanced Mission Training for Global Border Security Screening Solutions	S2 University
1315	Future of Digital Learning	Adobe, Inc.
1400	Cyber Table Top (CTI)	Trideum Corporation
1445	"Stop Prescribing Start Steering"– Epic Games is proposing an innovative way to collaborate for the entire training community, from geeks to simulation end users	Epic Games, Inc.
1530	Driving Simulator Development with Vortex Studio & Unreal Engine	CM-Labs Simulation
1615	C4ISR: Reducing Cognitive Load in Mission Planning with True 3D Image Visualization	3D Planeta

Exhibitor Networking Event

Tuesday, 3 December • 1700 - 1830 • Exhibit Hall

Be sure to kick off I/ITSEC 2019 with a stop by one of the participating booths at the I/ITSEC Exhibitor Networking Event. What a great way to view the latest technology while networking with exhibitors and your fellow attendees. Be sure to check out the official I/ITSEC website and onsite signage for updated participants.

Most up-to-date information will be available on the mobile app, website and onsite during I/ITSEC.
(As of 27 October 2019)

Booth	Company Name
381/481	Cole Engineering Service Inc. (CESI)
407	Google Cloud
820	3D Perception
1201	TRU Simulation & Training
1662	Improbable
1748	Lockheed Martin
1768	Scalable Display Technologies
2300	Aegis Technologies Group
2360	Team Defence Australia
2401	Aptima, inc
2810	National Training & Simulation Association
2826	E2M Technologies
2832	Krauss-Maffei Wegmann

Launch Pad

Exhibit Hall – Booth 793

The training, education, and simulation community will once again demonstrate their game-changing innovations to key government decision makers and procurement officials at I/ITSEC 2019. A panel of government and industry members selected the most innovative white papers via an objective, competitive process. The selected demonstrators employ technological innovations, re-define training and simulation processes, or create something entirely new that is going to change the way we train, simulate and educate.

The Launch Pad Special Event targets all I/ITSEC attendees, including select government acquisition stakeholders. Acquisition program leadership and Science and Technology divisions will be at I/ITSEC to assess the Launch Pad presentations' technology readiness levels. Speed to market is a key acquisition principle, and Launch Pad provides an opportunity to highlight technology that may be appropriate for rapid prototyping/rapid fielding initiatives.

Tuesday, 3 December – Session 1 (Language Tools and Apps)		
1400	Using Artificial Intelligence Technology and Personalized Services for Optimized Dynamic Language Teaching and Learning	Ponddy Education, Inc.
1430	An App-based Approach for Reliably and Efficiently Bringing Users to Fluency in a New Language	Fluent Forever, Inc.
Tuesday, 3 December – Session 2 (Game Engine Tools)		
1600	One World SDK for Unity	SimBlocks LLC
1630	Physically Based Night Vision Goggle Sensor Simulation in Game Engine	Presagis
Wednesday, 4 December – Session 3 (Augmented/Virtual Reality Tool/Robotics)		
1400	Omni-Directional Treadmill	Infinadeck
1430	The Robot Operating System (ROS) and the Gazebo Simulation Environment	Huntington Ingalls Industries
Wednesday, 4 December – Session 4 (Augmented and Virtual Reality Tools)		
1600	Computer Vision on the Edge	MapBox, Inc.
1630	Disruptive Training Across the Spectrum of Use Cases Using Virtual Immersive Experiences	Enduvo

NTSA Sustaining Member • NTSA Regular Member • NTSA Associate Member

Design Concepts	1217
Design Interactive, Inc.	2308
Diamond Visionics	2000
DIGINEXT	2560
DigitalCM	338
Digital Projection	887
Displays & Optical Technologies, Inc.	1822
DiSTI Corporation	1380
DMSCO	2372
domeprojection.com GmbH	1287
Doron Precision Systems, Inc.	507
E2M Technologies, Inc.	2826
Eagle 6 Technical Services, LLC	3173
EBC Electronics Corp.	1885
Eduworks Corporation	2958
Elbit Systems, Ltd.	2200
Electric Picture Display Systems	1768
Elite Aluminum Corporation/FORTSUSA	565
Embry-Riddle Aeronautical University	242
eMDee Technology, Inc.	880
Engineering & Computer Simulations, Inc.	1235
Engineering & Manufacturing Services, Inc (EMS)	627
Engineering Support Personnel (ESP), Inc.	1227
Epic Games, Inc.	2161
esc Aerospace US, Inc.	3167
Esri	250
ETSA CIC	2685
EWA GSI	624
Explotrain, LLC	1964
Extron Electronics	1109
FAA COE TTHP	558
FAAC, Inc.	1370
FARO Technologies, Inc.	632
FermiTron, Inc.	3170
FIRST Robotics	2997
FlightSafety International	1401
Florida Troops to Teachers	3197
FN America, LLC	1481
ForgeFX Simulations	3030
FoxGuard Solutions	2068
Frasca International, Inc.	2157
Full Sail University	1180
Future Leaders Pavilion	2980
G&D North America, Inc.	552
Gaumard Scientific	2480
GBvi Ltd.	3106
GDIT	2238
Geeks and Nerds	3166
General Dynamics Mission Systems	2232
George Mason University Serious Games Institute	1982
Georgia Tech Research Institute	1119
GLESEC	3175
Global Technology Integrators LLC	2226
GlobalSim, Inc.	2020
GO2Altitute	2431
Google LLC	407
GREEN AMMO AS	3161
GSA FAS & FEDSIM	521
Global Technology Integrations LLC	2226
H2 IT Solutions	595
Hampden Engineering Corporation	620
HP	1113
HTC Vive	2426
HTX Labs	1392
Huntington Ingalls Industries	1612
i2k	3111
IDS International	1987
IHSE USA, LLC	418
Immersive Display Solutions, Inc.	1463
Immersive Wisdom, Inc.	522
iMotions	3141
Improbable	1662
Industrial Smoke & Mirrors	2800
Industrial Structures	561
Inert Products LLC	1960
inlusion Netforms UAB	775
Innovation Showcase	2588
Integration Innovation, Inc.	2672
Inter-Coastal Electronics, Inc.	2268
Israel Aerospace Industries Ltd.	1071
IT²EC	3014
ITility, LLC	652
JANUS Research Group, Inc.	1986
J.F. Taylor, Inc.	1781
JIRACOR	2080
Joint Program Manager Medical Modeling & Simulation (JPM MMS)	2185
JRM Technologies	2008
JVC Visual Systems	1712
Katmai	700
KBR	3135
Kentucky Trailer	1829
Knowledge Based Systems, Inc.	520
Kratos	1312
Krauss-Maffei Wegmann GmbH & Co. KG	2832
L3Harris	1449
Laerdal Medical	2181
Land Forces 2020	2360
Larsen Motorsports, Inc.	2993
Laser Shot	1001
Launch Pad	793
Leidos	1413
LEONARDO	872
Leonardo DRS	395
Lightspace Technologies	673
LLS, Ltd.	3100
Lockheed Martin	1748
LSI, Inc.	840

Luminar Technologies	2430
Lunarline, Inc.	1270
LuxCarta	663
ManTech International	187
Mantis	342
Manus VR	2081
Marathon Targets	1700
Marine Corps System Command (PM TRASYS)	1433
MASA Group	2858
Mass Virtual, Inc.	3119
Matrox Graphics	787
Maxar Technologies	1980
MBX Systems	3004
Meggitt Training Systems	1421
MEI Technologies, Inc.	3027
MES Simulation & Training Corp.	857
MetaVR	1348
Metova Federal, LLC (CyberCENTS)	757
Military Officers Association of America (MOAA)	628
Mittler Report Verlag GmbH	2683
MONCH Publishing Group	3028
Moog	1021
Moog, Inc. (E-O Imaging)	656
MotionSystems	2534
Motum Simulation	2360
MS&T Magazine - Halldale Group	657
MSI Computer Corp.	319
Mursion	1274
Muskogee Technology	1985
MyComputerCareer	2427
Nasco Healthcare	340
NASA	3191
National Center for Adv of STEM Education (nCASE)	3189
National Center for Simulation	2208
National Center for Simulation-STEM	3181
National Defense Industrial Association	2810
National Defense Magazine	2810
National Geospatial Intelligence Agency	451
National Guard Association of the United States	622
National Training & Simulation Association (NTSA)	2810
NATO	2173
Navy STEM	3183
Network Allies, LLC	3031
Newman & Spurr Consultancy Ltd.	3018
Newton Design, LLC	3070
Nexter Systems	2832
NextGen Interactions	2669
NLR-Netherlands Aerospace Centre	630
Noetic Group	2360
North American Rescue LLC	238
Northrop Grumman	2548
Norxe	3011
NSTXL	241
Nutanix, Inc.	1983
Oak Grove Technologies	2392
Oakwood Controls	3010
OCPS Orange Technical College	3185
Old Dominion University Online	2966
Opaque Multimedia Pty Ltd.	2360
Operative Experience, Inc.	421
OptiTrack	871
ORBIT Electronics Group	2513
Orlando Science Center (OSC)	3187
Oshkosh Speciality Vehicles	3052
OWI & Vigilante	2580
Panel Products Inc	881
Paramount Panels, Inc.	420
Parsons	836
PatchPlus Consulting, Inc.	519
PATCO Electronics	422
Pathfinder Systems, Inc.	883
Patriot Products LLC	3000
Phoenix TS	560
Pinnacle Solutions, Inc.	1081
Pitch Technologies	2326
PiTech Solutions	3063
PLEXSYS	1573
PLW Modelworks	675
Polhemus	1920
Power Innovations Int'l, Inc.	1815
Pragmatics, Inc.	3158
Pratt & Whitney	2014
Precision Flight Controls, Inc.	413
Presagis	2848
Prevaliance, Inc.	2599
ProActive Technologies, Inc.	453
project syntropy GmbH	1281
PTC	258
Pulau Corporation	3048
PureMedSim Technology Group	2281
Q4 Services	1223
Quadrant Simulation Systems, Inc.	501
QuantaDyn Corporation	749
Quantified Design Solutions, LLC	3074
Quantum 3D, Inc.	1049
Quantum Improvements Consulting	457
Rapid Prototyping Services	1165
RAVE Computer	863
Ravenswood Solutions	2660
Raytheon	1037
Real-Time Innovations	2421
Resilient	1180
RGB Spectrum	607
Riptide Software, Inc.	2697
Rite in the Rain	559
RPA Electronic Solutions, Inc.	2409
RSi Visual Systems, Inc.	812
RUAG Schweiz AG	2818

NTSA Sustaining Member • NTSA Regular Member • NTSA Associate Member

S2MARTS/NSTXL	256
S2 University	3065
SA Photonics	518
Saab Defense and Security	800
Safety Training Systems, Inc.	1213
SAIC	2149
Scalable Display Technologies	1768
SCALABLE Network Technologies	613
SeaBox, Inc.	2429
Seminole State College of Florida	3195
Senspex, Inc.	548
Serco, Inc.	495
Serious Games Challenge	2880
SGB Enterprises, Inc.	2314
Shen Te Enterprises, Inc.	313
Shephard Media	549
SimCentric Technologies	1259
SimCraft	1292
SimiGon, Inc.	3148
SimIS, Inc.	2960
SIMmersion LLC	2521
SimPhonics, Inc.	1809
Simtek, Inc.	721
Simthetiq, Inc.	2334
Simulation and Control Technologies	1861
SimulationDeck, LLC	771
SimX	513
SMART EYE AB	1969
Soar Technology	635
Society for Simulation in Healthcare	2283
Solinnov Pty Ltd.	2360
Sonalysts	648
SonoSim, Inc.	2086
Sony Electronics, Inc.	2348
Specular Theory, Inc.	1180
Starline	550
Stirling Dynamics	2415
Strategic Systems, Inc.	301
Symbolic Displays, Inc.	2964
Systems Engineering Group, Inc.	254
Systems Technology Inc - PARASIM	2534
Team Defence Australia	2360
TEC Simulation	529
Technical Systems Integrators, Inc.	1271
Tech Wizards, Inc.	1334
Ternion Corporation	2214
TerraSim Inc.	2534
Thales	649
Theissen Training Systems, Inc.	1973
TiER1 Performance Solutions	535
T-Mobile US, Inc.	240
Tobii Pro	1981
Touché Technologies	3154
Trailer Transit, Inc.	618
TraumaFX Solutions, Inc.	531
TREALITY SVS	1760
TReX/NSTXL	239
TrianGraphics	980
Trideum Corporation	2626
TRU Simulation + Training	1201
Turning Technologies	1883
Twin Oaks Computing	654
UCF E2i Creative Studio	3097
U.S. JACLEAN, Inc.	459
UFA, Inc.	1926
UNIGINE Holding	307
United Electronic Industries (UEI)	1123
U.S. Army PEO STRI	339, 1533
U.S. Army CCDC	329
U.S. Navy	249
U.S. Navy / NAWCTSD	1439
USAF Expeditionary Operations School	621
USAF Training Systems Product Group	1539
Valiant Integrated Services, Inc.	1491
Valley IT Solutions LLC	3035
Vanguard LED Displays, Inc.	726
Varjo Technologies	1393
VATC - Visual Awareness Technologies & Consulting	660
Vcom3D	2381
Veraxx Engineering Corporation	1801
Vertex Solutions	2556
VIOSO	1984
VirTra	1029
Virtual Flight Academy	2582
Virtual Reality Media, A.S.	553
Virtual Simulation Systems Pty Ltd.	1093
VirtuReal	2360
Vision Engineering Solutions, LLC	3164
VMASC	2864
VRgluv, LLC	1273
Vricon	681
VT MAK	1322
Wacom Technology	3021
Wartsila Defense, Inc.	834
Westar Display Technologies, Inc.	870
WITTENSTEIN Aerospace & Simulation	641
Women in Defense	2810
WorldViz VR	243
World Wide Technology	882
Yorktown Systems Group, Inc.	601
YTEK Pty Ltd.	2360
ZedaSoft, Inc.	1473
Zeiss	539

Committees


AIR FORCE
ARMY
NAVY
USMC
'19
INDUSTRY


WINNING THE WAR OF COGNITION
BY PUSHING READINESS & LETHALITY BOUNDARIES

Conference Committee

Service Executives	Col Philip E. Carpenter, USAF, Senior Materiel Leader, Simulators Program Office, Air Force Materiel Command BG Michael E. Sloane, USA, Program Executive Officer for Simulation, Training and Instrumentation CAPT Tim Hill, USN, Executive Officer, NAWCTSD and Naval Support Activity Col "Lou" Lara, USMC, Program Manager, MARCORSYSCOM PM TRASYS
OSD/Joint Executive	Gregory Knapp, OSD (P&R) Force Readiness & Training
Service Principals	
Air Force	Tony DalSasso, USAF AFLCMC
Air Force Deputy	Tracy Titcombe, USAF AFLCMC
Army	Jesse Campos, U.S. Army PEO STRI
Navy	Diana Teel, NAWCTSD
Marine Corps	Koren L. Odermann, MARCORSYSCOM PM TRASYS
OSD Principal	Walter (Shep) Barge, Ph.D., OSD (P&R)/JAEC
Conference Chair	Brian Holmes, Quantum3D Government Systems
Deputy Conference Chair	Robert Kleinhample, SAIC
Program Chair	Jennifer Arnold, Booz Allen Hamilton, Inc.
Deputy Program Chair	Matt Spruill, Trideum Corporation
Subcommittee Chairs	
Education	Rhianon Dolletski-Lazar, ECS Federal
Emerging Concepts and Innovative Technologies	Gabe Diaz, Mantech International Corporation
Human Performance, Analysis and Engineering	Ingrid Mellone, HII-MDIS
Policy, Standards, Management and Acquisition	Jeffrey Raver, SAIC
Simulation	Paul Cummings, ECS
Training	Benjamin Bell, Ph.D., Eduworks Corporation
Best Paper Committee Chair	Diane Justice, USAF AFLCMC
Tutorial Board Co-Chairs	David Milewski, CAE USA MSI Lisa Scott Holt, Ph.D., Intelligent Automation, Inc.
Best Tutorial Committee Chair	Lee Lacy, Ph.D., The DiSTI Corporation
Education and Training Advisor	VADM Al Harms, USN (Ret.)
Scholarship Committee Chair	Janet Spruill, Aptima, Inc.
Director for International Programs	K. Denise Threlfall, Ph.D.
Strategic Planning and STEM Committee Chair	Linda Brent, Ed.D., The ASTA Group
Special Event Coordinator	Kara Orvis, Ph.D., Aptima, Inc.
Website and Social Media Advisor	John Killilea, NAWCTSD
Conference Sponsor	National Training and Simulation Association
President	RADM James Robb, USN (Ret.)
Vice President	Debbie Langelier, CEM
Director of Exhibits	Shannon Burch, CEM
Media Relations/Communications	John Williams
Operations	Annie Patenaude, AMP Analytics
Protocol Coordinator	Steve Detro, Detro Consulting LLC
Historian	Carol Denton

Council of Chairs

The Council of Chairs is a special advisory group to NTSA and the I/ITSEC Committee. The exclusive membership is comprised of previous I/ITSEC Conference Chairs. Drawing on their cumulative experience, these leaders provide a unique perspective and advice for the ongoing mission of I/ITSEC.

1979 A.W. Herzog *(Deceased)* and G.V. (Vince) Amico *(Deceased)*
1980 Robert W. Layne *(Deceased)*
1981 Kurt Merl
1982 James A. Gardner, Ph.D.
1983 John Todd *(Deceased)*
1984 Ralph T. Davis *(Deceased)*
1985 John W. Hammond
1986 Rodney S. Rougelot
1987 David P. Crane *(Deceased)*
1988 Thomas E. Sitterley, Ph.D.
1989 Arthur L. Banman
1990 Steve Selcho
1991 Donald M. Campbell
1992 Jerry Jerome
1993 J.D. (Jack) Drewett
1994 G.P. (Pres) McGee
1995 Judith Riess, Ph.D.
1996 Ed Ward
1997 Dennis Shockley
1998 Jim Cooksey
1999 Stan Aronberg *(Deceased)*
2000 Ron Johnson *(Deceased)*
2001 Debbie L. Berry
2002 Paul Bernhardt
2003 Bill Walsh
2004 Buck Leahy
2005 Steve Swaine
2006 Steve Detro
2007 Amy Henninger, Ph.D.
2008 Don Currie
2009 DeLloyd Voorhees, Jr.
2010 Jim Wall, Ph.D.
2011 Mike Genetti, Ph.D.
2012 Amy Motko
2013 Cyndi Turner Krisan, CMSP
2014 Ron Smits
2015 Brent Smith
2016 Janet Spruill
2017 David Hutchings
2018 Elizabeth Biddle, Ph.D.

Education

Chair:
Rhianon Dolletski-Lazar, ECS Federal

Deputy Chair:
Jeffrey Beaubien, Ph.D., Aptima, Inc.

Troy Bennett, NAWCTSD
Bethany Brant, USAF AFLCMC
Sally Carter, USAF AETC DLIELC
Amanda Davies, Ph.D., Rabdan Academy
William Gerber, Ph.D., Institute for Defense Analyses
Matthew Hackett, Ph.D., Army Futures Command, STTC
Kelly Hale, Ph.D., Draper Laboratory
LTC Glenn Hodges, Ph.D., USA, Naval Postgraduate School
Alysson Hursey, SAIC
Randy Jensen, Stottler Henke Associates Inc.
Aaron Judy, NAWCTSD
Brent Kedzierski, Shell Oil Company
Joseph Lomangino, MAGTF Staff Training Program TECOM
Anastacia "Stacy" MacAllister, Ph.D., Lockheed Martin
Colleen Matthews, U.S. Army PEO STRI
Jennifer McArdle, Center for Strategic and Budgetary Assessments
Barron Mills, in solutions, LLC
Anthony Montecalvo, USAF AFLCMC
James Murnan, PM TRASYS PM
Kevin Oakes, SAIC
Brian Overy, Aechelon Technolgy
Annie Robinson, Magic Leap Horizons
Robby Robson, Ph.D., Eduworks Corporation
Sae Schatz, Ph.D., Advanced Distributed Learning (ADL) Initiative
Ron Smits, SAIC
Mike Thorpe, Serco, Inc.
Christina Welch, NAWCTSD
Angie White, Integration Innovation, Inc.

Emerging Concepts & Innovative Technologies

Chair:
Gabe Diaz, Mantech International Corporation

Deputy Chair:
Lisa Jean Bair, SAIC

Randal Allen, Ph.D., Lone Star
Paul Bogard, USAF AFLCMC
Marcus Boyd, L3Harris Technologies, Inc., Link Training & Simulation
Chuck Breed, Ph.D., Zenetex LLC
John Burwell, Varjo
John Dzenutis, The Boeing Company
Justin Fessler, Salesforce
Mike Genetti, Ph.D., Collins Aerospace
LtCol Byron Harder, Ph.D., USMC, TECOM
John Hodak, NAWCTSD
Wendy Johnson, Ph.D., USAF HQ AETC
Diane Justice, USAF AFLCMC
Tyson Kackley, MCSC DC, M&S Lead PM Wargaming Capability
Tara Kilcullen, Aptima, Inc.
Gordon King, RSI Visual Systems
Andrew Koch, NAWCAD
Craig Langhauser, Collins Aerospace
Jeremy Lanman, Ph.D., U.S. Army PEO STRI
LT Joseph Mercado, USN, NAWCTSD
Dave Orne, Lockheed Martin
Beth Pettitt, Ph.D., STTC
Tim Quiram, FORCECOM Training Division (FC-Td), USCG
Scott Schutzmeister, Institute of Defense Analyses
Harry Sotomayor, U.S. Army PEO STRI
Shawn Stafford, Full Sail University
Brian Stensrud, Ph.D., Soar Technology
Kendy Vierling, Ph.D., USMC, TECOM
David "Fuzzy" Wells, Ph.D., UCF/IST
Tim Woodard, NVIDIA

Human Performance, Analysis and Engineering

Chair:
Ingrid Mellone, HII-MDIS

Deputy Chair:
J. Robert Bois, Ph.D., Lockheed Martin

Jason Bewley, ATS
Paul Bourgeois, PM TRASYS ENG
Mark Covey, Motion Reality
Gordon Gattie, Ph.D., NSWC Dahlgren
Liz Gehr, Ph.D., The Boeing Company
Benjamin Goldberg, Ph.D., CCDC Soldier Center, STTC
Steve Gordon, Ph.D., GTRI
Michele Harrison, NETC
Toni Hawkins-Scribner, USAF AETC AU
Scott Johnston, Booz Allen Hamilton
Nathan Jones, PM TRASYS
Tom Kehr, Cole Engineering
Aerial Kreiner, Ph.D., USAF AFRL
Rob Lechner, The Boeing Company
Perry McDowell, MOVES Institute, Naval Postgraduate School
Ron Moore, Leidos
Sophia Moshasha, Brightline Interactive
Jennifer Murphy, Ph.D., Quantum Improvements Consulting LLC
Connie Perry, U.S. Army PEO STRI
Paul Phillips, USAF AFLCMC
Brent Smith, Advanced Distributive Learning (ADL) Initiative
Teresita Sotomayor, Ph.D., CCDC Soldier Center, STTC
LTC Phillip Thomas, USA, Special Warfare Education Group (Airborne)
Michael Truelove
Brett Ulander, Ph.D., Bluedrop Training & Simulation
Eric Weisel, Ph.D., Old Dominion University
JoAnn Wesley, PM TRASYS
Jenifer Wheeler, Southwest Research Institute

Policy, Standards, Management and Acquisition

Chair:
Jeffrey Raver, SAIC

Deputy Chair:
Carla Cropper, Collins Aerospace

Marty Bink, Ph.D., U.S. Army Research Institute
Phil Brown, Ph.D., Joint Resources and Readiness Division, NORAD-USNORTHCOM J74
Carol Byers-Bendle, PM TRASYS PM
James Dennis, Ph.D., General Dynamics Information Technology
Jeremiah Folsom-Kovarik, Ph.D., Soar Technology
Tyler Gates, Brightline
Mike Genetti, Ph.D., Collins Aerospace
Richard Grohs, USAF HQ ACC
Holley Hagerman, JTIEC
Susan Harkrider, Modeling and Simulation Division, Night Vision & Electronic Sensors Directorate (NVESD)
Keith Henry, USAF AFAMS
Mindy Hoover, Iowa State University
Greg Kratzig, Ph.D., Royal Canadian Mounted Police
Rachael MacKenzie, USAF AFLCMC
Mike Merritt, NAWCTSD
Stephanie Okimoto, DHS
Steve Parrish, Laerdal Medical & Simulations
Doug Parsons, CCDC AVMC
Mark Parsons, SAIC
Philippe Perey, CAE
Tiffany Peterson, AroCorp
Aaron Presnall, Ph.D., Jefferson Institute
Steven Schaber, 3D Perception
Shauna Stokes, Ph.D., PM TRASYS
Sharon Tabori, Collins Aerospace
Brett Telford, MCMSMO
Hung Tran, CAE USA
Janet Weisenford, ICF
Michelle Wright, NAWCTSD

Simulation

Chair:
Paul Cummings, ECS

Deputy Chair:
Tony Krogh, AEgis Technologies

Angela Alban, SIMETRI, Inc.
Paul Andrzejewski, HigherEchelon
Andre Balta, Cubic
Lisa Bird, U.S. Army PEO STRI, Virtual Training Systems
Christina Bouwens, Ph.D., UCF
Monique Brisson, USAF AFRL
Edward Degnan, Ph.D., USAF AFAMS
Nina Deibler, Serco, Inc.
Todd Glenn, FAAC Incorporated
Capt Kathleen Haggard, USMC, PM TRASYS
Kenny Hebert, Quantum3D
John Huddlestone, Ph.D., Coventry University
David Hutchings, DDH and Associates, LLC
Ron Inmon, PM TRASYS PM
Eric Jarabak, PM TRASYS ENG
Mike Lokuta, CAE
Paul Lyon, Esterline SVS
Jimmy Moore, PeopleTec
LT Michael Natali, USN, NAVMED
Klainie Nedoroscik, American Systems
Robert Sottilare, Ph.D., Soar Technology
Sherry Steward, Ph.D., NAWCTSD
Peter Swan, VT MAK
Brian Vogt, SAIC
Andy Wasserman, US Secret Service
Paul Watson, U.S. Army PEO STRI
Will Wells, NAWCTSD
Leigh Yu, OSD

Training

Chair:
Benjamin Bell, Ph.D., Eduworks Corporation

Deputy Chair:
Kerri Chik, TiER1 Performance

Christine Allen, Ph.D., UCF
Stu Armstrong, Cole Engineering Services, Inc.
John Aughey, The Boeing Company
Amy Bair, Ph.D., HRS Consulting
Maj Scotty Black, USMC, TECOM
Sean Carey, USAF HQ AMC
Claudia Clark, Ph.D.
Jeff Frost, GaN Corporation
Nick Giannias, CAE
Pat Hart, U.S. Army PEO STRI
Maureen Holbert, Booz Allen Hamilton
Cheryl Johnson, Ph.D., NAWCTSD
Julie Kent, Raytheon
John Lee, Improbable
Josh Looper, USAF AFLCMC
Amy Motko, Carley Corporation
Heather Oonk, Pacific Science & Engineering
Robert Parrish Jr., U.S. Army PEO STRI
Jim Pharmer, Ph.D., NAWCTSD
Mike Robbs, Federal Law Enforcement Training Center
Capt J. Garrick Sheatzley, USMC, EWTGLANT M&S Officer
Alexandra Steiner, Ph.D., Trideum Corporation
Alyssa Tanaka, Ph.D., Soar Technology
Robert Wallace, USAF ACC 29TSS
Chuck Wythe, Cape Henry Associates
Thomas Yanoschik, SAIC

International Programs

Director
K. Denise Threlfall, Ph.D.

Deputy Coordinators
Paul Thurkettle, NATO Allied Command Transformation
Michael Weber, Arorae Corporation

Members
Angela Alban, SIMETRI, Inc.
Sean Carey, USAF HQ AMC
Amanda Davies, Ph.D., Rabdan Academy, UAE
Leslie Dubow, Veterans Health Administration
Jeff Frost, GaN Corporation
Liz Gehr, Ph.D., The Boeing Company
Tara Kilcullen, Aptima, Inc.
Craig Langhauser, Collins Aerospace
Josh Looper, USAF AFLCMC
Tiffany Peterson, Arorae Corporation
Robby Robson, Ph.D., Eduworks Corporation

Knowledge Management

Chair
Anne Little, Ph.D., SAIC

Deputy Chair
Eliot Winer, Ph.D., Iowa State University / Department of Mechanical Engineering

Members
Favio Lopez, Trideum Corporation
Mark Soodeen, CAE

Operations/Protocol

Chair
Annie Patenaude, AMP Analytics

Deputy Chair Operations
Catherine Emerick, Raytheon Company
Michael Motko, ESP, Inc.

Deputy Chair Protocol
Steve Detro, Detro Consulting, LLC

Members
Lee Barnes
Richard Boyd, Tanjo
Jesse Citizen, Citizen's Consulting Solutions, LLC
Carol Denton
Charles Frye, Camber Corporation
Jim Godwin, The Tolliver Group, Inc.
Stephen Goldberg, ARL/UCF
Bob Heinlein, 3D Systems Corporation
Zach Johnson, Principled Leadership Consultants
Edward Kulakowski, OT Training Solutions, Inc.
Pete Marion, TMST Consultants
Wes Naylor, Fifty Pound Brains, LLC
Joseph O'Connell, JL O'Connell & Associates, LLC
Bob Snyder, WBB
Mary Trier, Capital Communications
Sam Worrell, FAAC

Serious Games Showcase & Challenge IPT

Chair
Kishan Shetty, Janus Research

Deputy Chair
Jennie Ablanedo, University of Central Florida

Government Chair
Steve McCabe, USAF Simulators Program Office, Air Force Materiel Command

Director
Jennifer McNamara, BreakAway Games

Members
Adelle Adams, AdamsEve Coaching
Stu Armstrong, Cole Engineering Services, Inc.
Matt Becchio, Engineering & Computer Simulations, Inc.
Michelle Brauer, AOCE, Inc.
Kayla Clay, BreakAway Games
Karen Cooper, Ph.D., NAWCAD
Seth Crofton, Gaming Consultant
Matt Dombrowski, University of Central Florida
Leslie Dubow, Veterans Health Administration
Tyler Edwards, USAF Simulators Program Office, Air Force
John Fairchild, SAIC
Meagan French, Second Avenue Learning
Mark Friedman, Vertex Solutions Group, Ltd.
Dolly Rairigh Glass, Capital Communications & Consulting
Kent Gritton, JTIEC/NAWCTSD
Lisa Scott Holt, Ph.D., Intelligent Automation, Inc.
LT Samuel Hughes, USN, NAWCTSD, Navy
Ben Little, U.S. Army PEO STRI
Maj Adam Lynch, USMC PM TRASYS
Doug Maxwell, Ph.D., Janus Research
Perry McDowell, MOVES Institute, Naval Postgraduate School
Craig Porter, Veterans Health Administration
Elaine Raybourn, Ph.D., Sandia National Laboratories
Erik Sand, Florida Interactive Entertainment Academy, UCF
Scott Shiffert, HP, Inc.
Juliana Slye, Government Business Results, LLC
Brent Smith, Advanced Distributed Learning
Peter Smith, Ph.D., University of Central Florida
Vance Souders, Plas.md
Matt Spruill, Trideum Corporation
Shane Taber, Engineering & Computer Simulations, Inc.
K. Denise Threlfall, Ph.D.
Brian Vacek, Flight Safety International
Michael Woodman, Ph.D., SAIC

Student Interns
Anastasia Papaioanou, University of Central Florida
Christopher Hedley, University of Central Florida
Hiram Rodriguez, University of Central Florida
Jean Salman, University of Central Florida
Jessica Withers, University of Central Florida

Special Events Committee

Chair

Kara L. Orvis, Ph.D., Aptima, Inc.

Deputy Chair

Jim Threlfall, Tipping Point Solutions Inc.

Members

I/ITSEC Fellows

Robert Lutz, Johns Hopkins University Applied Physics Laboratory
Robert Richbourg, Ph.D., Institute for Defense Analyses
Margaret Loper, Ph.D., Georgia Tech Research Institute
Michael Genetti, Ph.D., Collins Aerospace

Black Swan

Fred Fleury, ZedaSoft, Inc.
Liz Gehr, Ph.D., The Boeing Company

Operations Liaison

Annie Patenaude, AMP Analytics

STEM Committee

Chair

Linda Brent, Ed.D., The ASTA Group, LLC; NTSA, Strategic Planning

Members

Serious Games

Jennifer McNamara, BreakAway Games

Future Leaders Pavilion

Ann Friel

Students at I/ITSEC

Bill "Roto" Reuter, R-Squared Solutions, LLC

Scholarships

Janet Spruill, Aptima, Inc.

CEU/Professional Development Workshops

Debbie L. Berry, Lockheed Martin
Jana Breburdova, University of Central Florida Continuing Education
Sean Armstrong, University of Central Florida Continuing Education

America's Teachers at I/ITSEC

Margaret Loper, Ph.D., Georgia Tech Research Institute

STEM Pavilion Project Based Learning Exhibits

CarolAnn Dykes Logue, University of Central Florida Innovation Districts

Teacher Tours and Training

Robert Seltzer, NAWCTSD

stemCONNECT

Jeff Bindell, Ph.D., University of Central Florida
Vicki Morelli, Florida High Tech Corridor Council
Carol Ann Dykes Logue, STEM Education Council of Central Florida
Eileen Smith, University of Central Florida
Hank Okraski, National Center for Simulation

Tutorial Board

Co-Chairs

David Milewski, CAE USA MSI
Lisa Scott Holt, Ph.D., Intelligent Automation, Inc.

Members

Charles Cohen, Ph.D., Cybernet Systems Corporation
Jim Coolahan, Ph.D., Coolahan Associates, LLC
Leslie Dubow, Veterans Health Administration
Mike Freeman, Ed.D., AP Ventures
Scott Hooper, Bohemia Interactive Simulations, Inc.
Kevin Hulme, Ph.D., University at Buffalo
Randolph M. Jones, Ph.D., Soar Technology
Lee Lacy, Ph.D., The DiSTI Corporation
Robert Lutz, Johns Hopkins Applied Physics Laboratory
Bjorn Moeller, Pitch Technologies
S.K. Numrich (Sue), Ph.D., Institute for Defense Analyses
Michael O'Connor, Trideum Corporation
Elaine Raybourn, Ph.D., Sandia National Laboratories
Robert Richbourg, Ph.D., Institute for Defense Analyses
Roy Scrudder, Applied Research Laboratories - The University of Texas at Austin
Ramona Shires, ND
Juliana Slye, Government Business Results, LLC

NOTES

Conference Information

About Registration

In addition to access to Tutorials, Papers, Special Events and Professional Development Workshops, registration fees cover Continuing Education Units (CEUs), lunches (T-W-Th), coffee breaks (T-W PM, W-Th AM), continental breakfasts (W-Th), and the Thursday banquet. A meeting bag with conference materials is included.

I/ITSEC Registration Services for 2019

We strive to minimize the time spent in line so you can move on to the conference events or the exhibit floor. Our goal is to make your I/ITSEC experience a pleasant one even before you enter the Orange County Convention Center (OCCC). Avoid that line and move on to what you came to I/ITSEC to do!

Traditional Registration Stations. Located in S220 of the South Concourse Registration area, traditional walk-up registration will be available for Full Service Registration, on-site payments, changes/edits to name badges, multiple badge pick-ups, or just because you prefer dealing one-to-one with a real person.

Alternate Registration Stations within the Orange County Convention Center. Limited stations at the Main Registration Station will be open Friday and Saturday to handle early registration, especially exhibitors. Conference Attendees are encouraged to wait until Sunday afternoon or use the Self Badging/Self Registration kiosks.

Self-badging printing stations will be available for those who pre-registered and received a confirmation number. To complete your registration at this station, you must be paid in full with no outstanding balance or questions remaining about your registration.

VIPs, Speakers (including Paper Presenters), Media, and International registrants will have special registration stations. More details will be provided to each group, but be sure and watch for signage pointing to these areas.

Registration outside of the Orange County Convention Center. I/ITSEC full-service satellite registration will be located at the Main Lobby of Hyatt Regency, adjacent to hotel check in, from Sunday noon through Tuesday. These station will be staffed to assist you whether you need to start your registration from scratch or just need to pick up your nametags.

Convention Center Parking

EXHIBITOR PARKING

$17 per Day – For regular vehicles with re-entry privileges each day. Exhibitor must show badge and receipt for repeat entries.

$25 per Day – For oversized vehicles with re-entry privileges each day. Exhibitor must show badge and receipt for repeat entries.

ATTENDEE PARKING

$17 per Entry – For regular vehicles per entry.

$25 per Entry – For oversized vehicles per entry.

AFTER 5PM

$10 per Entry – For regular vehicles. Same stipulations as above.

$15 per Entry – For oversized vehicles. Same stipulations as above.

ACCEPTED PAYMENT METHODS:

Cash, Traveler's Checks, American Express, MasterCard & Visa

Dress Code

BRANCH	CONFERENCE AND GENERAL SESSIONS	BANQUET
Army	ACUs or Duty Uniform	Army Blue *(Army Evening Mess Optional)*
Marine Corps	Service "C"	Evening Dress *(Dress Blue "B" or Service "A" Optional)*
Navy	Service Khaki, Navy Service Uniform	Dinner Dress White *(Service Dress White Optional)*
Air Force	Blues *(Short or Long Sleeve)*	Mess Dress or Semi-Formal
Coast Guard	Tropical Blue Long	Dinner Dress White *(Service Dress White Optional)*
Civilian	Business Attire	Black Tie *(Optional)*

The National Training and Simulation Association has blocked rooms with the Orlando hotels listed below. Make your lodging arrangements either on-line or by phone through onPeak, our official Housing Partner, through 24 November 2019 (18 November for Hyatt). Beginning November 25, 2019 all changes and cancellations will need to be made directly with the hotel, please refer to the policies on your confirmation for details. On or after 11 November the hotels not onPeak may charge deposits and declined credit cards are subject to cancellation. For your convenience the hotel direct phone numbers can be found in the Changes Policy section of your onPeak confirmation and will be posted on the I/ITSEC website.

**Please note the group rate expires and current room rates may apply after 24 November. onPeak is our official housing partner and the only company authorized to represent I/ITSEC and NTSA. If you are contacted by other companies who present themselves as representing the Conference or Association, please report to Debbie Langelier.*

Securing your Reservation

- **Go to** select Official Housing Portal
- **Choose your category:** corporate, exhibitor, or government attendee
- **View** hotels.
- **Enter** your check-in and checkout dates and the available hotels will populate.
- **Choose** your preferred hotel and the program will lead you through the booking process.

Should you need to extend your stay and do not see the night available, or need assistance please contact us via **https://www.onpeak.com/help**.

If you prefer to book via telephone, friendly and knowledgeable agents are ready to take your calls Monday through Friday from 8:00 AM - 6:00 PM CT at (855) 992-3353

More Information about Lodging Arrangements

- Government room rates are subject to change, based on the released per diem rate. The Government rate will update in the fall once the new rates are released.
- Government Rate Room Reservations: Require appropriate Government/Military ID, to be presented at the hotel desk upon check-in. **Rates are subject to change upon check-in without the proper credentials*.
- Some hotels may charge an additional Resort Fee to include applicable taxes, please refer to your confirmation and the hotel's website.
- The individual hotels are not authorized to accept reservations directly for this conference. Please email if your preferred hotel is unavailable for assistance.
- Guests must identify themselves as I/ITSEC Conference Attendees to receive incentives offered by the hotel for conference guests.
- The Conference will be held at the Orange County Convention Center, in the South Concourse. The headquarter hotel is the Hyatt Regency Orlando.
  **I/ITSEC Guests booked through onPeak Receive Optional Reduced Resort Fee: $15/day at the Hyatt*
- Shuttle buses/vans will be available throughout the conference.

To help defray conference management costs, an assessment is included in the room rates shown with these hotels. We encourage you to make your lodging arrangements within the designated housing package established.

① **DoubleTree by Hilton Orlando at SeaWorld***
10100 International Drive
Orlando, FL 32821
Industry: $140

② **Embassy Suites International Drive – Convention Center***
8978 International Drive
Orlando, FL 32819
Industry $155

③ **Extended Stay Deluxe Orlando - Convention Center**
8750 Universal Blvd.
Orlando, FL 32819
One Rate: $91

④ **Hampton Inn - Convention Center***
8900 Universal Blvd.
Orlando, FL 32819
Industry: $138

⑤ **Hilton Orlando**
6001 Destination Parkway
Orlando, FL 32819
Industry: $247

⑥ **Homewood Suites by Hilton International Drive***
8745 International Drive
Orlando, FL 32819
Industry: $148

⑦ **Hyatt Place Orlando/Convention Center**
8741 International Drive
Orlando, FL 32819
One Rate: $142

⑧ **Hyatt Regency Orlando (Conference Headquarters)***
9801 International Drive
Orlando, FL 32819
Industry: $257

⑨ **Residence Inn Orlando Convention Center***
8800 Universal Blvd.
Orlando, FL 32819
Industry: $154

⑩ **Rosen Centre Hotel**
9840 International Drive
Orlando, FL 32819
Industry: $214*

⑪ **Rosen Inn at Pointe Orlando**
9000 International Drive
Orlando, FL 32819
One Rate: $83

⑫ **Rosen Plaza**
9700 International Drive
Orlando, FL 32819-8114
Industry: $202*

⑬ **Springhill Suites Orlando Convention Center**
8840 Universal Blvd.
Orlando, FL 32819
Industry: $154*

**A limited amount of rooms offered at the Government per diem rate.*

To get from your hotel to the South Concourse of the OCCC, you have several choices of transportation.

- I/ITSEC will provide shuttle bus service to all properties listed. (Schedules will be available at the hotels and at the entrance to the conference registration area.)
- Reasonable public transportation is available on the I-Ride trolley bus along International Drive. Check **http://www.iridetrolley.com** or your hotel for schedules.
- Your own or a rented vehicle. See page 95 for detailed parking information.
- Most of the hotels are within walking distance (wear comfortable shoes).

Hertz

The National Training and Simulation Association has arranged for the Hertz Company to be the official car rental agency for I/ITSEC with the special rates below. You can also make your reservations on-line through the I/ITSEC website (Lodging/Travel). Vehicles may be returned to any Hertz location in Florida at no additional charge.

CAR	CLASS	DAILY	WEEKEND	WEEKLY
A	Economy	$39	$19	$169
B	Compact	$42	$21	$174
C	Midsize	$45	$23	$184
D	Standard 2/4-Door	$49	$25	$194
F	Full Size 4-Door	$55	$33	$205
G	Premium	$69	$69	$345
I	Luxury	$89	$89	$399
Q4	Midsize SUV	$62	$62	$299
L	Standard SUV	$74	$74	$339
R	Minivan 2WD	$79	$79	$399
U	Convertible	$75	$75	$413
T	Large SUV	$115	$115	$549
T6	PRM XCAP SUV	$130	$130	$715

Advertising Opportunities: Official Publications of I/ITSEC

Now more than ever, with the increased challenges facing the defense and security marketplace, you need to keep your organization's message in front of its target audience. Reach the leading decision-makers at the world's largest simulation, training and modeling event of the year by advertising your products and services in the Official Publications of I/ITSEC.

Advertising in these publications is an excellent way to stand out in the crowd and invite the attendees to visit your exhibit, product demonstration and/or website. Then after the event has ended, these publications are used by many as desk-references, so your advertisement will reach the decision-makers long after the conference is over.

The National Training and Simulation Association's Annual Simulation & Training Trends and Technology Review – I/ITSEC Exhibitor Directory

This publication will be available to all the attendees, exhibitors, and exhibit visitors at I/ITSEC. It will be placed in the attendees' conference bags and available at registration, and other locations at the convention center. As an added bonus, your ad will also appear in the December Issue of National Defense Magazine — exposure beyond the walls of the convention center. National Defense is sent to over 62,159 BPA audited readers, including the members of NTSA. *(Directory section will not appear in* National Defense *Magazine)*.

The I/ITSEC Show Daily

Advertise in this year's Daily and be noticed by your customers and potential partners who are attending I/ITSEC. The I/ITSEC Show Daily informs the simulation & training community on breaking events & happenings on-site at I/ITSEC. It is printed overnight and distributed daily at the conference center, choice hotels, and uploaded to the I/ITSEC website. The daily has evolved into a vital part of I/ITSEC; a "must read" while attending the conference. Stop in to Media Room, S210E for more information.

Use both to give your company Unequalled Exposure

Special packages have been created so your organization can take advantage of both opportunities!

Web Banners

A limited number of banner ad spaces are available on the I/ITSEC website.

Kathleen Kenney (703) 247-2576 • kkeney@ndia.org
or **Alex Mitchell** (703) 247-2568 • amitchell@ndia.org • Booth 2810

I/ITSEC Proceedings

The I/ITSEC Knowledge Repository provides a valuable link to the I/ITSEC training, simulation and education community. Access the online papers repository available at **www.iitsec.org** post-conference

Stay in Touch

Free Wireless hot spots. E-mail/Internet Kiosks.

Complimentary internet, WiFi and email access in the lobby (look for signage). Internet Kiosks available in main lobby near registration. If you need access outside of the complimentary stations, all of OCCC is now WiFi enabled for a modest user fee.

I/ITSEC is the premier annual event of its kind, attendance by the mainstream and specialist trade press is heavy, resulting in coverage that reaches your key marketing targets. Our media staff stands ready to assist you in achieving maximum exposure during your time at I/ITSEC. Corporate representatives are invited to bring their marketing materials to the Media Room for distribution as early as possible after the opening of registration. Additional exhibitor presentations will be made available inside the exhibit hall at the Innovation Showcase, Booth 2588.

Prior to the conference, contact John Williams at **(703) 362-7005** or **jwilliams@ndia.org**; check out more details on the I/ITSEC News page of **http://www.iitsec.org**. The I/ITSEC Media Room is S210E, phone **(407) 685-4013**.

National Training and Simulation Association

The NTSA, an affiliate of NDIA, represents and promotes the business interests of companies in the simulation, training, mission planning/rehearsal, and support services industry. NTSA's corporate and individual members enjoy reduced fees on all NTSA events and services, as well as a monthly e-newsletter (Training Industry News) and National Defense magazine. Sustaining and Regular Corporate members receive early space selection and discounts on exhibit space at I/ITSEC. Individual memberships are also available.

For membership information, call Carol Dwyer at **(703) 247-9471** or email at **cdwyer@ndia.org**. Visit the NTSA website **Trainingsystems.org**.

National Defense Industrial Association

Based in Arlington, Virginia, the National Defense Industrial Association (NDIA) is a non-profit, educational association representing industry, government, and academia. 1,700 companies and 75,000 individuals rely on NDIA for networking, knowledge, and business development opportunities. As the nation's leading defense industry association, NDIA promotes collaboration to deliver cutting-edge technology, weapons, equipment, training and support to warfighters and first responders. Through events, divisions, regional chapters and three affiliate organizations, NDIA convenes ethical forums connecting experts from government, academia and the defense industry to define threats and design solutions to ensure U.S. and partner national security.

For NDIA membership information visit **www.ndia.org** or contact **Zoila Martinez** at **zmartinez@ndia.org**.

Women In Defense

A NATIONAL SECURITY ORGANIZATION

Women In Defense (WID) strengthens the Defense Industrial Base and workforce by promoting programming that creates and enhances opportunities for women, increasing diversity within the defense community. WID's two-fold mission focuses on empowering women currently working in defense and encouraging talented young women to pursue careers in National Security.

Membership is open to women and men whose primary professional activities impact the national security of the United States and its partners and allies. WID's 22 chapters include members from defense companies; all branches of the U.S. Armed Forces; government; academia; think tanks; associations; and professional services. Active military and government employees receive complimentary membership.

www.womenindefense.net

Certified Modeling and Simulation Professional

EVENTS AT I/ITSEC

STATE OF THE CMSP NATION MEETING

Wednesday, December 4, 1000 – 1100, Room S210D

Join the CMSP discussion with a newly formed CMSP 3.0 review committee.

CMSP WORKSHOP

Friday, December 6, 0800 – 1200 , Room S331A

This workshop describes the CMSP application, philosophy behind the exam and delves into sample exam questions.

CMSP CERTIFICATION

Requirements: 3-8 years work experience, CMSP application, resume, 3 letters of recommendation, and successful completion of the CMSP exam. Certification is good for 4 years after which recertification is required.

For more information, visit **SimProfessional.org** or contact **Carol Dwyer** at cdwyer@NDIA.org

FOR LIFE-THREATENING EMERGENCIES DIAL 911
SECURITY HOTLINE DURING I/ITSEC: (407) 685-6111

Security Training before the Conference

Technology collection directives contain mandates requiring exhibitors and presenters to receive a counterintelligence (CI) briefing from their CI support staff prior to I/ITSEC. Contractors with classified contracts may contact their Defense Security Service Special Agents. To avoid security breaches, I/ITSEC presenters and exhibitors should ensure that the required briefing has been received. A list of CI support agencies follows. Please contact your security officer/manager and ensure that an appropriate briefing for yourself and your colleagues is arranged. Providers of the briefings are:

Army	902 Military Intelligence
Navy, USMC, Coast Guard	Naval Criminal Investigative Service
Air Force	Air Force Office of Special Investigation
Contractors	Defense Counterintelligence and Security Agency (formerly Defense Security Service)

Personal Security

The most important thing to protect, of course, is yourself. Pay attention to your surroundings. Report suspicious behavior or security breaches to a security person or NTSA staff. Familiarize yourself with emergency procedures and exits at your hotel and the Convention Center. Please note that security surveillance cameras are in place throughout the conference and exhibit areas.

Emergency Medical Services

EMT and/or paramedics will be on-site during I/ITSEC (including hall build-up and teardown). During I/ITSEC 2019, they will be located on the same level as Registration, near the escalators between S220 and S230. Dial 911 for life threatening emergencies. For non-emergencies within the center, dial 5-9809 or on your cell dial (407) 685-9809, or alert any security or I/ITSEC staff member with a radio.

Bags and Briefcases

Bags and briefcases may be carried in by those wearing **Conference Attendee** or **Exhibitor** badges. **Exhibit Visitors** (those who are only visiting the exhibits) **WILL NOT** be allowed to carry in bags or briefcases. A check room will be available in the main registration area. A small purse or fanny pack is allowed, but is subject to search. Additional security restrictions may be posted on http://www.iitsec.org and on signage at the conference. Conference Management reserves the right to adjust security levels as deemed necessary during the conference.

Presentations

Recording devices will not be permitted in the presentation rooms, unless authorized by the conference management. Presenters and Exhibitors should review their company's policy documents and those of the government agencies with whom you contract regarding open distribution, limited distribution, restricted distribution and sharing limitations.

Cameras

Exhibitors have the right to limit photographs and videos of their displays. Please respect this right by asking before photographing or videotaping. Participants found taking photos or videos without the consent of the subject presentors or exhibitors will be dealt with according to security procedures, to possibly include confiscation of materials and removal from the premises.

Inquiries (before the conference)
Registration (702) 798-8340 • **Exhibit/Sponsorship** (703) 247-9473 • **All other inquiries** (703) 247-9480

Earle L. Denton Memorial Golf Tournament

Organized by Central Florida Chapter NDIA • Sunday, 1 December **OR** Monday, 2 December

Shingle Creek GOLF CLUB

Rosen Shingle Creek Golf Club
9939 Universal Blvd, Orlando, FL 32819 • 407-996-9933 • www.shinglecreekgolf.com

Limited Availability – Register early!

Deadlines

Golf On-Line Registration	22 November
Sponsorship	19 November

Tournament Time

Sunday	1100 Registration	1230 Shotgun
Monday	0630 Registration	0730 Shotgun

Point of Contact

Debbie Berry 407-748-3807
debbie.berry@lmco.com

Format

Captain's Choice / Scramble

Pairings & Requests

Final assignments and pairings will be made by the tournament coordinator. Priority is based upon receipt of payment.

NOTE: To guarantee requested pairings, all golfers (two, three or four) MUST be entered during a single login session. Golfers registering separately MUST clearly specify pairing requests under comments. The tournament coordinator will attempt to honor all requests.

Cancellations

Must be received via email to **debbie.berry@lmco.com** by close of business 15 November to receive 50% refund. No refunds thereafter. Substitute golfers are permitted.

On-Line Registration

- Register and/or select sponsorship at **www.iitsec.org/ATTENDEES/PLANNINGYOURSTAY/Pages/default.aspx**
- Register one to four players per login.
- Special promotions listed on registration site are valid through October 18.

Fees

$100 per player *(green fees, range balls, cart, lunch)*

Coordinate club rentals directly with the Rosen Shingle Creek Golf Club pro shop.

Sponsorships

Details available at **www.iitsec.org**

Hole Sponsor	$500
Beverage Cart	$2,500
Hole-in-One	$2,500
Boxed Lunch	$3,000

Sponsors

Send your logos via email to **debbie.berry@lmco.com** no later than 19 November. Do not bring your own sign.

**Scholarships and additional qualified initiatives supported through tournament proceeds; for a full list of initiatives (STEM, Wounded Warriors, etc.) supported, please visit: http://www.ndia-cfl.org.*

ANNUAL I/ITSEC 5K RUN/WALK/ROLL 2019

WINNING THE WAR OF COGNITION
BY PUSHING READINESS & LETHALITY BOUNDARIES

WEDNESDAY, DECEMBER 4, 2019
Orange County Convention Center
5:30AM Packet Pickup • 6:45AM Start Time

WEBSITE:

http://www.iitsec.org/attendees/planningyourstay

www.facebook.com/iitsec5k

All registered runners will receive a custom race tech shirt, finishers race medal, race bib and official timing by Milestone Race Authority, and pre- and post-race refreshments. Tax-deductible registration.

EARLY REGISTRATION $25 until August 30

August 18 – November 8 (shirt size subject to availability)	$30
November 9 – November 22 (shirt size subject to availability)	$35
November 23 – Onsite (shirt size subject to availability)	$40

CHARITIES THE 5K WILL SUPPORT

Camaraderie Foundation

I/ITSEC STEM Initiative

TITLE SPONSOR

ASTi

Email Sean Osmond for Race Information at **iitsec5k@gmail.com** or Shannon Burch for Sponsorship information at **sburch@ndia.org**

See You Next Year!

AIR FORCE '19 ARMY NAVY USMC INDUSTRY

WINNING THE WAR OF COGNITION
BY PUSHING READINESS & LETHALITY BOUNDARIES

NTSA

NATIONAL TRAINING AND SIMULATION ASSOCIATION

THE WORLD'S LARGEST MODELING & SIMULATION EVENT

I/ITSEC | INTERSERVICE/INDUSTRY TRAINING, SIMULATION & EDUCATION CONFERENCE

THE FUTURE IS NOW

ARMY

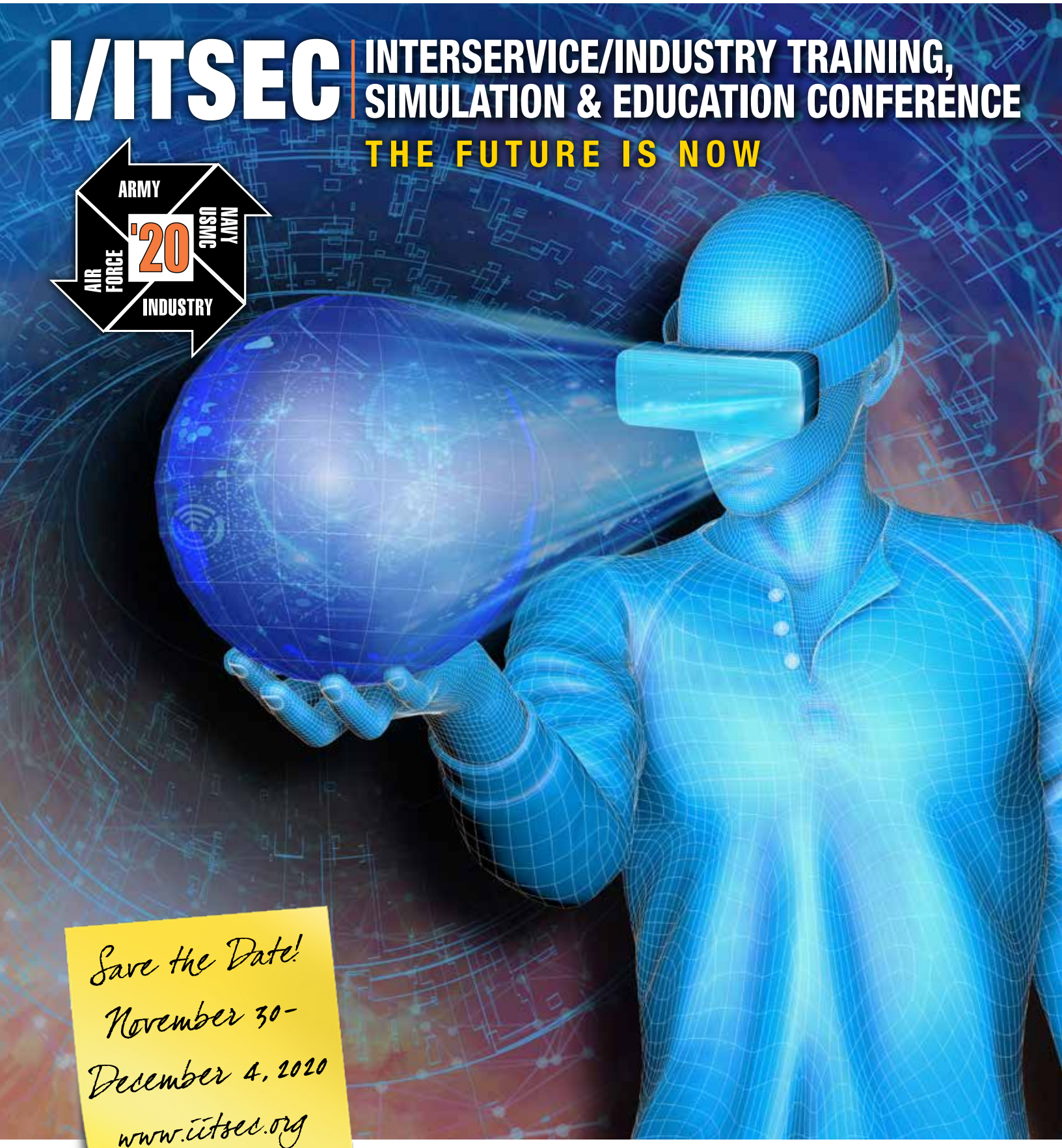
NAVY

USMC

'20

AIR FORCE

INDUSTRY



Save the Date!

November 30–

December 4, 2020

www.iitsec.org

NOVEMBER 30 – DECEMBER 4, 2020 ▶ WWW.IITSEC.ORG ▶ ORLANDO, FLORIDA

NDIA

CALL FOR PAPERS AND TUTORIALS

I/ITSEC 2020

THE FUTURE IS NOW

ABSTRACT DEADLINE: 1 MARCH 2020

Subcommittees/Categories

- Education
- Emerging Concepts & Innovative Technologies
- Human Performance, Analysis and Engineering
- Policy, Standards, Management & Acquisition
- Simulation
- Training

Tutorials

Information on core M&S, training and education topics suitable for management and technical personnel.

The submission process for the I/ITSEC Papers and Tutorials coincide. Submittal details will vary slightly, but the milestones will match.

Follow the

Papers/Tutorials Completion Process

for 2020 Abstract Submittal which will be posted in December.

http://www.iitsec.org/authors

I/ITSEC 2020 Program Chair

Matt Spruill
Trideum Corporation
757-617-4219 | mspruill@trideum.com

I/ITSEC 2020 Tutorial Board Co-chairs

David Milewski
CAE USA MSI
757-224-5491 | dave.milewski@caemsi.com

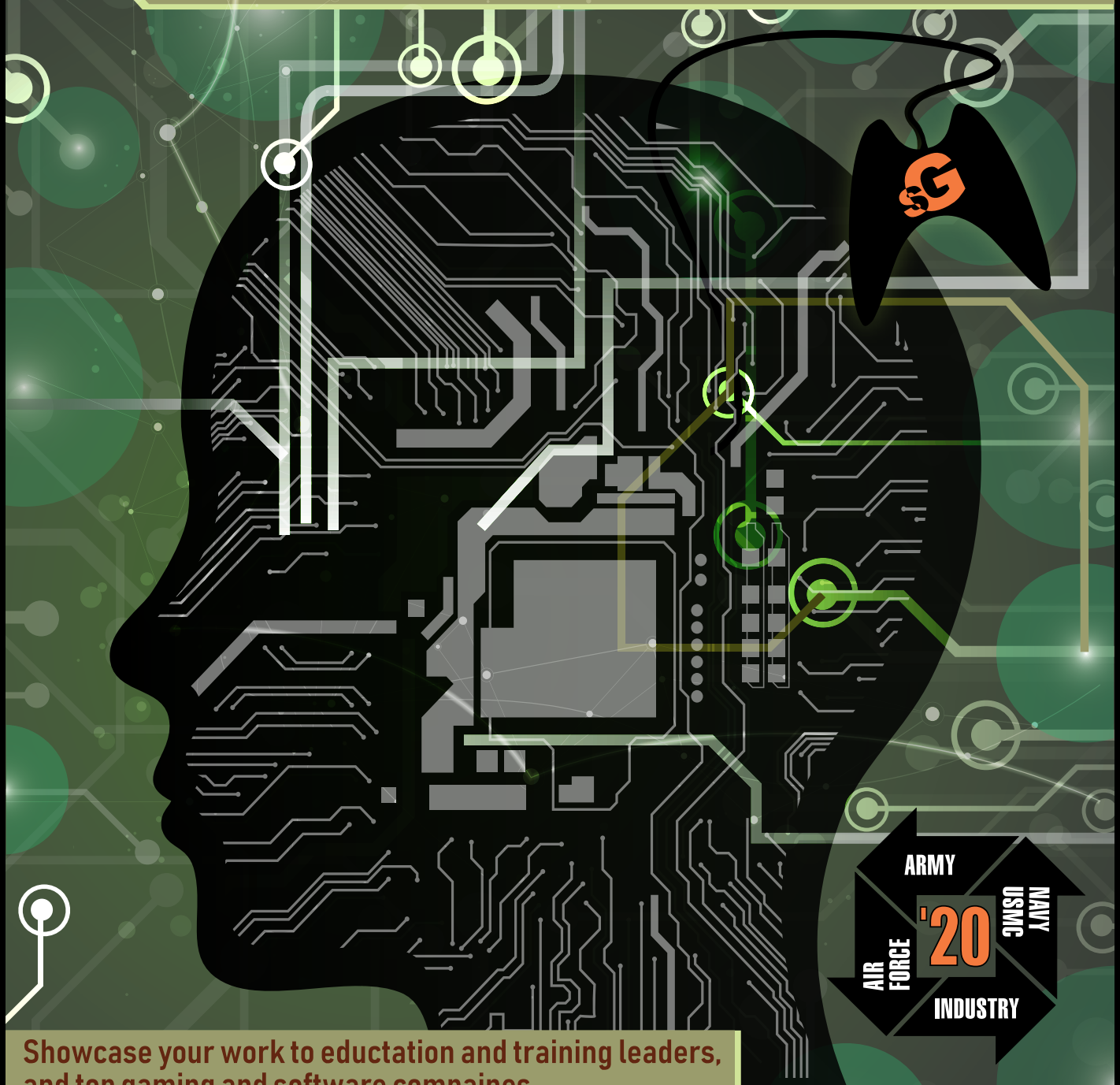
Lisa Scott Holt, Ph.D.
Intelligent Automation, Inc.
301-294-5212 | lholt@i-a-i.com

SERIOUS GAMES
SHOWCASE & CHALLENGE

Submissions Open August 2020

Compete for prestigious awards including:

Innovation Award | People's Choice | Students' Choice | Best XR | Best in Category



Showcase your work to eductation and training leaders, and top gaming and software compaines.

Orange County Convention Center NOV. 30 - DEC. 4, 2020

More Information:
sgschallenge@gmail.com

www.sgschallenge.com | www.iitsec.org

I/ITSEC *Honors all* VETERANS

Past, Present and Future

SPONSORED BY

Google Cloud

Thank you

to our 5K Sponsors
for their support of the
Camaraderie Foundation
and **I/ITSEC STEM Initiative**

ASTi
AVT Simulation
Contec Americas
Diamond Visionics
E2M Technologies Inc.
Huntington Ingalls
Integration Innovation, Inc. (i3)
Ravenwood
Senspex, Inc.
Trideum
Twin Oaks Computing
Wittenstein
Yet Analytics Inc
Zenetex

Interservice/Industry Training, Simulation and Education Conference
The National Training and Simulation Association (NTSA)
An Affiliate of the National Defense Industrial Association (NDIA)
2101 Wilson Blvd., Suite 700 • Arlington, VA 22201
http://www.iitsec.org