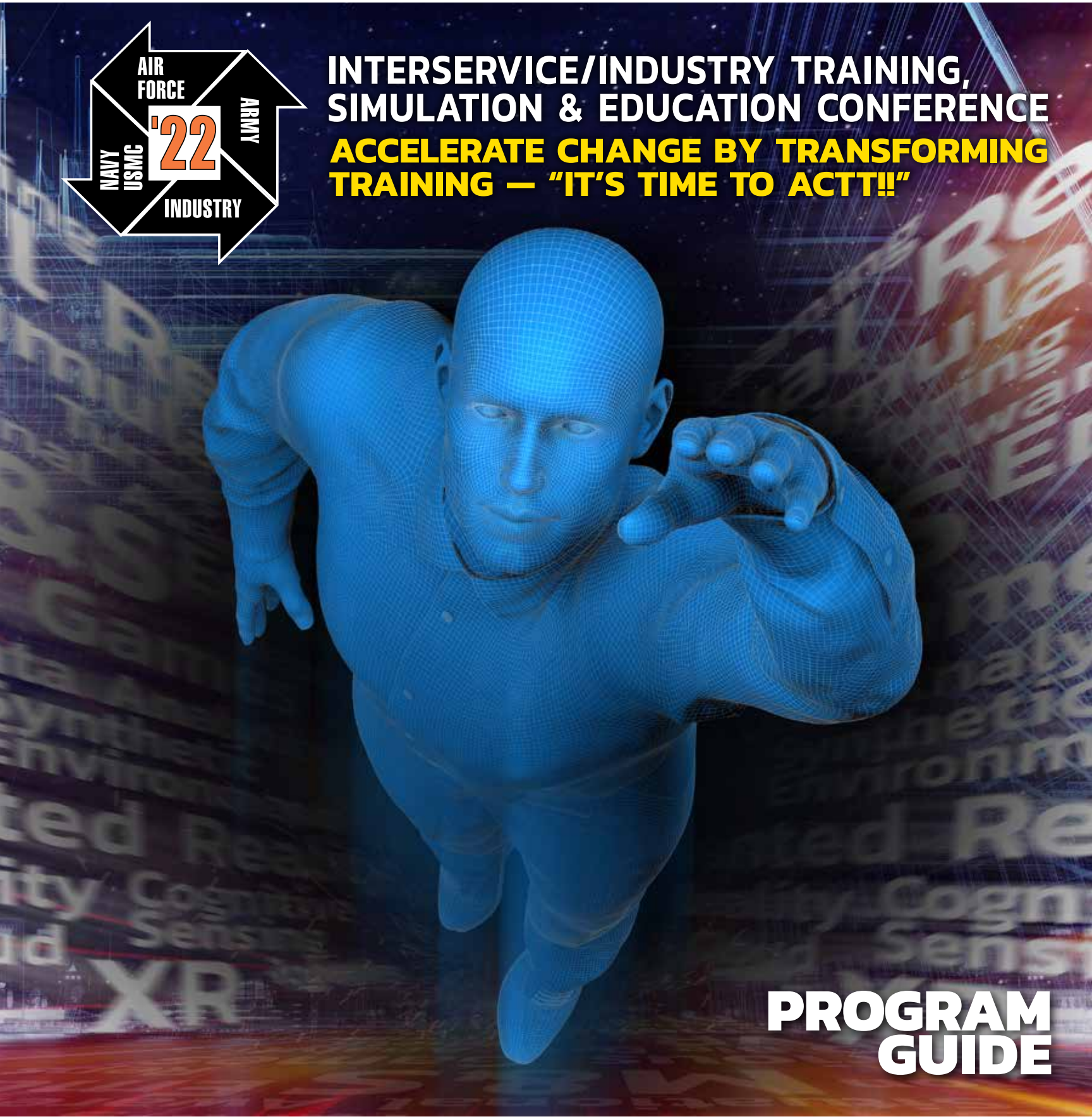
NTSA NATIONAL TRAINING AND SIMULATION ASSOCIATION
THE VOICE OF THE TRAINING & SIMULATION COMMUNITY

AIR FORCE
ARMY
NAVY USMC
INDUSTRY
'22

INTERSERVICE/INDUSTRY TRAINING, SIMULATION & EDUCATION CONFERENCE

ACCELERATE CHANGE BY TRANSFORMING TRAINING — "IT'S TIME TO ACTT!!"



PROGRAM GUIDE

28 NOVEMBER – 2 DECEMBER 2022 | ORLANDO, FLORIDA
WWW.IITSEC.ORG

NDIA

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WELCOME ATTENDEES OF I/ITSEC 2022!

On behalf of the United States Air Force, this year's Lead Service; our sponsoring association, the National Training and Simulation Association (NTSA); the Service Executives and their Principals; and the hundreds of volunteers from the military, government, industry, and academia, it is my distinct honor and great pleasure to welcome you to the 2022 Interservice/Industry Training, Simulation and Education Conference (I/ITSEC).

This year's theme, *Accelerate Change by Transforming Training – "It's Time to ACTT!!"* is specifically designed to challenge us as modeling and simulation, training, and education professionals to enhance, adapt, and accelerate our solutions to meeting training and education requirements through advanced technology and approaches. Faced with declining resources, increased competition, and the ability to rapidly implement new technology across the community, we must be able to achieve transformation before the solutions and approaches themselves become obsolete. Let's ACTT now to revolutionize training that will meet the challenges we face, both now and in the future.

I/ITSEC 2022 features content-rich special events, paper presentations, tutorials, and exhibits to inform and guide the latest learning and simulation trends, practices, and technologies. If networking, conducting market research, and/or demonstrating your innovations is your desire, you will be thrilled to join the approximately 18,000 expected attendees representing multiple countries. I/ITSEC provides the world's largest display of training system capabilities, as it expects over 425 exhibitors presenting leading-edge technology and innovative concepts that allow us all to ACTT now.

I/ITSEC is the largest global training, simulation, and education conference, attracting 17,000 to 20,000 people each year – and that requires a huge amount of coordinated effort to make it seem seamless and elegant! It begins with support and organization from the NTSA, and it also requires the efforts of over 300 volunteers to make this event happen each year! You read that right – 300 volunteers. I am humbled by the dedication of our team of professionals from industry, government, and academia who couple their passion and creativity to shape the content for our 2022 Program. I/ITSEC would not be what it is without their hard work and dedication. Whether they serve on a paper subcommittee, the Tutorials Board, Special Events, International Committee, the STEM Ecosystem, Knowledge Management, Operations, Conference Committee, or are a member of the Council of Chairs, each and every one of our volunteers make up the heartbeat of I/ITSEC. My sincere thanks and appreciation to each of them for a job well done this year.

Whether you are an engineer, educator, trainer, system developer, or business developer, I have no doubt that I/ITSEC 2022 will educate, motivate, and inspire you. Out of great challenges rise great opportunities. I challenge you to join in the conversation, to attend as many events as you can, and to engage as many exhibitors as possible so that you can execute the next great training exercise, develop the next great simulation environment, or educate our next-generation workforce. It's your time to ACTT.

Sincerely,

Matt Spruill
I/ITSEC 2022 Conference Chair

WELCOME ATTENDEES OF I/ITSEC 2022!

Welcome to the world's largest modeling, simulation, and training conference! The Interservice, Industry, Training, Simulation, and Education Conference—I/ITSEC 2022 program is jam-packed beginning with Monday's tutorials and ending with Friday's Professional Development Workshops! We're so glad to be back in-person again this year as everyone truly values the networking that takes place at I/ITSEC. Whether attending paper presentations or one of our many special events, walking the exhibit hall with over 425 vendors, or just catching up with colleagues and friends, I/ITSEC 2022 has something to offer everyone in the M&S community!

This year's lead Service, the United States Air Force, in collaboration with the National Training and Simulation Association, the Service Executives and Principals, and the combined total of 300 volunteers from industry, government, and academia, have worked over the last year and a half to prepare this I/ITSEC 2022! Our theme this year is, *Accelerate Change by Transforming Training – "It's Time to ACTT!!"* Too often the solutions provided to our warfighter are obsolete by the time they go through the long acquisition, procurement, and fielding lifecycle. The challenge to both the Government and industry is to provide or accelerate solutions to the warfighter that make a timely difference and advantage to our services in these changing world situations. Our 2022 program is designed around how both the Government and industry can meet these demands to ensure our services and allies are prepared for the near term situation and also look into the future to bring innovations in training and simulation that surpass our adversaries.

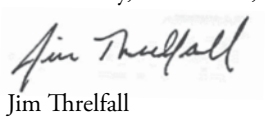
This program guide represents a very rich and synchronized collection of opening and closing ceremonies, special events, papers, tutorials, STEM events, and collaboration / network opportunities. This professional education event is your opportunity to gain insights into the latest science, technology, and best practices; see new innovations; and collaborate with your peers across our domain to add to our industry's body of knowledge.

Monday kicks off with 30 tutorials running the gamut of XR, Simulation Interoperability, Training Design, to LVC. Monday also has the first of 43 special events with the Congressional Modeling and Simulation Event. As always, this standing-room only event features insights from training and simulation leaders from the Modeling and Simulation Congressional Caucus. Opening Ceremonies on Tuesday morning features a combination of keynote speakers from the U.S. Air Force and Space Force, along with Industry. This event will be followed by the military's discussion of current opportunities and challenges during the Senior Leader Panel.

From a professional development forum perspective, there are 130 paper presentations from six subcommittee tracks. Paper presentations focus on some of the most timely topics, to include medical simulators, cyber ranges and training, artificial intelligence, AR/VR, the metaverse, and DoD/Federal/Industry policies. The nominees for Best Paper from each subcommittee will present on Wednesday in two Best Paper sessions. At the Closing Ceremony, we will award the coveted I/ITSEC Best Paper and Best Tutorial awards. You won't want to miss seeing who among your peers has achieved this distinction. Congratulations to each of our Subcommittee Best Paper and Tutorial nominees this year.

Special Events continue to be an important part of the conference. Are you interested in hearing from General and Flag Officer Panels on the future of their organizations, Service headquarter-level Acquisition officials discussing rapid development and innovation, Joint/Allied Interoperability or learning about the "Next Big Thing-Metaverse"? Other events throughout the week will involve another Black Swan, Cyber Pavilion, and EcosyS-TEM of Learning including career investment, outreach encounters, and focused workshops. I hope you'll take advantage of those to forge new partnerships and gain new ideas you can take back to make a difference in your own organization.

The weeklong I/ITSEC closes with eight Professional Workshops on Friday, so this a great opportunity to share development methodologies and approaches. We look forward to offering you the experience to see beyond your current role and organizations to the possibilities within our community, our industry, our nations, and the world. ENJOY THE WEEK AT I/ITSEC 2022!



Jim Threlfall
I/ITSEC 2022 Program Chair

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OPENING CEREMONY SPEAKERS

FIRESIDE CHAT WITH USAF AND USSF SENIOR LEADERS

GENERAL DAVID W. ALLVIN, USAF
Vice Chief of Staff
of the Air Force

GENERAL DAVID W. ALLVIN is the 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 the Deputy's Management Action Group. He assists the Chief of Staff with organizing, training and equipping of 689,000 active-duty, Guard, Reserve and civilian forces serving in the United States and overseas.

Gen. Allvin graduated from the U.S. Air Force Academy in 1986. He has commanded at the squadron and wing levels, including the 97th Air Mobility Wing, Altus Air Force Base, Oklahoma. He has held major command staff assignments and served on the Joint Staff.

Gen. Allvin served as Commanding General, NATO Air Training Command - Afghanistan; Commander, 438th Air Expeditionary Wing, Kabul, Afghanistan; Commander, 618th Air and Space Operations Center; Director, Strategy, Concepts and Assessments; Deputy Chief of Staff for Strategic Plans and Requirements, Headquarters, U.S. Air Force and Director, Strategy, Plans and Policy, Headquarters U.S. European Command; and as Vice Director, Strategy, Plans and Policy, the Joint Staff. Prior to his current assignment, he was Director for Strategy, Plans, and Policy, J-5, Joint Staff.

Gen. Allvin is a command pilot with more than 4,600 hours in more than 30 aircraft models, including 800 flight test hours.

MAJOR GENERAL SHAWN N. BRATTON, USSF
Commander, Space Training and
Readiness Command

MAJOR GENERAL SHAWN N. BRATTON is Commander, Space Training and Readiness Command, temporarily located at Peterson Space Force Base, Colorado. Space Training and Readiness Command was established as a Field Command 23 August 2021, and is responsible for preparing the USSF and more than 6,000 Guardians to prevail in competition and conflict through innovative education, training, doctrine, and test activities. Maj Gen Bratton received his commission from the Academy of Military Science in Knoxville, Tenn. Prior to his commissioning Maj Gen Bratton served as an enlisted member of the 107th Air Control Squadron, Arizona Air National Guard. He has served in numerous operational and staff positions. Maj Gen Bratton was the first Air National Guardsman to attend Space Weapons Instructor Course at Nellis Air Force Base. He deployed to the Air Component Coordination Element, Camp Victory Iraq for Operation IRAQI FREEDOM, he served as the USNORTHCOM Director of Space Forces, and commanded the 175th Cyberspace Operations Group, Maryland Air National Guard. He also served as the Deputy Director of Operations, USSPACECOM. Prior to his current assignment, Maj Gen Bratton served as the Space Training and Readiness Task Force Lead.

INDUSTRY KEYNOTE

VAN SULLIVAN
Chief Executive Officer,
Trideum Corporation

VAN SULLIVAN is one of the founders and has served as the CEO of Trideum Corporation since 2005. As CEO, his primary focus is on establishing an evergreen company through the implementation of an employee stock ownership plan and development of an ownership culture in all levels of the employee family. Mr. Sullivan leverages his early life on the farm to integrate existing resources to create novel solutions to complex problems that add value to Trideum's customers. Van is a classically trained engineer with certifications in government contract management, project management, and entrepreneurship. He has 40 years of experience in applied research, engineering development, and test and evaluation. Specific areas of expertise include sensor analysis and test, emulative-level simulation (continuous and discrete, component to system level), and integration of simulation technology to test and evaluation.

Van holds a master's degree in electrical engineering from the University of Central Florida and a bachelor's degree in engineering science and mechanics from the University of Tennessee. His graduate work focused on implementation of a Kalman-filter compensated simulation for real-time human performance assessment. He has additionally completed several professional development programs from Duke University, MIT, and Oxford University.

Van is well known at the national, state, and local level from both his role at Trideum and in the Huntsville Madison County Chamber of Commerce, as well as from his current and past participation in community activities including: president of the Westminster Christian Academy School Board, chairman of the Hope Evangelical Free Church Elder Board, member of the Huntsville Committee of 100 and several of its task forces, member of the BizPac Board of Directors, currently serving as the Vice President of the Alabama School of Cyber Technology and Engineering Foundation Board of Directors, and from coaching soccer at the recreational, club, and varsity school levels. He enjoys spending time with his wife of 36 years, his three kids and two "kid-in-laws", and restoring his three classic mustangs.

TUESDAY, 29 NOVEMBER • 1015 – 1200
HYATT WINDERMERE BALLROOM

SENIOR LEADER PANEL

REAR ADMIRAL JAMES A. ROBB, USN (RET.)
President, National Training and Simulation Association (NTSA)

DIMITRI KUSNEZOV, PH.D.
Under Secretary for Science and Technology, Department of Homeland Security

LIEUTENANT GENERAL KEVIN M. IIAMS, USMC
Commanding General, Training and Education Command, USMC

VICE ADMIRAL FRANCIS MORLEY, USN
Principal Military Deputy Assistant Secretary of the Navy (Research, Development and Acquisition)

DASD CAROLINE BAXTER
Deputy Assistant Secretary of Defense (DASD) for Force, Education and Training, USD P&R

YOUNG J. BANG
Principal Deputy Assistant Secretary of the Army (Acquisition, Logistics & Technology)

KAREN D. H. SAUNDERS, SES
Program Executive Officer for Simulation, Training and Instrumentation, U.S. Army PEO STRI

LISA COSTA, SES, PH.D.
Chief Technology and Innovation Officer (CTIO), U.S. Space Force

KEVIN D. STAMEY, SES
Director for Information Dominance Programs, Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics

LIEUTENANT GENERAL MICHAEL CLAESSON
Chief of Joint Operations, Swedish Armed Forces

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, *Accelerate Change by Transforming Training – "It's Time to ACTT!!"* This year's panel will include senior representatives from U.S. Military Services, DHS, OSD, and NATO. Following opening remarks, the audience will interact with the panel through a Q&A feature. All attendees will also have the chance to submit questions in advance. Do not miss the opportunity to hear from national leaders on the way ahead.

CONFERENCE CHAIR

MATT SPRUILL
Trideum Corporation
I/ITSEC 2022
Conference Chair

MATTHIAS "MATT" A. SPRUILL IV is Trideum Corporation's Director of Training Services & Solutions. In this role, he is responsible for leading solution delivery and developing Trideum's strategic vision for all training, simulation, and education growth within Trideum. Matt has worked in the training and simulation industry for 34 years, holding both military and industry positions, and he is constantly exploring new methods, techniques, and technologies to help advance the state of the art in training and education for not only today's, but for the next generation, workforce. Matt's 20-year military career as a U.S. Army Armor Officer culminated in leading development and operationalization of the Joint Live Virtual Constructive Federation (JLVC), DoD's first all-service entity-based federation that is still used to train combatant commands, joint task forces, and service organizations. In his current role at Trideum, Matt also serves as a strategic advisor to the Joint Staff J7's Joint Knowledge Online (JKO) leadership. Additionally, Matt has been a tireless advocate and an active leader in the broader training and simulation community, including serving as Chairman of the Board of the Virginia Modeling and Simulation Partnership, Conference Chair for MODSIM 2009, and Vice President of Operations for the Association of the United States Army (AUSA) Sunshine Chapter. For 16 years, he has held progressive I/ITSEC leadership positions, including serving twice as a Subcommittee Chair and three times as Special Events Chair. Matt holds a Master of Science degree in Computer Information Systems from Colorado State University and a Bachelors degree in Management Information Systems from the University of Kentucky. He is the co-author of three Civil War books: "Echoes of Thunder – A Guide to the Seven Days Battles;" "Summer Lightning – A Guide to the Second Battle of Manassas;" and "Decisions at Second Manassas – The Fourteen Critical Decisions That Defined the Battle."

PROGRAM CHAIR

JIM THRELFALL
Tipping Point Solutions
I/ITSEC 2022
Program Chair

JAMES "JIM" THRELFALL is Vice President of Operations/Business Development at Tipping Point Solutions, Inc. Jim has more than 38 years of progressive managerial, educational, and financial experience in the fields of Organizational Performance and Human Resource Development for industry, corporations, and the U.S. Government. He worked in the areas of human resource development/performance to include: implementing and managing training systems and programs; curriculum development; instructional strategies; instructional technology; traditional through electronic-based training; gaming and immersive environments; mixed/virtual/augments reality; and research analysis. Jim is a retired Army Field Artillery Officer. In his current role at Tipping Point Solutions, Jim is responsible for the management and support of Federal Agencies, DoD, and commercial engagements to include: assisting organizations to define learning and/or training solutions for system or product implementation; planning and resourcing the execution of the development projects; and successful integration of those training/learning solutions. Jim was also the Program Manager under the Army Capabilities Integration Center (ARCIC), CIO/G6 and TRADOC "Connecting Soldiers to Digital Applications" and provided TRADOC with the first mobile device and tablet application for Patriot Missile Crew Training. This innovative training product was the Winner of the first Mobile Category for the Serious Games Showcase & Challenge in 2011. Jim has been a member of the I/ITSEC community since 2008, serving as subcommittee chair for HSE and Education, as well as chairing Special Events. Jim holds a Master of Science degree in Education (Training Technology) from Old Dominion University and Bachelor of Arts degree in Military Studies from Norwich University.

CONFERENCE SPONSOR

REAR ADMIRAL 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.

DAVID L. NORQUIST
President and Chief Executive Officer, National Defense Industrial Association

Mr. David L. Norquist is the President and Chief Executive Officer of the National Defense Industrial Association (NDIA). He has over 30 years of public and private sector experience in national security and federal financial management. This includes serving in three Senate confirmed positions: the Chief Financial Officer (CFO) of the Department of Homeland Security, the Under Secretary of Defense Comptroller/CFO and most recently the 34th Deputy Secretary of Defense. He began his career as a civil servant, supporting Army intelligence as a program/budget analyst with assignments on the Army staff, a major command, a defense agency, and at an overseas field site. Following his time with the Army, Mr. Norquist served for six years with the House Appropriations Subcommittee on Defense as a professional staff member. He later served for eight years as partner with Kearney and Company, a certified public accounting firm focused exclusively on the federal government. Mr. Norquist is a graduate of the University of Michigan, where he received a Bachelor of Arts in Political Science and a Master's Degree in Public Policy. He also holds a Master's Degree in National Security Studies from Georgetown University.

AIR FORCE SERVICE EXECUTIVE

COLONEL MATT "T2" RYAN, USAF, is the Senior Materiel Leader, Simulators Division. In this role, he leads a team of 600 members, executes a $5.8B portfolio, and is responsible for developing and maintaining 70+ simulator and training systems for nine Major Commands (MAJCOMs) and multiple FMS partner nations. Col Ryan received his commission from the University of Oklahoma in 1999, completed an M.S. degree in Aerospace Engineering from the University of Dayton, and an M.S. degree in Systems Engineering from the Air Force Institute of Technology at Wright-Patterson. He is a graduate of Air Force Test Pilot School and has served as a Lead Test Flight Engineer, Flight Commander, Director of Operations, and Squadron Commander; program office tours include the Department of the Air Force Rapid Capabilities Office and the Life Cycle Management Center's Special Projects program office; and served in a staff position at Global Reach Programs, Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics.

ARMY SERVICE EXECUTIVE

KAREN D.H. SAUNDERS, SES, is the Program Executive Officer for Simulation, Training and Instrumentation (PEO STRI). She previously served as the Chief of Staff for the Undersecretary of Defense for Acquisition and Sustainment (USD(A&S)). Prior to that, Ms. Saunders served as the Department of Defense's (DoD) Executive Director, Defense Science Board (DSB). In December 2014, Ms. Saunders culminated a 30 year honorable career in the U.S. Army as a Colonel serving as the Chief of Staff for the Assistant Secretary of the Army for Acquisition, Logistics and Technology. Prior to this, she served on the Office of the Secretary of Defense's (OSD) staff as the Military Assistant to the Principal Deputy to the Assistant Secretary of Defense for Research and Engineering. Prior to serving on the OSD staff, she was assigned to the NATO Training Mission – Afghanistan, Combined Security Transition Command – Afghanistan serving as the Chief, Security Cooperation Division; Security Assistance Office. She also served as the Senior Advisor to the Afghan National Army Ministry of Defense Acquisition, Technology, and Logistics Deputy Minister. Ms. Saunders has held command and staff assignments in Military Intelligence and Operations Research and Systems Analysis to include Strategic Intelligence Research Analyst, U.S. Army Concepts Analysis Agency, Bethesda, Maryland; Chief, Intelligence Systems Division, Battle Command Battle Lab – Huachuca; Battalion Executive Officer and Operations Officer, 304th Military Intelligence Battalion and 305nd Military Intelligence Battalion, Fort Huachuca, Arizona.

NAVY SERVICE EXECUTIVE

CAPTAIN DAN COVELLI, 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 Covelli leads a workforce of more than 1,200 scientists, evaluators, engineers, technicians, logisticians, contracting specialists, and support personnel. Captain Covelli, a 1994 graduate of S.U.N.Y. Maritime College with a Bachelor of Engineering Degree in Electrical Engineering, received his commission through the Naval Reserve Officers Training Corps and was designated a Naval Aviator in 1997. Captain Covelli served as the Executive Officer for NAWCTSD prior to assuming command in July 2021. A Marine Aviation Weapons and Tactics Squadron 1 graduate, CAPT Covelli has flown 119 combat missions and logged over 2,800 flight hours in 19 different aircraft. His decorations include the Meritorious Service Medal, Air Medal – Strike/Flight, Navy Commendation Medal, and Navy Achievement Medal along with various other personal, unit, and service medals.

MARINE CORPS SERVICE EXECUTIVE

LIEUTENANT COLONEL MARCUS J. REYNOLDS is the Program Manager for Training Systems (PM TRASYS) where he serves as Marine Corps Systems Command's executive agent assigned to manage acquisition and life-cycle support of Marine Corps ground training systems, devices, and training support services. Lieutenant Colonel Reynolds commands a staff of nearly 180 personnel, including Marines, civilians and support contractors located globally with professional expertise across the areas of program management, engineering, training facilities engineering, logistics, instructional systems design, procurement, contract management, cost estimation, budget and financial management, live, virtual, constructive integration, and business operations. He served a year as an Executive Fellow at Microsoft Corporation in Washington, D.C., through the Secretary of Defense Executive Fellowship Program and his research papers on Mixed Reality were published in the Marine Corps Gazette and in the U.S. Naval Institute's Proceedings Magazine. He holds an Associate of Science in Drafting & Design Technology, a Bachelor of Science in Industrial Technology from West Virginia Institute of Technology, and a Master of Science in Project Management from Colorado Technical University. His personal decorations include the Bronze Star Medal, Meritorious Service Medal with one gold star, Joint Commendation Medal, Navy Commendation Medal with one gold star, Navy & Marine Corps Achievement Medal, and 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.

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PRINCIPALS

SERVICE PRINCIPALS

HEATH MORTON
AIR FORCE

Training Systems Technical Advisor
Air Force Materiel Command (AFMC)

KYLE PLATT
ARMY

Director, Instrumentation Management Office (IMO)
U.S. Army Program Executive Office, Simulation, Training and Instrumentation (PEO STRI)

CAROL BYERS-BENDLE
MARINE CORPS

Future Technology Integrator
Program Manager for Training Systems (PM TRASYS), Marine Corps Systems Command (MARCORSYSCOM)

KENT GRITTON
NAVY

Director, Special Projects
Naval Air Warfare Center Training Systems Division (NAWCTSD)

OSD PRINCIPAL

FREDERICK C. ENGLE

Director, Military Training
Office of the Secretary of Defense (Personnel & Readiness) (OSD (P&R))

SERVICE BOOTHS

USAF	1539
PEO STRI	339/1387/1533
PM TRASYS	1433
NAWCTSD	349/1439
U.S. Army DEVCOM	329

ACRONYMS

COMMANDS

U.S. AIR FORCE

Air Force Agency for Modeling & Simulation	AFAMS
Air Force Life Cycle Management Center	AFLCMC
Air Force Life Cycle Management Center – Simulator Division	AFLCMC/WNS
Air Force Major Commands	MAJCOMs
Air Force Materiel Command	AFMC
Air Force Research Laboratory	AFRL

U.S. SPACE FORCE

Chief of Space Operations	CSO
Space Operations Command	SPOC
Space Training and Readiness Command	STARCOM
Space Systems Command	SSC
United States Space Force	USSF

U.S. ARMY

Army Contracting Command-Orlando	ACC-ORL
Assistant Secretary of the Army (Acquisition, Logistics and Technology)	ASA (ALT)
Program Executive Office for Command, Control and Communications – Tactical	PEO C3T
Program Executive Office – Aviation	PEO AVN
Program Executive Office Ground Combat Systems	PEO GCS
Program Executive Office – Intelligence, Electronic Warfare and Sensors	PEO IEWS
Simulation & Training Technology Center	STTC
Synthetic Training Environment Cross Functional Team	STE CFT
Training and Doctrine Command	TRADOC
U.S. Army Combat Capabilities Development Command - Soldier Center	DEVCOM SC
U.S. Army Program Executive Office, Simulation, Training and Instrumentation	PEO STRI
U.S. Army Threat Systems Management Office	TSMO

U.S. MARINE CORPS

Marine Air Ground Task Force Training Command	MAGTFTC
Marine Corps Air Ground Combat Center	MCAGCC
Marine Corps Systems Command	MARCORSYSCOM
Program Manager, Training Systems	PM TRASYS

U.S. NAVY

Assistant Secretary of the Navy for Research Development and Acquisition	ASN (RD&A)
Center for Naval Aviation Technical Training	CNATT
Commander, Fleet Readiness Centers	COMFRC
Commander, Naval Air Forces	AIRFOR
Commander, Naval Air Atlantic	AIRLANT
Commander, Naval Air Pacific	AIRPAC
Commander, Naval Air Training	CNATRA
Commander, Naval Surface Forces	SURFFOR
Commander, Regional Maintenance Center	CRMF
Naval Air Systems Command	NAVAIR
Naval Air Warfare Center Aircraft Division	NAWCAD
Naval Air Warfare Center Training Systems Division	NAWCTSD
Naval Air Warfare Center Weapons Division	NAWCWD
Naval Air Warfare Development Center	NAWDC
Naval Education and Training Command	NETC
Naval Information Warfare Command	NAVIFOR
Naval Sea Systems Command	NAVSEA
Naval Warfare Systems Command	NAVWAR
Office of the Chief of Naval Operations	OPNAV

OTHERS

Cybersecurity and Infrastructure Security Agency	CISA
Defence Science and Technology Laboratory	DSTL
Department of Homeland Security	DHS
Industry & Standards Organization	ISTO
Institute for Defense Analyses	IDA
Institute of Electrical and Electronics Engineers	IEEE
NATO Modelling and Simulation Group	NMSG
North Atlantic Treaty Organization	NATO
Secretary of Defense	OSD
Undersecretary of Defense for Acquisition and Sustainment	USD(A&S)
U.S. Special Operations Command	USSOCOM

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AGENDA

WEDNESDAY • 23 NOVEMBER 2022

TIME	SESSION	LOCATION
0800	**EXHIBITOR REGISTRATION OPEN**	WEST CONCOURSE
1700	**EXHIBITOR REGISTRATION CLOSE**	

THURSDAY • 24 NOVEMBER 2022 • CLOSED FOR THANKSGIVING

FRIDAY • 25 NOVEMBER 2022 AND SATURDAY • 26 NOVEMBER 2022

0800	**EXHIBITOR REGISTRATION OPEN**	WEST CONCOURSE
1700	**EXHIBITOR REGISTRATION CLOSE**	

SUNDAY • 27 NOVEMBER 2022

0800	**EXHIBITOR REGISTRATION OPEN**	WEST CONCOURSE
1200	**CONFERENCE REGISTRATION OPEN**	WEST CONCOURSE
1200	**SATELLITE REGISTRATION OPEN**	HYATT REGENCY MAIN LOBBY/ ROSEN CENTRE HOTEL
1800	**ALL REGISTRATIONS CLOSE**	

MONDAY • 28 NOVEMBER 2022

0700	**CONFERENCE AND EXHIBIT REGISTRATION OPEN**	WEST CONCOURSE
0730	**SATELLITE REGISTRATION OPEN**	HYATT REGENCY MAIN LOBBY/ ROSEN CENTRE HOTEL
0830 – 1000	**TUTORIALS** (SYNOPSES BEGIN ON PAGE 67)	
	Putting the When and Where into Simulations	W307A
	International Trade Compliance: Regulatory Developments and Key Risk Areas	W307B
	Avoid the Illusion of Knowing: Reshaping Design in ADDIE	W307C
	Simulation Conceptual Modeling Theory and Use Cases	W307D
	The WHY & How of eXtended Reality (XR) Enterprise Adoption	W308A
	The I/ITSEC Professional Development Primer: M&S Fundamentals, Certification, and Contemporary Applications	W308B
	Powerful & Accessible Immersive Experiences – Visualizing & Transforming Large Data Sets in eXtended Reality	W308C
	IEEE 1278TM Standard for Distributed Interactive Simulation (DIS): Concepts and Techniques	W305A
	A Process for Distributed LVC Event Integration and Execution	W305B
	An Introduction to Cognitive Systems for Modeling & Simulation	W306A
1030 – 1200	**SIGNATURE EVENT:** Congressional Modeling and Simulation Caucus	W311ABCD
1245 – 1415	**TUTORIALS** (SYNOPSES BEGIN ON PAGE 71)	
	A Comprehensive Introduction to Medical Simulation	W307A
	Principles for Designing Effective, Efficient, and Engaging Training to Accelerate Expertise	W307B
	Introduction to Competency-Based Experiential Learning	W307C
	Addressing the Challenges of Rigorous Model Validation	W307D
	Machine Learning and the Benefits of Applying it to XR Training Systems	W308A
	Introduction to Defense Modeling and Simulation	W308B
	Evolution of RF Signal Visualization from Spectrum Analyzers to Augmented Reality	W308C
	Introduction to HLA	W305A
	Live, Virtual and Constructive (LVC) Interoperability 101	W305B
	Secure Heterogeneous Network (HetNet) Architecture Applied to LVC Environments	W306A
1245 – 1415	**FOCUS EVENT:** CMSP 3.0 – Reinvention!	W300 – THEATRE
1400	**EXHIBITS OPEN**	EXHIBIT HALL

DOWNLOAD MOBILE APP

AGENDA

1430 – 1545	**SIGNATURE EVENT:** The NBT TalX – Imagining the Future Fight through Emerging Technologies	W300 – THEATRE
1430 – 1600	**TUTORIALS** (SYNOPSES BEGIN ON PAGE 74)	
	Practical Guide to Learning Engineering	W307A
	Operational Impact: Quantifying Training Solution Value	W307B
	Leading by Design: User Experience (UX) for the Department of Defense	W307C
	Accreditation of Simulation-Based Experiments and Training: Beyond the M&S	W307D
	Anytime, Anywhere Adaptive XR Training	W308A
	A History of Games for Military Training: From Sheep Knuckles to the Metaverse	W308B
	Sharing Environmental Data for LVC using RIEDP	W308C
	TENA, Interoperability, and Data Management	W305A
	Secure Distributed Simulation Training Systems Anywhere, with OMG DDS	W305B
	Transform Your Training by Migrating Content to cmi5	W306A
1600 – 1730	**SIGNATURE EVENT:** I/ITSEC Fellows	W300 – THEATRE
1800	**EXHIBITS CLOSE**	
1800	**ALL REGISTRATION STATIONS CLOSE**	

TUESDAY • 29 NOVEMBER 2022

0700	**CONFERENCE AND EXHIBIT REGISTRATION OPEN**	WEST CONCOURSE
0730	**SATELLITE REGISTRATION OPEN**	HYATT REGENCY MAIN LOBBY/ ROSEN CENTRE HOTEL
0815 – 1000	**OPENING CEREMONIES** Call to Order Presentation of Colors National Anthem Invocation **OPENING REMARKS** Matt Spruill, 2022 Conference Chair	HYATT WINDERMERE BALLROOM

FIRESIDE CHAT WITH USAF AND USSF SENIOR LEADERS

General David W. Allvin, USAF
Vice Chief of Staff of the Air Force

Maj Gen Shawn N. Bratton, USSF
Commander, Space Training and Readiness Command

INDUSTRY KEYNOTE

Van Sullivan
Chief Executive Officer, Trideum Corporation

1015 – 1200	**SIGNATURE EVENT:** Senior Leader Panel	HYATT WINDERMERE BALLROOM
1200	**EXHIBITS OPEN**	EXHIBIT HALL
1200 – 1330	**LUNCH** (Opening of Exhibits and Lunch will occur at 1200 or upon adjournment of the Senior Leader Panel)	EXHIBIT HALL
1400 – 1530	**PAPER SESSIONS** (TITLE/AUTHOR LIST BEGINS ON PAGE 90. SESSION SCHEDULES FOR THIS TIME FRAME ARE ON PAGE 86.)	ROOMS W307ABCD; W308AB
1400 – 1530	**SIGNATURE EVENT:** Department of the Air Force (DAF) Senior Leader / General Officer Panel	W311ABCD
1400 – 1530	**FOCUS EVENT:** Thinking on Your Feet: Agile Acquisition for a Dynamic World	W309AB
1400 – 1530	**PROGRAM BRIEF:** PM TRASYS Program Reviews	W308C
1600 – 1730	**PAPER SESSIONS** (TITLE/AUTHOR LIST BEGINS ON PAGE 90. SESSION SCHEDULES FOR THIS TIME FRAME ARE ON PAGE 86.)	ROOMS W307ABCD; W308AB
1600 – 1730	**SIGNATURE EVENT:** Virtual Training for Actual Results	W304EF
1600 – 1730	**SIGNATURE EVENT:** Indo-Pacific Training Capability Improvements for Multi-Domain Warfighting	W304AB
1600 – 1730	**FOCUS EVENT:** The Data is the Thing!: Successes and Challenges in Measuring Performance, Proficiency and Effectiveness Outcomes in Multinational Real World Contexts	W304GH
1600 – 1730	**PROGRAM BRIEF:** USAF Acquisition Update	W308C
1600	**SATELLITE REGISTRATION STATIONS AT HYATT & ROSEN CENTRE CLOSE**	

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 • 30 NOVEMBER 2022

0630	5K Walk, Run or Roll Charity Race	OCCC – WEST HALL D
0700	**CONFERENCE AND EXHIBIT REGISTRATION OPEN**	WEST CONCOURSE
0830 – 1000	**PAPER SESSIONS** (TITLE/AUTHOR LIST BEGINS ON PAGE 90. SESSION SCHEDULES FOR THIS TIME FRAME ARE ON PAGE 87.)	ROOMS W307ABCD; W308A
0830 – 1000	**SIGNATURE EVENT:** Accelerating Innovation to Bridge the Valley of Death	W304GH
0830 – 1000	**SIGNATURE EVENT:** The NBT TalX – The Consumer Metaverse Meets Defense	W311ABCD
0830 – 1000	**FOCUS EVENT:** Synthetic Environments to Enable Multi-Domain Operations	W310AB
0830 – 1000	**FOCUS EVENT:** Adaptive Training at Scale: Ready for Primetime?	W300 – THEATRE
0830 – 1000	**PROGRAM BRIEF:** Navy Training Programs Vision – Platforms, Sailors, Environment	W309AB
0930	**EXHIBITS OPEN**	EXHIBIT HALL
1030 – 1200	**PAPER SESSIONS** (TITLE/AUTHOR LIST BEGINS ON PAGE 90. SESSION SCHEDULES FOR THIS TIME FRAME ARE ON PAGE 87.)	ROOMS W307ACD; W308A
1030 – 1200	**SIGNATURE EVENT:** Naval Aviation Flag Officer Panel	W304AB
1030 – 1200	**SIGNATURE EVENT:** The NBT TalX – Beyond the Hype: Perspectives on XR and the Metaverse for Training	W311ABCD
1030 – 1200	**COMMUNITY OF INTEREST:** M&S Emerging Technologies: Innovation Opportunities and Challenges	W308C
1030 – 1200	**COMMUNITY OF INTEREST:** Joint Wargaming Interoperability Showcase	W309AB
1200 – 1330	**LUNCH**	EXHIBIT HALL
1200 – 1700	**FOCUS EVENT:** I/ITSEC Career Fair	W110A
1400 – 1530	**PAPER SESSIONS** (TITLE/AUTHOR LIST BEGINS ON PAGE 90. SESSION SCHEDULES FOR THIS TIME FRAME ARE ON PAGE 88.)	ROOMS W307ABCD
1400 – 1530	**SIGNATURE EVENT:** The NBT TalX – Defense Leaders Perspectives on the Military Metaverse	W311ABCD
1400 – 1530	**SIGNATURE EVENT:** Principal Cyber Advisors' Panel	W304AB
1400 – 1530	**SIGNATURE EVENT:** Transforming Training with Allies and Partners to Confront and Deter Russian Aggression	W304EF
1400 – 1530	**FOCUS EVENT:** Training, Analytics, and Experimentation: USMC Wargaming Panel	W309AB
1400 – 1530	**COMMUNITY OF INTEREST:** The New Frontier: Training for the Space Mission	W310AB
1600 – 1730	**PAPER SESSIONS** (TITLE/AUTHOR LIST BEGINS ON PAGE 90. SESSION SCHEDULES FOR THIS TIME FRAME ARE ON PAGE 88.)	ROOMS W307ABD; W308AB
1600 – 1730	**SIGNATURE EVENT:** Getting Real, Getting Better – A Navy Flag Officer Panel	W304AB
1600 – 1730	**SIGNATURE EVENT:** The NBT TalX – Vision of the Military Metaverse	W311ABCD
1600 – 1730	**FOCUS EVENT:** Space Warfighter Training Transformation: A Visual Approach	W310AB
1600 – 1730	**FOCUS EVENT:** Joint Service Interoperability and Modeling and Simulation in the DoD	W304GH
1600 – 1730	**FOCUS EVENT:** Back to the Future – A Green Planet May Require Nuclear Power	W300 – THEATRE
1600 – 1730	**FOCUS EVENT:** Best From Around the Globe	W304EF
1800	**ALL REGISTRATIONS CLOSE**	
1800	**EXHIBITS CLOSE**	

THURSDAY • 1 DECEMBER 2022

0700	**CONFERENCE AND EXHIBIT REGISTRATION OPEN**	WEST CONCOURSE
0830 – 1000	**PAPER SESSIONS** (TITLE/AUTHOR LIST BEGINS ON PAGE 90. SESSION SCHEDULES FOR THIS TIME FRAME ARE ON PAGE 89.)	ROOMS W307ABCD; W308AB
0830 – 1000	**FOCUS EVENT:** Special Operations Force Battlespace Preview	W310AB
0830 – 1000	**FOCUS EVENT:** Innovation Match Game	W304EF
0830 – 1000	**FOCUS EVENT:** Accelerating Readiness through Digital Engineering	W309AB
0830 – 1000	**COMMUNITY OF INTEREST:** Simulation Standards: The Path to Seamless Interoperability for Multi-Domain Operations	W308C

DOWNLOAD MOBILE APP

AGENDA

0830 – 1000	**COMMUNITY OF INTEREST:** Evolving Medical Training – Big Data, Multi-Domain Operations, and Prolonged Care	W304GH
0830 – 1200	**PROGRAM BRIEF:** PEO STRI TSIS Program Brief	W311ABCD
0930	**EXHIBITS OPEN**	EXHIBIT HALL
1030 – 1200	**PAPER SESSIONS** (TITLE/AUTHOR LIST BEGINS ON PAGE 90. SESSION SCHEDULES FOR THIS TIME FRAME ARE ON PAGE 89.)	ROOMS W307ABCD; W308B
1030 – 1200	**SIGNATURE EVENT:** Virtual Evaluation in Prototyping and Experimentation	W304GH
1030 – 1200	**FOCUS EVENT:** International Perspectives on Creating and Sustaining Learning Ecosystems in the Wild	W309AB
1030 – 1200	**FOCUS EVENT:** Evolving Distributed Mission Operations Joint DMO Panel	W310AB
1030 – 1200	**IRON DEV AWARDS CEREMONY**	W308A
1030 – 1200	**COMMUNITY OF INTEREST:** Human-Centered Artificial Intelligence in Training, Simulation, and Education	W308C
1030 – 1200	**COMMUNITY OF INTEREST:** Flying in the Metaverse: Certifying Extended Reality	W304EF
1030 – 1200	**PROGRAM BRIEF:** Navy Vision from Training Systems Program Managers	W304AB
1200 – 1330	**LUNCH**	EXHIBIT HALL
1300	**SERIOUS GAMES SHOWCASE & CHALLENGE AWARDS CEREMONY**	BOOTH 2588
1330 – 1500	**PAPER SESSIONS** (TITLE/AUTHOR LIST BEGINS ON PAGE 90. SESSION SCHEDULES FOR THIS TIME FRAME ARE ON PAGE 89.)	ROOMS W307ABC
1330 – 1500	**COMMUNITY OF INTEREST:** Information Warfare: Combating Disinformation Via Inoculation Training and Social Simulations	W308C
1500	**EXHIBIT HALL AND REGISTRATION CLOSE**	
1800	**Hosted Reception** Sponsored by Lockheed Martin	HYATT WINDERMERE BALLROOM
1900	**Conference Awards Banquet** *Reception & Awards* Best Paper Award Presentation Best Tutorial Award Presentation I/ITSEC 2022 Scholarship Presentations • RADM Fred Lewis Postgraduate Scholarships • Leonard P. Gollobin Postgraduate Scholarships • CMSP Postgraduate Scholarship • Barbara McDaniel Undergraduate Scholarships Passing of the Flag for I/ITSEC 2023 Post Dinner Entertainment and Networking	HYATT WINDERMERE BALLROOM

FRIDAY • 2 DECEMBER 2022

0800 – 1200	**PROFESSIONAL DEVELOPMENT WORKSHOPS** (SYNOPSES ON PAGES 96 – 98)	**LOCATION**
	PDW 1: Harnessing the Power of Data Analytics to Optimize Training	W307A
	PDW 2: Live-Virtual-Constructive (LVC) Interoperability Techniques	W307B
	PDW 3: Distributed LVC Event Process	W307C
	PDW 4: Using Object Management Group's Data Distribution Service (OMG DDS) for Distributed Training Simulators	W307D
	PDW 5: Serious Game Design Work Shop	W308A
	PDW 6: Introduction to Mathematical Modeling for Analysts and Educators	W308B
	PDW 7: Certified Modeling and Simulation Professional 3.0	W308C
	PDW 8: VR Trainee Attention and Cognitive Load Assessment Using Headset Integrated Eye Tracking and Biophysiological Sensors	W308D

DRESS CODE

BRANCH	CONFERENCE AND GENERAL SESSIONS	BANQUET
Air Force	Blues *(Short or Long Sleeve)*	Mess Dress or Semi-Formal
Army	Exhibit Floor/Attendees – ACUs or Duty Uniform Panelist/Speakers – ASUs, Class A's	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)*
Space 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

I/ITSEC SUPPORTS OUR WARFIGHTERS, FIRST RESPONDERS, AND FAMILIES

For more information visit https://www.iitsec.org/attend/charities-at-iitsec

TUNNEL TO TOWERS

Since 9/11, Tunnel to Towers has been helping America's heroes by providing mortgage-free homes to Gold Star and fallen first responder families with young children and by building custom-designed smart homes for catastrophically injured veterans and first responders. They are also committed to eradicating veteran homelessness and aiding the victims of major U.S. disasters.

- 450+ mortgage free homes (delivered or in progress).
- Educating 600,000+ through their 9/11 Never Forget Mobile Exhibit.
- 250+ million raised in support of our nation's greatest heroes and their families.
- 95 cents of every dollar donated goes directly to programs.

The I/ITSEC 5K Run/Walk/Roll supports Tunnel to Towers with proceeds from the race going to the Orlando Chapter of Tunnel to Towers. In 2021, the I/ITSEC community was able to contribute over $8,000 to help our service members and we hope to contribute even more this year! The I/ITSEC 5K will be held Wednesday, 30 November at 0630 in front of the OCCC West Concourse, Hall D.

JUST OUR SOLDIERS HELPERS (JOSH)

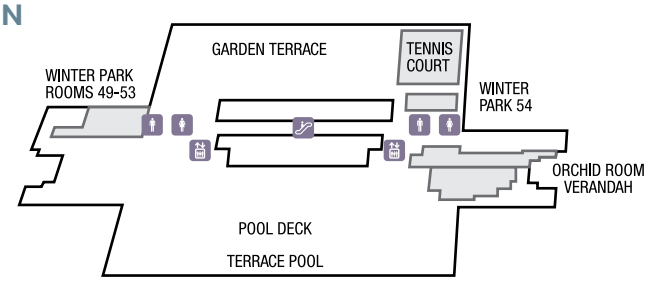
Just Our Soldiers' Helpers (JOSH), is a woman-founded and led IRS-approved non-profit founded in 2011. The JOSH mission is to increase the morale of deployed U.S. service members from all branches of the military. They do this by providing care packages containing name brand items that are not readily available during deployment.

- JOSH is an all-volunteer organization; 87% of all funds go directly towards program-related expenses. less than 3% goes towards administrative costs.
- JOSH ships only full-size name-brand products.
- JOSH ships every month of the year to all the warfighters on their list.
- JOSH has shipped over 150,000 pounds of products to our warfighters since 2011.

I/ITSEC 2022 will be the inaugural year that the I/ITSEC community helps support JOSH. Onsite at the OCCC, during I/ITSEC 2022, volunteers and attendees will sort, pack, and ship 140 care packages to our service members around the world. We can accomplish this with help from our industry partners, we have made several support levels available so all can support. Packing will happen before I/ITSEC opens on Sunday, 27 November at approximately 1030 in Room 109 at the OCCC West Concourse.



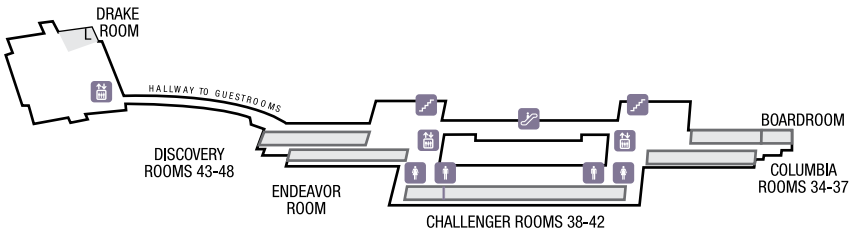
RECREATION LEVEL



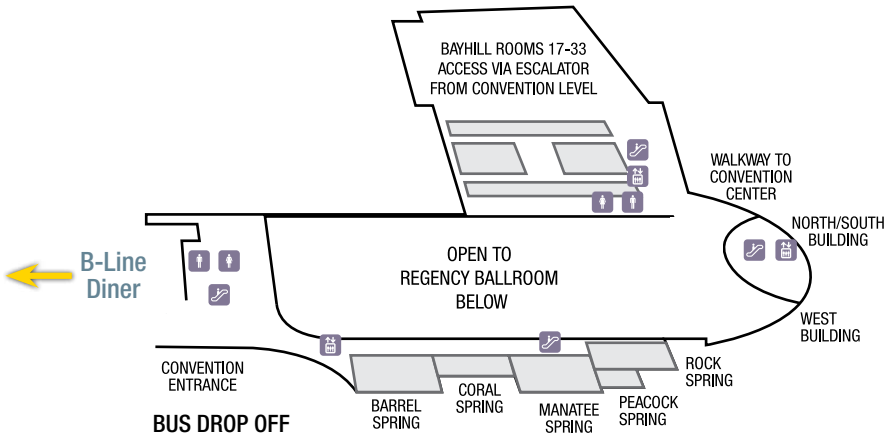
KEY

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

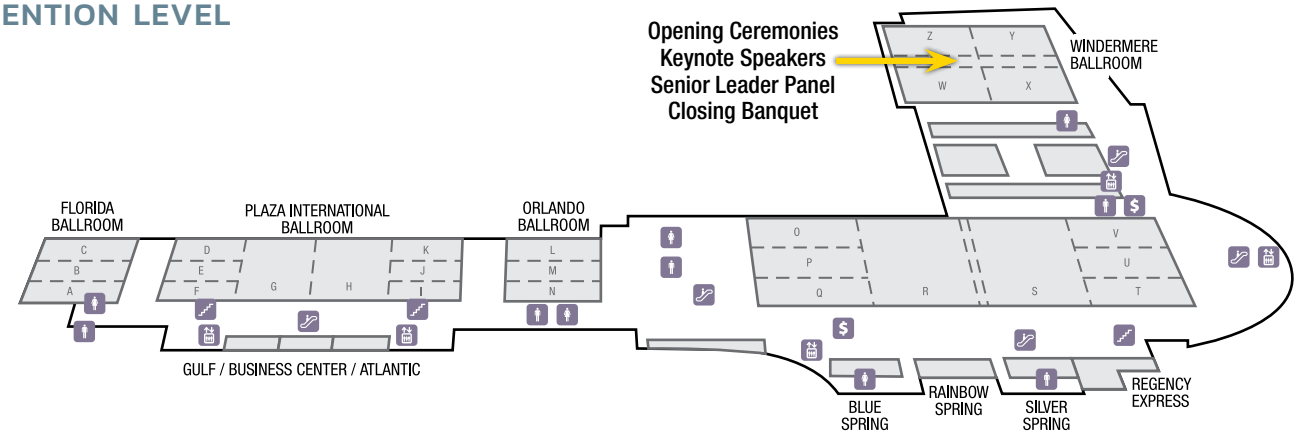
MEZZANINE LEVEL



ENTRY LEVEL

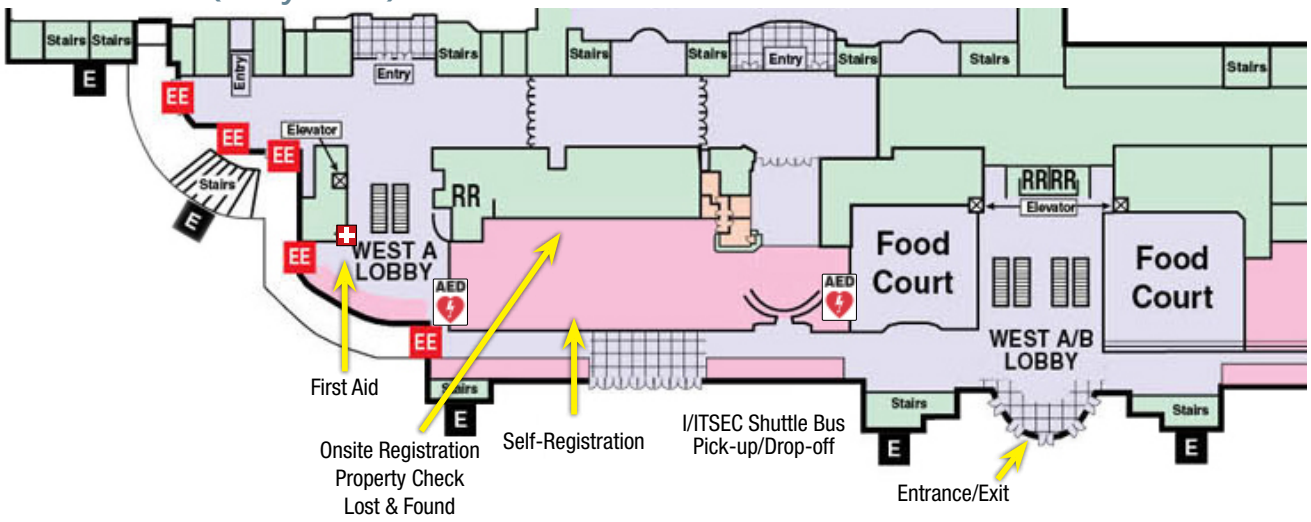


CONVENTION LEVEL

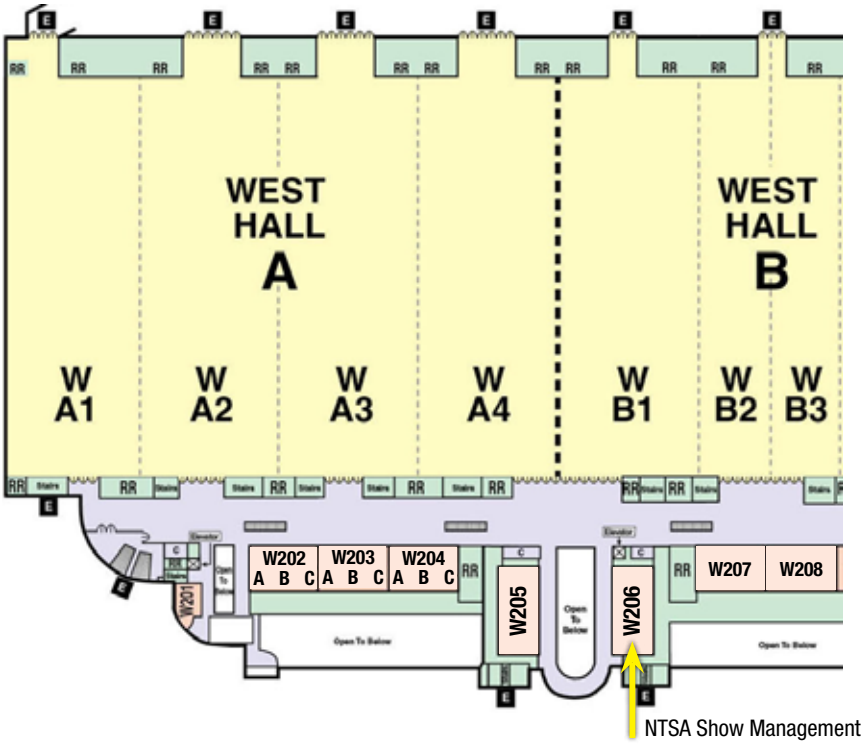


WEST CONCOURSE

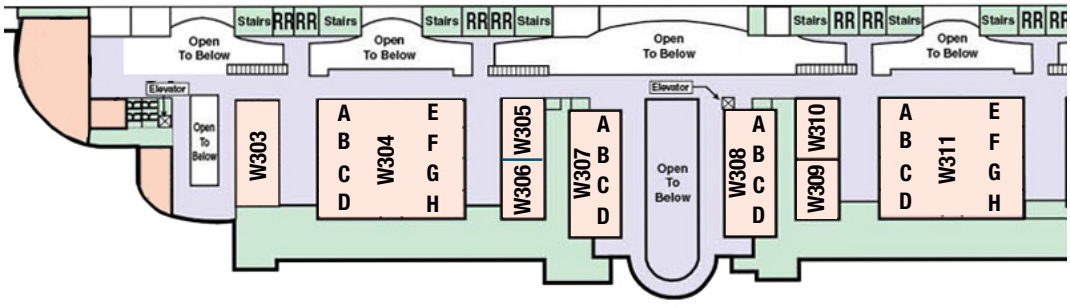
LEVEL 1 (Entry Level)



LEVEL 2



LEVEL 3 (Presentations/Events/Practice Rooms)



MONDAY, 28 NOVEMBER • 1030 – 1200 • ROOM W311ABCD

CONGRESSIONAL MODELING AND SIMULATION CAUCUS

STRONG ADVOCACY FOR TRAINING AND READINESS

All attendees and exhibitors are invited 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 ofthe 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.

CONGRESSIONAL MODELING AND SIMULATION CAUCUS MEMBERS

BOBBY SCOTT
Caucus Co-Chair
Virginia 3rd District

JOHN RUTHERFORD
Caucus Co-Chair
Florida 4th District

STEPHANIE MURPHY
Caucus Co-Chair
Florida 7th District

JACK BERGMAN
Caucus Co-Chair
Michigan 1st District

ROBERT ADERHOLT
Alabama 4th 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

VIRGINIA FOXX
North Carolina 5th District

DOUG LAMBORN
Colorado 5th District

ALAN LOWENTHAL
California 47th District

ELAINE LURIA
Virginia 2nd District

SCOTT PETERS
California 52nd District

BILL POSEY
Florida 8th District

LUCILLE ROYBAL-ALLARD
California 40th District

C.A. DUTCH RUPPERSBERGER
Maryland 2nd District

DARREN SOTO
Florida 9th District

MIKE TURNER
Ohio 10th District

JOE WILSON
South Carolina 2nd District

ROBERT WITTMAN
Virginia 1st District

MONDAY, 28 NOVEMBER • 1430 – 1545 • ROOM W300-THEATRE

THE NBT TALX – IMAGINING THE FUTURE FIGHT THROUGH EMERGING TECHNOLOGIES

NEXT GENERATION TECHNOLOGY AND THE FUTURE OF CONFLICT!

MODERATORS

LUKE SHABRO
Deputy Director, Army Mad Scientist Laboratory, U.S. Army Training and Doctrine Command

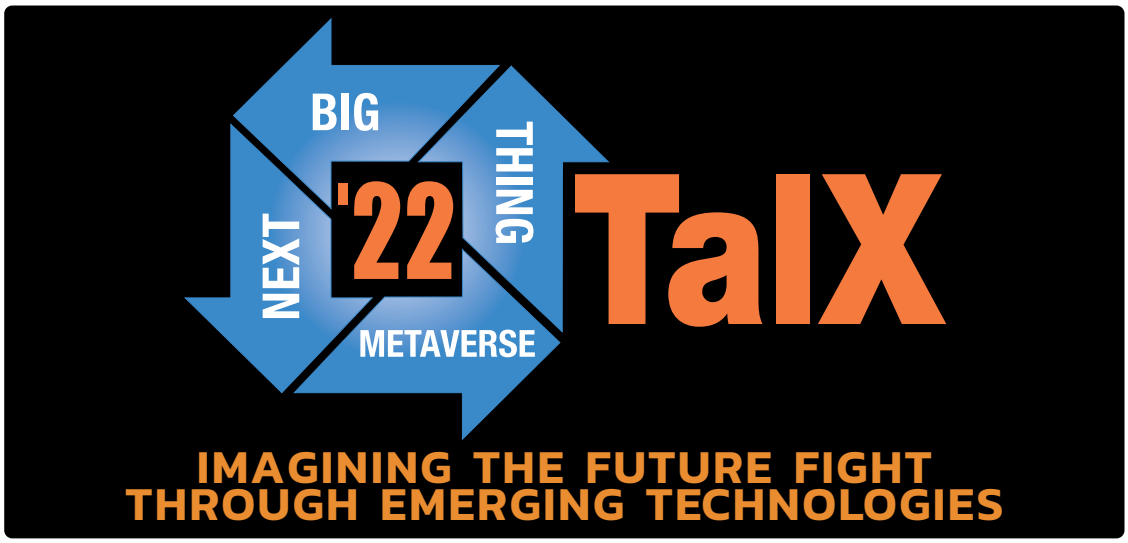
MATHEW SANTASPIRT
DEVCOM-AC Intelligence Representative to the TRADOC G2 U.S. Army DEVCOM Armaments Center

PANELISTS

WHITNEY McNAMARA
Associate Vice President, Beacon Global Strategies and Nonresident Senior Fellow, Center for Strategic and Budgetary Assessments

JENNIFER McARDLE, CMSP
Adjunct Senior Fellow, Center for a New American Security, Head of Research, Improbable U.S. Defense and Security

COMMANDER PAUL GROESTAD
Norwegian Navy, Deputy Branch Head, Concept Development, NATO Allied Command Transformation




MR. SHABRO


MR. SANTASPIRT


MS. McNAMARA


MS. McARDLE, CMSP


CDR GROESTAD

Technological change is fundamentally altering the future battlespace, with key implications for how the military may plan, train, and conduct operations. This panel discussion, which will result in a podcast released by the U.S. Army's Mad Scientist Laboratory, explores the emerging technologies that may radically reshape the future of competition and conflict — from extended reality interfaces, to artificial intelligence, and new means to empower the metaverse.

MONDAY, 28 NOVEMBER • 1600 – 1730 • ROOM W300-THEATRE

I/ITSEC FELLOW 2022

COME SEE THE I/ITSEC FELLOW PRESENTATION!

WARREN KATZ
I/TSEC 2022 Fellow

WHO IS THE I/ITSEC 2022 FELLOW

Warren Katz graduated from the Massachusetts Institute of Technology (MIT) with dual degrees in Mechanical and Electrical Engineering and started his career in Modeling and Simulation as an engineer at Bolt, Beranek and Newman (BBN), Inc. working on the Simulation Networking (SIMNET) program — the pioneering distributed simulation program sponsored by the Defense Advanced Research Projects Agency. The purpose of this ground-breaking program was to create a prototype research system to investigate the feasibility of creating a real-time distributed simulator for combat simulation. SIMNET, the resulting application, was to prove both the feasibility and effectiveness of distributed simulation for combined arms training. Warren's team at BBN developed the vehicle simulation and network software, as well as other software such as artillery, resupply, and semi-automated forces often used for opposing forces. After proving the feasibility of distributed simulation, the DoD sponsored the development of the Distributed Interactive Simulation (DIS) standard, and Warren left BBN to become the co-founder of MAK Technologies in 1990. Soon after, MAK released the first commercial distributed simulation toolkit — VR-link — a product that is still thriving over 30 years later! Warren continued to lead MAK as its visionary COO and CEO for more than two decades, and his "Dial-a-Tank" concept was a precursor to today's modern reconfigurable virtual simulators. He forged some of the earliest links between the defense M&S community and the gaming community — launching the "Spearhead" commercial tank simulation game through publisher Interactive Magic in 1998; and the first DIS/HLA plug-in for the Unreal game engine a few years later. Warren also helped to develop the concept and architecture for the DARPA "DARWARS" program in the early 2000's and leveraged funding from the U.S. Army, Marine Corps, Air Force, and other customers to develop the Battle Command line of low-overhead tactical trainers. By Warren's retirement from MAK in 2012, his company's product line had expanded to include a commercial Run-Time Interface for the High Level Architecture (HLA RTI); a market-leading Computer Generated Forces tool (VR-Forces); a streaming terrain server (VR-TheWorld Server); and one of the first 3D rendering engines that could generate visual terrain at run-time directly from GIS source data (VR-Vantage).

COME SEE THE I/ITSEC FELLOW PRESENTATION!

Warren Katz has focused his I/ITSEC Fellows paper on his many years of M&S experience in the training and acquisition domains, describing "a slow and fitful transformation" from a business model where all development of simulation software and technology was custom crafted for every new project, to an industry that consists today of a large number of vendors of finished commercial-off-the-shelf (COTS) items that can be purchased at a firm fixed price, are of commercial software quality, are well supported, and can be integrated, and adapted into finished systems quickly and easily. Warren discusses that to enable this market, open interoperability standards first needed to be created that would allow the exchange of data of various kinds emerged such that content (e.g., environmental data, entity state, scenario initial conditions, after-action review archives, etc.) can all be transmitted and received by products from different vendors and leveraged repeatedly without re-creation. Please join us as he recounts the trials, tribulations, successes, and failures of the conversion of this ecosystem into a free market of competing vendors!

TUESDAY, 29 NOVEMBER • 1015 – 1200 • HYATT WINDERMERE BALLROOM

SENIOR LEADER PANEL

IT'S TIME TO ACTT!

MODERATOR

REAR ADMIRAL JAMES A. ROBB, USN (RET.)
President, National Training and Simulation Association (NTSA)

PANELISTS

DIMITRI KUSNEZOV, PH.D.
Under Secretary for Science and Technology, Department of Homeland Security

LIEUTENANT GENERAL KEVIN M. IIAMS, USMC
Commanding General, Training and Education Command, USMC

VICE ADMIRAL FRANCIS MORLEY, USN
Principal Military Deputy Assistant Secretary of the Navy (Research, Development and Acquisition)

CAROLINE BAXTER
Deputy Assistant Secretary of Defense (DASD) for Force Education and Training, USD P&R

YOUNG J. BANG
Principal Deputy Assistant Secretary of the Army (Acquisition, Logistics & Technology)

KAREN D. H. SAUNDERS, SES
Program Executive Officer for Simulation, Training and Instrumentation, U.S. Army PEO STRI

LISA COSTA, SES, PH.D.
Chief Technology and Innovation Officer (CTIO), U.S. Space Force

KEVIN D. STAMEY, SES
Director for Information Dominance Programs, Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics

LIEUTENANT GENERAL MICHAEL CLAESSON
Chief of Joint Operations, Swedish Armed Forces


RADM ROBB, USN (RET.)


DR. KUSNEZOV


LTGEN IIAMS, USMC


VADM MORLEY, USN


DASD BAXTER


MR. BANG


MS. SAUNDERS, SES


DR. COSTA, SES


MR. STAMEY, SES


LTG CLAESSON

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, *Accelerate Change by Transforming Training – "It's Time to ACTT!!"* This year's panel will include senior representatives from U.S. Military Services, DHS, OSD, and NATO. Following opening remarks, the audience will interact with the panel through a Q&A feature. All attendees will also have the chance to submit questions in advance. Do not miss the opportunity to hear from national leaders on the way ahead.

TUESDAY, 29 NOVEMBER • 1400 – 1530 • ROOM W311ABCD

DEPARTMENT OF THE AIR FORCE (DAF) SENIOR LEADER / GENERAL OFFICER PANEL

THE BIG PICTURE

MODERATOR

ROWAYNE A. "WAYNE" SCHATZ JR., SES
Director for Studies and Analysis, Office of the Secretary of the Air Force

PANELISTS

LIEUTENANT GENERAL RICHARD G. MOORE, JR., USAF
Deputy Chief of Staff for Plans and Programs, Headquarters U.S. Air Force

THOMAS J. LAWHEAD, SES
Assistant Deputy Chief of Staff, Strategy, Integration and Requirements, Headquarters

MAJOR GENERAL SHAWN N. BRATTON, USSF
Commander, Space Training and Readiness Command

MAJOR GENERAL ALBERT G. MILLER, USAF
Director of Training and Readiness, Deputy Chief of Staff for Operations at Headquarters, U.S. Air Force


MR. SCHATZ, JR. SES


LT GEN MOORE, JR., USAF


MR. LAWHEAD, SES


MAJ GEN BRATTON, USSF


MAJ GEN MILLER, USAF

In August of 2020, the Chief of Staff of the Air Force (CSAF) Gen Charles Q. Brown released a strategic approach called *Accelerate Change or Lose*. The U.S. Air Force seeks to ensure integration and acceleration of the changes necessary to explore new operational concepts and bring more rapidly the capabilities that will help Airmen in future fights. This strategic approach is highlighted in this year's I/ITSEC theme, *Accelerate Change by Transforming Training – "It's Time to ACTT!!"*

This panel brings together Air Force leaders and organizations to provide "The Big Picture." The Air Force leaders will provide insight from their acquisition, research and technology, and mission readiness perspectives into how accelerating and employing Modeling & Simulation technology across the enterprise will meet readiness and lethality challenges. This panel provides an opportunity for I/ITSEC participants to engage with AF leaders involved with accelerating the implementation of training technology across the Air Force enterprise to increase readiness and lethality.

If we are to succeed, the CSAF reminds us, "Urgent actions are required now to secure the U.S. Air Force's continued ability to deliver global effects on strategically-relevant timelines. Demonstrating strength, adaptability, and resilience to primary competitors is necessary to deterring future armed conflict. Should deterrence fail, the U.S. Air Force must be prepared to fight in defense of America's interests—and win."

DOWNLOAD MOBILE APP

SIGNATURE EVENTS

TUESDAY, 29 NOVEMBER • 1600 – 1730 • ROOM W304EF

VIRTUAL TRAINING FOR ACTUAL RESULTS

MODERATOR

SCOTT PULFORD
Deputy Project Manager Synthetic Environment, Program Executive Office Simulation, Training and Instrumentation

PANELISTS

BRIGADIER GENERAL WILLIAM GLASER, USA
Director, Synthetic Training Environment (STE) Cross Functional Team (CFT) Army Futures Command (AFC)

COLONEL SCOTT WOODWARD, USA
Deputy Commander, U.S. Army Combined Arms Center

DEVIN LYDERS
Senior Vice President Advanced Training Systems, Cole Engineering Services, Inc.

ROGER McNICHOLAS
Vice President Training, Testing & Efficiency Solutions, General Dynamics Mission Systems, Ground Systems


MR. PULFORD


BG GLASER, USA


COL WOODWARD, USA


MR. LYDERS


MR. McNICHOLAS

Virtual training (VT) is playing a key role in the transformation of the U.S. Army into a force capable of Multi-Domain Operations, particularly as it enables "fast" familiarization training for soldiers and units operating in unfamiliar terrain/populations.

The 90-minute discussion will focus on VT's versatility, as it:

- Can be tailored to mimic urban and rural areas, as well as a variety of terrain (ex: swamps, forests), as well as opposing and allied forces' tactics, techniques, and procedures.
- May be used to rapidly test and evaluate new equipment and tactics against opponents and systems; may also be used to test proposed capability improvements before development.
- Makes testing more effective/efficient (ex: info may be used to ensure that physical tests and evaluations are designed to provide maximum useful information).

TUESDAY, 29 NOVEMBER • 1600 – 1730 • ROOM W304AB

INDO-PACIFIC TRAINING CAPABILITY IMPROVEMENTS FOR MULTI-DOMAIN WARFIGHTING

MODERATOR

CAROLINE BAXTER
Deputy Assistant Secretary of Defense (DASD) for Force Education and Training, USD P&R

PANELISTS

LIEUTENANT GENERAL KEVIN M. IIAMS, USMC
Commanding General, Training and Education Command

VICE ADMIRAL SCOTT D. CONN, USN
Deputy Chief of Naval Operations for Warfighting Requirements and Capabilities, N9

MAJOR GENERAL ALBERT G. MILLER, USAF
Director Training and Readiness, A3, Headquarters

BRIGADIER GENERAL MICHAEL R. DROWLEY, USAF
Director, Joint Training and Exercises Directorate J7, INDOPACOM

BRIGADIER GENERAL CHARLES LOMBARDO, USA
Director of Training G-3/5/7, Headquarters


DASD BAXTER


LTGEN IIAMS, USMC


VADM CONN, USN


MAJ GEN MILLER, USAF


BRIG GEN DROWLEY, USAF


BG LOMBARDO, USA

This Senior Leadership Round Table event will be hosted by Deputy Assistant Secretary of Defense for Force Education & Training, Caroline Baxter, and will focus on implementing the DoD Joint Operational Training Infrastructure (JOTI) Strategy, which synchronizes efforts and "establishes a long-term oversight and management construct to modernize DoD operational training infrastructure over the next 10 years."

The event will be a high-level discussion with a question-and-answer session amongst DoD Senior Trainers. The discussion will center on how to successfully execute the strategy. Implementation depends on a unified vision and path to readiness, will require clear authorities for decision making, and consistent communication and coorperation among the DoD Components.

To support military training, the Defense industry must understand how the JOTI Strategy is taking the DoD in a new direction to train to fight a peer adversary so they can develop, modernize, and field innovative technologies, meeting the Department's current and future needs.

WEDNESDAY, 30 NOVEMBER • 0830 – 1000 • ROOM W304GH

ACCELERATING INNOVATION TO BRIDGE THE VALLEY OF DEATH

MODERATOR

RICHARD N. TEMPALSKI, HQE
Chief Modeling and Simulation Officer, Department of the Air Force (USAF and USSF)

PANELISTS

LIEUTENANT GENERAL SHAUN Q. MORRIS, USAF
Commander, Air Force Life Cycle Management Center

MAJOR GENERAL HEATHER PRINGLE, USAF
Commander, Air Force Research Laboratory

HONORABLE JAMES "HONDO" GEURTS
Former Service Acquisition Executive for the Navy, USMC, and USSOCOM

TYLER GATES
Chief Executive Officer / Managing Principal, Brightline Interactive

LAUREN BEDULA
Managing Director, Beacon Global Strategies


MR. TEMPALSKI


LT GEN MORRIS, USAF


MAJ GEN PRINGLE, USAF


HON. GEURTS


MR. GATES


MS. BEDULA

The Air Force, DoD, and training units are looking for and investing in innovative solutions. This event will focus on how organizations are bridging the innovative solutions "Valley of Death." This Valley of Death is the process of transitioning these technologies and devices from prototype to production and ultimately into the hands of the warfighter. Accelerating the timeline to get these technologies and devices from the prototype phase and into the fight can be challenging. This panel will provide an opportunity for I/ITSEC participants to engage with leaders from Department of Defense and industry experts who have successfully transitioned innovative solutions. The panel will describe how to leverage the acquisition process and sharpen the warfighters bite.

WEDNESDAY, 30 NOVEMBER • 0830 – 1000 • ROOM W311ABCD

THE NBT TALX – THE CONSUMER METAVERSE MEETS DEFENSE

MODERATOR

DANNY WILLIAMS
Unreal Engine Simulation Manager, Epic Games

PANELISTS

GASTAO DE FIGUEIREDO
Senior Vice President, Strategic Partnerships, Blackshark.ai

ALEXANDRE TEODORESCO
Director of Strategic Development and Innovation, The 7 Fingers

BRIAN VOGELSANG
Senior Director AR Products, Qualcomm

APURVA SHAH
Founder and Chief Executive Officer, Duality Robotics


MR. WILLIAMS


MR. DE FIGUEIREDO


MR. TEODORESCO


MR. VOGELSANG


MR. SHAH

The metaverse is a global and converging evolution of technology that is going further than the classic boundaries that exist within the Simulation & Training community. To view the metaverse only through our own lens limits our ability to understand its full potential. In recent years the innovation that we see coming from the simulation industry has started to converge with other industries. Nowhere is this more true than with the foundational technologies used to build the metaverse. Join us to hear from luminaries coming from several industries that advanced faster in their metaverse adoption and learn how advances being done there will benefit our industries' path into the future.

WEDNESDAY, 30 NOVEMBER • 1030 – 1200 • ROOM W304AB

NAVAL AVIATION FLAG OFFICER PANEL

DESIGNING U.S. NAVY'S AVIATION FORCES TO DETER CONFLICT AND WIN OUR NATION'S WARS

MODERATOR

REAR ADMIRAL JAMES A. ROBB, USN (RET.)
President, National Training and Simulation Association (NTSA)

PANELISTS

VICE ADMIRAL KENNETH WHITESELL, USN
Commander, Naval Air Forces/ Commander, Naval Air Force, U.S. Pacific Fleet

REAR ADMIRAL RICHARD T. BROPHY, USN
Chief of Naval Air Training

REAR ADMIRAL ANDREW LOISELLE, USN
Director, Air Warfare Division, N98, Office of the Chief of Naval Operations

REAR ADMIRAL MAX McCOY, USN
Commander, Naval Aviation Warfighting Development Center

REAR ADMIRAL JOSEPH B. HORNBUCKLE, USN
Commander, Fleet Readiness Centers, Naval Air Systems Command

REAR ADMIRAL KEITH A. HASH, USN
Commander, Naval Air Warfare Center Weapons Division/ Assistant Commander for Test and Evaluation, Naval Air Systems Command


RADM ROBB, USN (RET.)


VADM WHITESELL, USN


RADM BROPHY, USN


RADM LOISELLE, USN


RDML McCOY, USN


RDML HORNBUCKLE, USN


RDML HASH, USN

> "The U.S. Navy will build, maintain, train, and equip a combat- credible, dominant naval force to keep the sea lanes open and free, deter conflict, and when called upon, decisively win our Nation's wars."

These words from the CNO 2022 NAVPLAN highlights I/ITSEC 2022's theme: *Accelerate Change by Transforming Training – "It's Time to ACTT!!"* In this special event, senior Naval Aviation leadership will discuss how the U.S. Navy's aviation community plans to meet this unexpected future while deploying forward to engage our long-term competition for the freedom of the seas.

The U.S. Navy looks to ensure our Sailors can out-think and outfight any adversary while remaining the best trained and educated naval force. Deterrence is not merely in raw capability, we must demonstrate the skill and will to win the fight. Making sure that both lethality and readiness are maintained as part of our core training goals is critical to this ability. And we must do this while maintaining a responsible plan for funding and acquiring these capabilities.

The Sailors who serve today are the most well-trained naval force in history and are critical to the Navy's ability to meet its mission. This panel of senior Navy leaders will provide insight from acquisition, research and technology, and mission readiness perspectives into how to optimize the human performance of U.S. Navy Sailors so that they can be counted upon to succeed in the face of the unexpected future. ADM Michael Gilday, Chief of Naval Operations reminds us, "Decisive naval power is essential in this security environment; America cannot cede the competition for influence. This is a uniquely naval mission. A combat-credible U.S. Navy—forward deployed and integrated with all elements of national power—remains the Nation's most potent, flexible, and versatile instrument of military influence. As the United States responds to the security environment through integrated deterrence, our Navy must deploy forward and campaign with a ready, capable, combat-credible fleet."

WEDNESDAY, 30 NOVEMBER • 1030 – 1200 • ROOM W311ABCD

THE NBT TALX – BEYOND THE HYPE: PERSPECTIVES ON XR AND THE METAVERSE FOR TRAINING

XR TRAINING

MODERATOR

JENNIFER M. RILEY, PH.D.
Director, XR Enablers, Design Interactive, Inc.

PANELISTS

COLONEL THOMAS F. WEGNER
HQ AETC/A9 Director, Analysis and Innovation, Air Education and Training Command, Joint Base San Antonio-Randolph, Texas

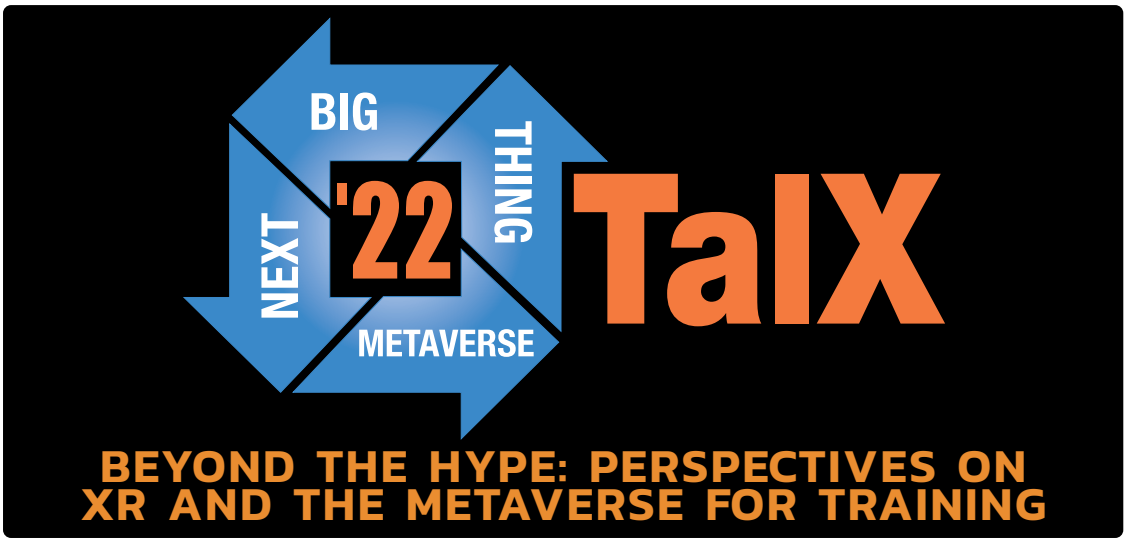
RANDY COATS, PH.D.
Department of Air Force, Executive Director, Analysis and Innovation, HQ AETC/A9

PETER SQUIRE, PH.D.
Program Officer - Human Performance, Training, & Education, Office of Naval Research, Code 34 – Warfighter Performance

RUBEN GARZA
Chief, Defense Medical Modeling & Simulation Office (DMMSO) Education & Training Directorate (J7), Defense Health Agency

JOE RUISI
Deputy Chief, Air Education Training Command, Medical Modernization Division, Air Force Medical Modeling and Simulation Training Program Office/DMMSO

DANIEL ROBINSON
Founder and Chief Executive Officer, Red 6




DR. RILEY


COL WEGNER


DR. COATS


DR. SQUIRE


MR. GARZA


MR. RUISI


MR. ROBINSON

General Charles Brown, Jr. challenged the Department of the Air Force (DAF) to accelerate change or lose. The DAF and other DoD organizations are tapping into the power of extended reality (XR) to rise to this challenge with respect to training and education. The goal — Transform training to develop warfighters that maintain superiority in mission capability, readiness, and lethality. XR experts and influencers from government and industry share stories at the Beyond the Hype: Perspectives on XR and the metaverse for Training Next Big Thing (NBT) Talx on what it means to change the training paradigm and how XR-powered immersive training is being adopted to prepare U.S. forces to dominate and win the high-end fight. Discussions include how XR will revolutionize training and enhance the U.S. military's competitive advantage and will highlight realized successes in application of XR to eliminate skill gaps and instructor shortages. Critical R&D for enhancing XR utility and application will be presented.

WEDNESDAY, 30 NOVEMBER • 1400 – 1530 • ROOM W311ABCD

THE NBT TALX – DEFENSE LEADERS PERSPECTIVES ON THE MILITARY METAVERSE

MODERATOR

ANTHONY ROBBINS
Vice President of Public Sector, NVIDIA

PANELISTS

LIEUTENANT GENERAL MARIA R. GERVAIS, USA
Deputy Commanding General/ Chief of Staff, U.S. Army Training and Doctrine Command

MAJOR GENERAL HEATHER L. PRINGLE, USAF
Commander, Air Force Research Laboratory, Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio; Technology Executive Officer, supporting both the U.S. Air Force and U.S. Space Force

LISA COSTA, SES, PH.D.
Chief Technology and Innovation Officer (CTIO), U.S. Space Force


MR. ROBBINS


LTG GERVAIS, USA


MAJ GEN PRINGLE, USAF


DR. COSTA, SES

The metaverse is the next era in the evolution of the internet, a 3D spatial overlay of the web linking the digital world to our physical world. In this new iteration of the internet, websites will become interconnected 3D spaces akin to the world we live in and experience every day. Many of these virtual worlds will be reflections of the real world linked and synchronized in real time. Many of these virtual worlds will be designed for training, simulation, gaming, socializing, and even entertainment matching the real world's laws of physics in some cases, but often choosing to break them to make the experiences more engaging.

Simulators, XR devices, and robots will act as portals between our physical world and virtual worlds. Humans will portal into a virtual world with VR and AR devices while AIs will portal out to our world via physical robots. Just like in the infancy of the internet, no one can predict exactly how it will grow or how large it will become. But today, we know we can lay the foundations. The foundations of the metaverse requires two things. First, a standard, open and extensible way to describe all of the things in the virtual worlds of the metaverse similar to HTML's purpose in today's 2D world. Secondly, a computing platform designed for the creation and simulation of virtual worlds is the next era of the 3D internet.

Join senior defense leaders as they discuss their strategies for executing Digital Twins and enabling their metaverse visions.

WEDNESDAY, 30 NOVEMBER • 1400 – 1530 • ROOM W304AB

PRINCIPAL CYBER ADVISORS' PANEL

PREPARING THE SERVICES FOR THE FUTURE OF CYBER

MODERATOR

COLONEL CHAD T. BATES, PH.D., USA
U.S. Army War College,
Department of Strategic Wargaming

PANELISTS

COLONEL JUSTIN CONSIDINE, USA
Military Assistant to the Principal Cyber Advisor, Department of the Army

JOSHUA REITER, SL
Deputy Principal Cyber Advisor, Department of the Navy

BRADLEY O. THOMASON
Director, Threat Systems Management Office


COL BATES, USA


COL CONSIDINE, USA


MR. REITER, SL


MR. THOMASON

The U.S. Department of Defense's Cyberspace senior leaders, charged with developing and implementing policy, will provide insights about science and technology development, considerations regarding critical infrastructure and thoughts on innovation to advance knowledge and education of the workforce. Come to hear challenging statements such as, "It sure would be terrific to attend a future I/ITSEC and see the number of cyberspace domain simulations rival those of flight simulators."

Attendees seeking insights regarding training, training simulations, workforce education, technology development and models for cyberspace will find this panel of particular interest. They can expect that hearing the personal voice of cyberspace senior leaders, who engage the moderator and audience with questions and answers in a panel format, will provide cyberspace capability perspectives for:

- Technology development and investment.
- Workforce development and challenges.
- Operational understanding and education.

PLAN A VISIT TO THE CYBER PAVILION — EXHIBIT HALL #2870

MONDAY, 28 NOVEMBER — **EXHIBIT HOURS 1400–1800**

1430 U.S. Army Combat Capabilities Development Command – Soldier Center (DEVCOM SC) Simulation; Training Technology Center (STTC)
1530 Army Cyber Institute (ACI), United States Military Academy (USMA)
1600 Offerings – Industry Demos

TUESDAY, 29 NOVEMBER — **EXHIBIT HOURS 1200–1830**

1330 Offerings Panel (Cyber Pavilion Sponsors)
1430 Opportunities Panel (DoD PMs/PEOs; Capability Managers)
1530 Information Warfare Panel
1630 "Cyber Content is King: Training reality beyond the script" – Panel on Cyber, Electromagnetic Warfare, Information Operations

WEDNESDAY, 30 NOVEMBER — **EXHIBIT HOURS 0930–1800**

0930 International Panel
1100 "Tomorrow's Battlefield Today: The Persistent Cyber Training Environment (PCTE)"
1230 Hot Topic: Observations – Ukraine and Russia
1400 ATTEND SPECIAL EVENT: Principal Cyber Advisors; Panel (W304AB) – *No Pavilion activity during this Special Event*
1600 Research Updates (Cyber Intern Students)

THURSDAY, 1 DECEMBER — **EXHIBIT HOURS 0930–1500**

1000 Offerings Panel (Cyber Pavilion Sponsors)
1100 Academic Panel (University Participants)

WEDNESDAY, 30 NOVEMBER • 1400 – 1530 • ROOM W304EF

TRANSFORMING TRAINING WITH ALLIES AND PARTNERS TO CONFRONT AND DETER RUSSIAN AGGRESSION

MODERATOR

CAROLINE BAXTER
Deputy Assistant Secretary of Defense (DASD) for Force, Education and Training, USD P&R

PANELISTS

CELESTE WARD GVENTER, PH.D., SES
President, DoD Security Corporation University, U.S. Department of Defense

LIEUTENANT GENERAL (A) MICHAEL CLAESSON
Chief of Joint Operations, Swedish Armed Forces

LIEUTENANT GENERAL (A) JOHN S. KOLASHESKI
Commanding General, U.S. Army V Corps

MAJOR GENERAL (AF) JESSICA MEYERAAN
Director of Exercises and Assessments, US EUCOM CJ7

MAJOR GENERAL (A) SERHII SALKUTSAN
Military Representative to NATO, Ukraine


DASD BAXTER


DR. GVENTER


LT GEN CLAESSON


LTG KOLASHESKI


MAJ GEN MEYERAAN


MAJ GEN SALKUTSAN

This Senior Leadership Rount Table event will be hosted by Deputy Assistant Secretary of Defense for Force Education & Training, Caroline Baxter, and will focus on critical aspects of training interoperability in a transforming security environment.

Faced with Russian aggression, DoD, Allied, and Partner leaders have recognized the need to rapidly develop plans and to work together to build integrated deterrence, capaigning, and coalition force capabilities. The U.S. Department of Defense is revising its Joint Operational Training Infrastructure Strategy to better incorporate Allies and Partners, and build coalition training capacity, and other nations are revising their own strategies as well. Meeting the challenges of modern warfare requires updated approaches, new training methods, and collaboration with the Defense industry to help modernize existing capabilities and develop innovative technologies.

Participants will have the opportunity to engage directly with Senior Leaders in a question-and-answer session. The panel will include discussions on: developing Coalition Training, the effects of updated Defense policies, the expansion of NATO, the identification of strategic paths to overcome gaps in Combined and Joint Training with integrated deterrence, campaigning, and building enduring advantages, and transformations driven by the Russian war on Ukraine.

WEDNESDAY, 30 NOVEMBER • 1600 – 1730 • ROOM W304AB

GETTING REAL, GETTING BETTER – A NAVY FLAG OFFICER PANEL

MODERATOR

REAR ADMIRAL JAMES A. ROBB, USN (RET.)
President, National Training and Simulation Association (NTSA)

PANELISTS

VICE ADMIRAL ROY KITCHENER, USN
Commander, Naval Surface Forces/ Commander, Naval Surface Force, U.S. Pacific Fleet

REAR ADMIRAL PETER GARVIN, USN
Commander Naval Education and Training Command

REAR ADMIRAL DOUGLAS SMALL, USN
Commander, Naval Information Warfare Systems Command

REAR ADMIRAL ERIC VER HAGE, USN
Commander, Regional Maintenance Center

REAR ADMIRAL TRACY HINES, USN
Navy Cyber Security Division Director, Office of the Chief of Naval Operations


RADM ROBB, USN (RET.)


VADM KITCHENER, USN


RADM GARVIN, USN


RADM SMALL, USN


RDML VER HAGE, USN


RDML HINES, USN

> "Our Navy team is the most capable in the world. However, we have identified unacceptable variability in our performance—the gap between our best and worst performers is too great. History shows that the navy which adapts, learns, and improves the fastest gains an enduring warfighting advantage. The essential element is fostering a healthy ecosystem—a culture—that assesses, corrects, and innovates better than the opposition. This is the essence of our Get Real, Get Better call to action, aimed at advancing a culture of excellence and accelerating our warfighting advantage in this critical decade."

These words from the CNO 2022 NAVPLAN highlights I/ITSEC 2022's theme: *Accelerate Change by Transforming Training – "It's Time to ACTT!!"* In this special event, Navy Flag Officers will discuss the U.S. Navy plans for Getting Real and Getting Better while deploying forward to engage our long-term competition for the freedom of the seas.

The U.S. Navy looks to ensure our Sailors can outthink and outfight any adversary while remaining the best trained and educated naval force. Deterrence is not merely in raw capability, we must demonstrate the skill and will to win the fight. Making sure that both lethality and readiness are maintained as part of our core training goals is critical to this ability. And we must do this while maintaining a responsible plan for funding and acquiring these capabilities.

The Sailors who serve today are the most well-trained naval force in history and are critical to the Navy's ability to meet its mission. This panel of senior Navy leaders will provide insight into the changes we can expect within key acquisition, research and technology and mission readiness domains. ADM Michael Gilday, Chief of Naval Operations reminds us "Building enduring advantages in a complex, rapidly changing threat environment demands a warfighting culture focused on continuous improvement."

WEDNESDAY, 30 NOVEMBER • 1600 – 1730 • ROOM W311ABCD

THE NBT TALX – VISION OF THE MILITARY METAVERSE

CHALLENGING YOUR PERSPECTIVES VIA INDUSTRY AND GOVERNMENT EXECUTIVES

MODERATOR

ROBERT KLEINHAMPLE, CMSP
Strategic Account Executive, Improbable U.S. Defense and National Security

PANELISTS

LIEUTENANT COLONEL RYAN KENNY, USA, PH.D.
Commander, 112th Signal Battalion (SO)(A), USASOC

ROB WHITEHEAD
Co-Founder & Chief Product Officer, Improbable

MICHAEL PUTZ
Co-founder & Chief Executive Officer, BlackShark.ai

NADINE ALAMEH, PH.D.
Chief Executive Officer & President Open Geospatial Consortium (OGC)


MR. KLEINHAMPLE, CMSP


LTC KENNY, USA


MR. WHITEHEAD


MR. PUTZ


DR. ALAMEH

The final and culminating special event for the Next Big Thing series of The TalX. These speakers are sure to engage and provoke thought about the potential and power of the military metaverse.

We are at an inflection point as technology converges to move us beyond the limits of our legacy live, virtual, and constructive simulations. The military is poised to not only leverage the significant investment and advancements made in the commercial metaverse market, but it is also, and perhaps better poised culturally to harness the power of the metaverse to improve readiness for the complex warfight.

As a result of this session you will be inspired with a vision for how you or your organization can harness the metaverse and/or contribute to the metaverse.

Remain after this session for the Next Big Thing Social with refreshments and hors d'oeuvres. Meet all of The Next Big Thing speakers from throughout the day and have conversations with them. You must attend one of the Next Big Thing events in order to receive a ticket to the social.

THURSDAY, 1 DECEMBER • 1030 – 1200 • ROOM W304GH

VIRTUAL EVALUATION IN PROTOTYPING AND EXPERIMENTATION

MODERATOR

DANIEL HETTEMA
Director, Digital Engineering, Modeling & Simulation Office of the Secretary of Defense (Research & Engineering)

PANELISTS

THOMAS IRWIN, PH.D., SES
Executive Director, Joint Warfighting Development, Joint Staff J7

RYAN NORMAN
Chief Data Officer, Test Resource Management Agency OUSD(R&E)

AMY HENNINGER, PH.D., CMSP
Senior Advisor and Branch Chief, Advanced Computing, Department of Homeland Security Science & Technology

JOHN DIEM
Director, Innovation Proving Ground, Bush Combat Development Complex, Texas A&M

FAVIO LOPEZ, CMSP
President and Chief Operating Officer, Trideum Corporation


MR. HETTEMA


DR. IRWIN, SES


MR. NORMAN


DR. HENNINGER, CMSP


MR. DIEM


MR. LOPEZ, CMSP

With the increased understanding of models as an authoritative source of truth, there is a current discussion within DoD on the use of the virtual space in evaluation of ideas, prototypes, experimentation, and other areas. Virtual environments for training are well-developed and understood; can these then be leveraged to provide benefit? Likewise, simulation environments for test and evaluation of concepts, prototypes and experiments have a long history of success within the test community; can these also be leveraged to provide benefit to other users?

The Director, Digital Engineering, Modeling & Simulation, Office of the Under Secretary of Defense (Research & Engineering), will lead a panel of Defense leaders from government, industry and academia, with experience in prototyping, experimentation, training, testing, and concept evaluation in virtual environments. These panelists will provide some of their virtual capabilities, lessons learned, and their continuing technical needs.

This will be an interactive discussion, as this is also a challenge to the I/ITSEC audience to let the leadership know if there already exists virtual environments that can be leveraged to other uses. If you already work with virtual environments that could be utilized in other areas, the panelists encourage you to attend this special event.

MONDAY, 28 NOVEMBER • 1245 – 1415 • ROOM W300-THEATRE

CMSP 3.0 – REINVENTION!

CERTIFICATION

MODERATOR

IVAR OSWALT, PH.D., CMSP
Senior M&S Analyst, The MIL Corporation

PANELISTS

TAMMIE SMILEY, CMSP
Senior M&S Solutions Architect, Trideum Corporation

DAVID "FUZZY" WELLS, PH.D., CMSP
Principal Cyber Simulationist, The MITRE Corporation

GEORGE STONE, PH.D., CMSP
Army Portfolio Manager, Aptima, Inc.

GLENN HODGES, PH.D.
Research Assistant Professor, The MOVES Institute, Naval Postgraduate School

CMSP

CERTIFIED MODELING AND SIMULATION PROFESSIONAL


DR. OSWALT, CMSP


MS. SMILEY, CMSP


DR. WELLS, CMSP


DR. STONE, CMSP


DR. HODGES

Modeling and simulation is a vibrant and growing profession. Simulations bring digital engineering to life; they convert data and models into dynamic representations that allow users to better understand analyses, to visualize product changes, and to train more efficiently and effectively. This is true within traditional disciplines like science and engineering, but it is increasingly the case in areas like medicine, that now use simulation and simulators to practice surgery, navigate through virtual arteries, and practice advanced lifesaving skills. In a profession, what is the mark of true distinction? Certification! This Special Event provides personal insights from a diverse panel on M&S, Certification, and CMSP.

TUESDAY, 29 NOVEMBER • 1400 – 1530 • ROOM W309AB

THINKING ON YOUR FEET: AGILE ACQUISITION FOR A DYNAMIC WORLD

LEARN HOW PROGRAM MANAGEMENT TEAMS MAKE RAPID ACQUISITION DECISIONS!

MODERATOR

TARA KILCULLEN
Principal, ZYGOS Consulting

PANELISTS

STEVE EDSALL
Product Director, Future Training Systems, U.S. Army PEO STRI

GREGORY DOUGHERTY
Head of Procurement, NAWCTSD

JULIA E. SUERETH
Project Officer, TVCS
Naval Surface Warfare Center Panama City Division (NSWC PCD), Program Manager, Training Systems (PM TRASYS)

CHRIS GARRETT, SLS
Technical Advisor for Systems Engineering, Air Force, AFLCMC/EN-EZ

COLONEL COREY KLOPSTEIN, USSF
Senior Materiel Leader, Warfighter, Enterprise Division (SSC/SZY), Space Systems Command


MS. KILCULLEN


MR. EDSALL


MR. DOUGHERTY


MS. SUERETH


MR. GARRETT, SLS


COL KLOPSTIEN, USSF

Government Program teams are consistently faced with meeting challenges for faster acquisition, development, and or procurement times. When deciding what method will be best for rapid acquisition and development, the Government has several options to choose from. Have you wondered how the Government Program teams decide to take one acquisition path over another? Have you ever wondered what goes into making those decisions? This panel of Program Management and Acquisition experts will describe how they work with their respective teams, acquiring agencies, and contracting commands to determine the best agile acquisition approach. Hear directly from various program leads with experience across all branches of Defense. They will focus their discussion on the challenges they face to meet rapid acquisition requests and the factors they consider when determining best path forward.

TUESDAY, 29 NOVEMBER • 1600 – 1730 • ROOM W304GH

THE DATA IS THE THING!: SUCCESSES AND CHALLENGES IN MEASURING PERFORMANCE, PROFICIENCY AND EFFECTIVENESS OUTCOMES IN MULTINATIONAL REAL WORLD CONTEXTS

MODERATOR

WINK BENNETT, PH.D.
Air Force Research Laboratory (711 HPW/RHW)

PANELISTS

LIEUTENANT COMMANDER MICHAEL "TINDER" NATALI, PH.D., USN
Deputy, Air Warfare Training Development Integrated Project Team Lead for PMA-205, Naval Air Training Systems and Ranges

LIEUTENANT COMMANDER JOE GEESEMAN, USN
Naval Aerospace Experimental Psychologist, Smart Sensor Program Manager for the Chief Digital and Artificial Intelligence Office (CDAO)

MAJOR MARK "FORGE" HANSEN, USAF
4TS/ADO for Innovation, Seymour Johnson AFB, NC

JUR CRIJNEN
R&D engineer, Royal Netherlands Aerospace Laboratory NLR

EMILY MILLS
Portfolio Manager, Design Interactive, Inc.


DR. BENNETT


LCDR NATALI, USN


LCDR GEESEMAN, USN


MAJ HANSEN, USAF


MR. CRIJNEN


MS. MILLS

I/ITSEC represents a very broad community with interests in all aspects of training, education, and modeling and simulation. This session specifically highlights applied examples of innovation in performance, proficiency and effectiveness data, measurement, analytics, storage and data storage and access security across a range of specific contexts to include tactical, medical, maritime, maintenance and space as examples of more systematic field implementations and evaluations. This event will expose the community to some recent innovations in data sciences and uses of more precise and persistent data for decision making.

With the current interest and increasingly significant investments in high fidelity, low cost technologies for education and training, what are people doing in the data spaces today. Who is doing what, what successes are they having, where are the real data innovations happening, and what are the continuing challenges that we see across the various contexts that are things the community needs to try and get after.

Several SMEs who are actively involved in their organization/agency's advancement in data, metrics, measurement and assessment, analytics and user availability of the data and outcomes will describe what they are doing as well as to discuss their successes, challenges, and potential needs for innovation and additional advancement in the data and measurement areas of application now and in the future.

WEDNESDAY, 30 NOVEMBER • 0830 – 1000 • ROOM W310AB

SYNTHETIC ENVIRONMENTS TO ENABLE MULTI-DOMAIN OPERATIONS

TRAIN MDO

MODERATOR

ROBERT SIEGFRIED, PH.D.
Chair, NATO Modelling and Simulation Group
Chief Executive Officer, Aditerna

PANELISTS

TOM IRWIN, PH.D., SES
Executive Director, Joint Warfighting Development
U.S. Joint Staff J7

BIJAL MISTRY
Head of Defence Modelling & Simulation Office (DMSO), UK Strategic Command

BRIGADIER DAMIAN HILL
Director General Joint Collective Training / J7, Joint Operations Command, Australian Department of Defence

COLONEL ROBERT "EYEBALL" GRANT, PH.D., USAF
Chair, Airpower Innovation and Integration, Department of Military and Strategic Studies, U.S. Air Force Academy

BRIGADIER GENERAL DIDIER POLOMÉ
Digital Transformation FOGO and Special Advisor to Supreme Allied Command Transformation, NATO Allied Command Transformation

DR. SIEGFRIED

DR. IRWIN, SES

MS. MISTRY

BRIG HILL

COL GRANT, PH.D.

BGEN POLOMÉ

"We fight as we train," and "Warfare is teamwork." Everyone would agree, wouldn't you? Yet, although we will always execute missions as a coalition, we are severly lacking the capability to frequently train and exercise as a coalition.

This is even more true when it comes to Multi-Domain Operations (MDO)! MDO refers to the seamless integration of all domains of warfare to achieve superiority and success on the (hybrid) battlefield. However, MDO is inherently complex and requires an allied approach on all levels to be successful; MDO must be an integral part of training and exercises.

Synthetic environments are the only way for Allies to efficiently and effectively generate force readiness for MDO. Yet, we are lacking interoperability and suitable synthetic environments.

This Special Event discusses the challenges of MDO, the art-of-the-feasible when it comes to replicating MDO in synthetic environments, and emphasizes areas that need improvement.

The I/ITSEC community is best positioned to address the challenges ahead of us. The panel members represent key stakeholders and thought leaders in this domain, and will give attendees expert insight into current state of the art, open challenges and possible ways forward.

WEDNESDAY, 30 NOVEMBER • 0830 – 1000 • ROOM W300-THEATRE

ADAPTIVE TRAINING AT SCALE: READY FOR PRIMETIME?

MODERATOR

DANIEL SERFATY
Chief Executive Officer and Principal Founder, Aptima, Inc.

PANELISTS

LLOYD KLEINMAN
Chief Technologist, International Programs, Surface Combat Systems Training Command

ALICIA SANCHEZ
Director of Innovation, DAUx at Defense Acquisition University

JANET SPRUILL
Senior Vice President, Government Programs, Aptima, Inc.


MR. SERFATY


MR. KLEINMAN


DR. SANCHEZ


MS. SPRUILL

For years, the concept of 'adaptive training' has been held up as a model, a means to personalize training beyond standardized one-size-fits all approaches, yet it has been held back by the underlying capabilities and algorithms needed to enable it. Fast forward to 2022, and we are now poised to deploy technology that can tailor individualized instruction and training at scale, providing highly personalized learning experiences, much like an experienced teacher who tailors lessons to each student in the classroom. Through advances in AI and theories of learning, curriculums can be modeled, disassembled, and recomposed, customizing instruction according to a student's speed, style of learning, and level of competence. In this panel, we will explore breakthroughs in how more robust AI, machine learning, and advanced analytics are combining to unlock ever more data to enable adaptive learning at the individual level, and to optimize readiness across the enterprise. Moderated by Daniel Serfaty, this panel of senior leaders from defense and industry will address the advances, applications, and challenges of deploying adaptive training in the military, civil aviation, K-12 education, and other domains.

WEDNESDAY, 30 NOVEMBER • 1200 – 1700 • ROOM W110A

I/ITSEC CAREER FAIR

Job opportunities are on the rise for the defense industry – leading the way for developing cutting-edge solutions. The career fair welcomes you to be part of the fast-growing Simulation and Training community.

Meet with industry and government organizations with opportunities for new graduates and transitioning professionals on Wednesday, 30 November from 1200 – 1700 at the OCCC in Room W110A for the I/ITSEC Career Fair. Contact Carol Dwyer at cdwyer@NTSA.org to register in advance

This event provides:
- an opportunity to learn more about open jobs available from government and industry partners,
- networking for businesses with subcontracting needs,
- a space to learn about the government's perspective and process, and
- an environment to grow your network.

Career Fair attendees who didn't get a chance to register in advance are welcome to register onsite at Registration. Participating Organizations will be added as they are confirmed; please visit the I/ITSEC website for the most up-to-date information. If you have any questions while onsite, please visit the Career Fair in room W110A.

PARTICIPATING ORGANIZATIONS ARE LISTED ONLINE AT
https://www.iitsec.org/education/career-investment/career-fair and onsite at the Discovery Den Info Desk in Booth 3185.

WEDNESDAY, 30 NOVEMBER • 1400 – 1530 • ROOM W309AB

TRAINING, ANALYTICS, AND EXPERIMENTATION

WARGAMING PANEL

MODERATOR

LUIS E. VELAZQUEZ
Chief Technology Officer, Marine Corps Systems Command (MARCORSYSCOM)

PANELISTS

COLONEL GEORGE C. SCHREFFLER III, USMC
Director Wargame Division (WGD), Marine Corps Warfighting Laboratory (MCWL)

COLONEL TIMOTHY BARRICK, USMC (RET.)
Wargame Director, Marine Corps University (MCU)

LIEUTENANT COLONEL RAYMOND P. FELTHAM, USMC
Program Manager Wargame Capability (PM WGC), Marine Corps Systems Command (MARCORSYSCOM)

LIEUTENANT COLONEL MARCUS J. REYNOLDS, USMC
Program Manager Training Systems (PM TRASYS), Marine Corps Systems Command (MARCORSYSCOM)

LIEUTENANT COLONEL SCOTTY BLACK, USMC
Naval Postgraduate School (NPS) Modeling, Virtual Environments & Simulation (MOVES)

JOSEPH N. LOMANGINO
Training and Education Command (TECOM)


MR. VELAZQUEZ


COL SCHREFFLER III, USMC


COL BARRICK, USMC (RET.)


LTCOL FELTHAM, USMC


LTCOL REYNOLDS, USMC


LTCOL BLACK, USMC


MR. LOMANGINO

Wargaming facilitates the assessment of potential technological modernization capabilities, the conduct of tradeoff analysis, and the exploration of concepts that foster and better inform innovation. There are multiple pillars within the community that leverage wargaming from Force Design analysis, small unit training, collective training, staff level training, and operations analysis. In order for wargames to be successful, it is imperative that they are designed and purpose built to meet end state objectives regardless of the community executing wargames.

Moderated panel will introduce you to wargame leaders and decision-makers from across capabilities development, requirements sponsorship, program management, and wargame execution. This panel will provide valuable insight into their scope of work and vision for the future of wargaming.

- Inform the audience comprised of members from industry, academia, governmental, and international partners on the correlated efforts
- Bring complicated computer wargame tools, computing, models, visualization, and the creation of a specialized facility and skilled labor force necessary to support the full range of wargaming possibilities
- Discussing common approaches.

WEDNESDAY, 30 NOVEMBER • 1600 – 1730 • ROOM W310AB

SPACE WARFIGHTER TRAINING TRANSFORMATION: A VISUAL APPROACH

MODERATOR

COLONEL BILL WOOLF, USAF (RET.)
President and Founder, Space Force Association

PANELISTS

MIKE TORRES
Chief of Digital Infrastructure & SpaceVerse, U.S. Space Force/Chief Technology & Innovation Office

GREG A. PRESTGARD
Dean of Academics, USSF STARCOM 319 CTS

BRIGADIER GENERAL WILLIAM E. COLE, (RET.)
President/Chief Executive Officer, MAK Technologies

BRIGADIER GENERAL STEVE GARLAND, USAF (RET.)
Executive Vice President, Fusion Constructive, LLC

MELVIN J. FEREBEE
Director of Space Technology, DigiFlight, Inc.

TOM DICKSON
President, Boecore


COL WOOLF, USAF (RET.)


MR. TORRES


MR. PRESTGARD


BG COLE, USA (RET.)


BRIG GEN GARLAND, USAF, (RET.)


MR. DICKSON

Since we can't train in space, finding visually rich training environments is key to providing relevant high-fidelity training for space warfighters. This event will provide an opportunity for I/ITSEC participants to engage directly with senior leaders regarding current and planned activities related to the Space Force training needs. Participants in this panel include Government and Industry Leaders currently working towards assisting Space Force in implementing modeling and simulation within their new training organizations and operational units. This panel discussion will enable the speakers to share their perspectives on the conference theme of Accelerating Change to Transform Training relative to transforming space warfighter training through visualization.

WEDNESDAY, 30 NOVEMBER • 1600 – 1730 • ROOM W304GH

JOINT SERVICE INTEROPERABILITY AND MODELING AND SIMULATION IN THE DOD

M&S JOINT INTERSECTION

MODERATOR

LIEUTENANT COLONEL JASON CANNON, USA
Modeling & Simulation Officer
Program Executive Office, Simulation, Training, and Instrumentation

PANELISTS

COLONEL TIMOTHY E. BEERS, USAF
Commander of the Air Force Agency for Modeling and Simulation (AFAMS), a Field Operating Agency subordinate to Headquarters U.S. Air Force (HAF) A3T

COLONEL STEPHEN BANKS, USA
Chief, Environment Operations Division, Joint Staff J7

COLONEL CHAD T. BATES, PH.D., USA
U.S. Army War College, Department of Strategic Wargaming

LIEUTENANT COLONEL CHRIS JOHNES, USA
Chief of Training Analysis, Communication Support & Simulations (TACSS), Operations Group, Joint Readiness Training Center (JRTC)

MAJOR MATT MORSE, USMC
Interoperability Lead, USMC Project Tripoli

YARON "RON" KETER
Program Manager, Navy Continuous Training Environment

KEVIN GALVIN
Systems Capability Researcher for Advanced Architecture Concepts Thales Research, Technology & Innovation


LTC CANNON, USA


COL BEERS, USAF


COL BANKS, USA


COL BATES, USA


LTC JOHNES, USA


MAJ MORSE, USMC


MR. KETER

The technical advances that have increased the individual capabilities of ground, surface, and air platforms bring unique interoperability challenges to joint, allied and coalition forces. This panel will provide Joint and NATO Partner perspectives on the current state of the application of modeling and simulation for training within the multi-domain network. The panel will also discuss two levels of interoperability, specifically:

- How to integrate the Services/Partners in an M&S Environment.
- How M&S enables Interoperability Operationally.

Additionally, the Modeling and Simulation offices of each Service will discuss their unique perspective, along with future trends and challenges in the M&S domain. The moderated discussion topics will include JLVC, Data Services, Land/Sea/Air integration, Cyber, Partnership Integration, and Live Considerations.

WEDNESDAY, 30 NOVEMBER • 1600 – 1730 • ROOM W300-THEATRE

BACK TO THE FUTURE – A GREEN PLANET MAY REQUIRE NUCLEAR POWER

BLACK SWAN: EXPLORING THE POSSIBILITIES OF NUCLEAR FUSION

MODERATOR

RYAN McNEAL
Digital Transformation Lead, Agile Combat Support Directorate, U.S. Air Force

PANELISTS

THOMAS A. LOCKHART, SES
Director of Engineering, Air Force Nuclear Weapons Center, U.S. Air Force

JASON G. WILLIAMS
Vice President and General Manager Energy and Space Sectors, Information Systems Laboratories, Inc.

LAUREN REINERMAN-JONES, PH.D.
Senior Scientist, Soar Technology, Inc.

MR. McNEAL

MR. LOCKHART, SES

MR. WILLIAMS

DR. REINERMAN-JONES

With the emerging realization that Solar and Wind energy is only commercially viable for 20% of the habitable earth, another safe and clean energy source is required. Our Black Swan event this year explores the magical promise of Nuclear Fusion (including Cold Fusion) to power the earth's future energy needs. Michl Binderbauer of TAE Technologies stated that by using Hydrogen Boron as the fuel for nuclear fusion we could cover the earth's energy needs for the next 100,000 years.

We are bringing together nuclear energy experts and social acceptance professionals to inform our I/ITSEC audience on new nuclear fusion technologies and how we could accept these new nuclear technologies into our society and communities. Please join us for this engaging session!

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. We believe modeling and simulation can play a major part in exploring these events to find cures and better prepare us for similar crises in the future.

WEDNESDAY, 30 NOVEMBER • 1600 – 1730 • ROOM W304EF

BEST FROM AROUND THE GLOBE

IT²EC

KARTHIK V. SARMA, PH.D.
SimX, Inc.

MODSIM WORLD

KEVIN HULME, PH.D., CMSP
University at Buffalo

Best from Around the Globe features the Best Paper awardees of IT²EC and MODSIM World. Each winner was selected by a committee and criteria specific to the particular global conference focus and theme. Come hear the award winning presentations selected as "Best Paper" from IT²EC and MODSIM World 2022, offering their outstanding presentations from these prestigious international conferences.

IT²EC 2022 BEST PAPER

XR Medical Simulation Training for the Future of Warfare: The Virtual Advancement of Learning for Operational Readiness (VALOR) Program
Karthik V. Sarma, Ph.D., SimX, Inc.

In future combat operations against near-peer competitors, efforts to achieve the "Golden Hour" are likely to be overwhelmed by operational scale and denied capabilities. Thus, maximizing survivability and recovery of combat casualties will require training a significantly larger proportion of warfighters in more advanced medical techniques and protocols which will allow them to extend the "Golden Hour" for as long as possible. In this talk, we discuss the Virtual Advancement of Learning for Operational Readiness (VALOR) program, a USAF-funded partnership between industry, academic, and the Government which has produced a comprehensive XR medical simulation training capability now being fielded across the Special Warfare community. We will also discuss ongoing research efforts to evaluate the efficacy of XR medical simulation training, as well as ongoing efforts to expand the scope of fielded capabilities in order to achieve the program's goals of improved realism, increased flexibility, and reduced cost for simulation training.

MODSIM WORLD 2022 BEST PAPER

Implementation of Live-Virtual-Constructive (LVC) Workplace Setting to Enhance Occupational Success among Young Adults with ADHD
Kevin Hulme, Ph.D., CMSP

MOTIVATION: Persons with ADHD (attention-deficit/hyperactivity disorder) often experience an elevated likelihood of being unemployed and are frequently in the service industry with a high turnover rate. Therefore, it is critical to better understand interventions that can improve young adult knowledge transfer in a typical workplace setting.

PREVELANCE: ADHD is thought to impact nearly 15% of young adults between the ages of 12 and 17, and adult prevalence has been recently estimated between 3 to 5%, worldwide.

METHODOLOGY: The Laboratory Assessment of Behavior in Occupational Roles (LABOR) is a first-of-its-kind analog workplace (pizzeria!) training environment that implements the Live-Virtual-Constructive (LVC) taxonomy for Modeling & Simulation (M&S).

OUTCOMES: Males with ADHD tend to exhibit "positive emotions" associated with risky (aggressive) driving behaviors, as compared to females, who generally tend to be more inattentive. Young adults enjoyed the LVC workplace environment implementation (i.e., realism/authenticity/engagement).

THURSDAY, 1 DECEMBER • 0830 – 1000 • ROOM W304EF

INNOVATION MATCH GAME

HOST

MARGARET MERKLE, PMP
Innovation Technology Chief, Simulators Division, Agile Combat Support Directorate, Air Force Life Cycle Management Center – Simulator Division

CO-HOSTS

EMILY EDMISTON
Tangram Flex, Supporting Program Manager, Simulators Division, Agile Combat Support Directorate, Air Force Life Cycle Management Center

MARILYN EVANS
SAIC, Supporting Program Manager, Simulators Division, Agile Combat Support Directorate, Air Force Life Cycle Management Center

SIMS INNOVATION


MS. MERKLE


MS. EDMISTON


MS. EVANS

Over the past several years, Pitch Day and Shark Tank competitions have been the focus of much fanfare – but what happens next? How do we move beyond experimental uses and match successful prototypes with real world users? The Simulators Innovation team is once again hosting the Innovation Match Game, in this event we will match up USAF training units with three vendors in an exploration of possible solutions to real world training needs. Modeled after the TV show "House Hunters", each prototype vendor will present a successful past project that might be adapted to solve the USAF training unit's improvement request, and after a short Q&A, the audience can pick their favorite! As an added bonus this year the Sims team is going to be sharing information regarding the 2023 Sims SBIR Pitch Day and our efforts to transition prototypes to deployment.

THURSDAY, 1 DECEMBER • 0830 – 1000 • ROOM W309AB

ACCELERATING READINESS THROUGH DIGITAL ENGINEERING

STORIES FROM THE FRONTLINE — DIGITAL ENGINEERING IN THE REAL WORLD

MODERATOR

CHRIS FINLAY
Vice President of Innovation, Engineering Innovation Factory, SAIC

PANELISTS

LIEUTENANT COLONEL BEAU BRANTLEY, USAF
Program Manager, Digital Engineering Platform as a Service (DEPaaS), USAF

JEFF JASTER
Deputy Executive Director, Modeling, Simulation & Prototyping, U.S. Army Ground Vehicle Systems Center (GVSC)

PAMELA KOBRYN, PH.D.
Chief Engineer, Digital Transformation, Air Force Research Lab (AFRL)

MR. FINLAY

LT COL BRANTLEY, USAF

MR. JASTER

DR. KOBRYN

Today's systems are becoming more and more complex. Traditional document-centric engineering approaches are inherently "lossy," labor-intensive, and do not scale well to accurately represent these large, complex cyber-physical systems. Transforming to Digital Engineering (DE) methodologies allows us to digitally generate, curate, and share computable data. We can then exploit this data to visualize and test myriad mission scenarios to get operational truths that improve mission success and adapt in days, not months.

This panel is designed to help those starting their digital engineering transformation journey, already implementing digital engineering, or simply interested in learning more about digital engineering and best practices in action. Hear from practitioners across the DoD who provide tangible DE examples from theory to implementation to success.

Each of our panelists will discuss their digital engineering journey highlighting challenges, successes and their road forward. The panelists will provide representative demonstrations illustrating their approaches to digital engineering and are prepared to take on all questions to provide you with ideas and lessons learned to facilitate your digital engineering initiatives in whatever phase you are in. Recognizing the breadth and challenges of navigating the digital landscape, some key topics discussed will include:

- The challenges and benefits of a common digital engineering platform and how that can be leveraged to accelerate digital engineering objectives
- Cultural and other barriers faced to institutionalize DE; including understanding how industry and government organizations meet the staffing needs
- Understanding the "long tail" of the return on investment; how models are used to reduce defects, recognize obsolescence before it impacts the warfighter and ultimately improve readiness
- How intellectual property and data rights are managed; how to get disparate system information that is "owned" by other organizations

THURSDAY, 1 DECEMBER • 0830 – 1000 • ROOM W310AB

SPECIAL OPERATIONS FORCE BATTLESPACE PREVIEW

DÉJÀ VECU: THE SOF OPERATORS' PERSPECTIVE

MODERATOR

LEO VENCKUS
Senior Program Analyst, Training Development Branch, J3 Training and Education Division, Operations Directorate, U.S. Special Operations Command

PANELISTS

LIEUTENANT COLONEL HEATHER G. DEMIS, USAF
492 Special Operations Wing, U.S. Air Force Special Operations Command

MAJOR BRENT C. BIRCHUM, USMC
Operations Officer, 3rd Marine Raider Support Battalion, Marine Forces Special Operations Command

CAPTAIN JOSHUA RANDLES, USA
Surgical Physician Assistant, Special Operations Medical Detachment (SOMEDD), 528th Sustainment Brigade (Airborne), U.S. Army Special Operations Command

CHIEF PETTY OFFICER ORAN FEINER, USN
Special Warfare Boat Operator Force JTAC Program Manager (N32), Naval Special Warfare Command

STAFF SERGEANT BENJAMIN C. WICKERHAM, USA
Regimental Medical Training Noncommissioned Officer, 75th Ranger Regiment, U.S. Army Special Operations Command

CHIEF WARRANT OFFICER FIVE ROBERT "BUDDY" EPTING, USA
Standardization Pilot, Special Operations Aviation Training Battalion, U.S. Army Special Operations Aviation Command (USASOAC)

For nearly three decades, SOF's pursuit of virtually previewing the battlespace before physically occupying has ebbed and flowed. This is exemplified in Special Operations Aviation's use of TOPSCENE® mission rehearsal system during Operation Joint Endeavor (1996-1997). That capability permitted Special Operators to gained route and objective area situational awareness before mission launching. Now, the whole of SOF anticipates previewing the environment with all its complexities (weather, altitude, illumination, enemy capabilities, etc.) prior to entering the physical battlespace.

How has SOF met the challenges of integrating data, training, and mission planning systems? What are SOF's tactical needs in the synthetic sphere? What simulation capabilities would better assist SOF to dominate the environment of growing kinetic and non-kinetic threats?

Special Operators from USSOCOM's four Service Components will speak to their professional experiences in the synthetic battlespace before entering the physical battlespace, having understood many of the complexities before the forward operating base.

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FOCUS EVENTS

THURSDAY, 1 DECEMBER • 1030 – 1200 • ROOM W309AB

INTERNATIONAL PERSPECTIVES ON CREATING AND SUSTAINING LEARNING ECOSYSTEMS IN THE WILD

MODERATOR

WINK BENNETT, PH.D.
Air Force Research Laboratory (711 HPW/RHW)

PANELISTS

LCDR MICHAEL "TINDER" NATALI, PH.D., USN
Deputy, Air Warfare Training Development Integrated Project Team Lead for PMA-205, Naval Air Training Systems and Ranges

LIEUTENANT NICK "TERROR" ARMENDARIZ, USN
Department Head, Operational Psychology Department, Naval Aerospace Medical Institute

ANNEKE NABBEN
Senior R&D Manager, Royal Netherlands Aerospace Laboratory NLR

CAROLINE SHAWL
Defence Science and Technology Laboratory, UK

MAYOWA OLONILUA
Defence Science and Technology Laboratory, UK

CHRISTINA PADRON
Vice President Partnerships and Growth, Dynepic, Inc.


DR. BENNETT


LCDR NATALI, USN


LT ARMENDARIZ, USN


MS. NABBEN


MS. SHAWL


MR. OLONILUA


MS. PADRON

Over the past few years, a number of commercial and government organizations have recognized the need to create a manageable learning enterprise for a number of efficiency and effectiveness reasons. This recognition has led to a number of innovative approaches and applications of integrated learning "ecosystems." While the components of learning ecosystems can vary in several key ways, the potential for a more integrated and managed approach to learning, at scale, appears to be substantial.

This Focus Event includes several panelists who have developed and are current using and growing learning ecosystems of their own. They will describe their drivers for creating their ecosystem and what were the criteria they used to determine the key aspects and emphases of people, content, technology, assessment, and management in their effort. Others might be considering such an endeavor and do not know where to start or what the key components of a functioning, sustainable ecosystem need to be.

Our SMEs will describe their development process, the aspects and features they wanted to include and what they see as their successes to date and lessons they have learned from the work so far. Finally, what are their recommendations for others who are thinking about creating their own organization's learning ecosystem?

THURSDAY, 1 DECEMBER • 1030 – 1200 • ROOM W310AB

EVOLVING DISTRIBUTED MISSION OPERATIONS JOINT DMO PANEL

MODERATOR

LIEUTENANT COLONEL ROSS UHLER, USAF
Chief, Distributed Training Systems
AFLCMC Simulator SPO

PANELISTS

COLONEL SCOTT KOECKRITZ, USAF
Chief, Test & Training Division, Headquarters Air Combat Command

COLONEL BENJAMIN CARROLL, USAF
Chief, Aircrew Tactics and Training Division, Headquarters Air Mobility Command

WING COMMANDER RUARI HENDERSON-BEGG
MA RAF SO1 Synthetics, Air Capability

WING COMMANDER MICK TULLY, CSC
SO1 Advanced Training and Test Environment - Air Warfare Centre Royal Australian Air Force

ROBERT SIEGFRIED, PH.D.
Chair, NATO Modelling and Simulation Group Chief Executive Officer, Aditerna

CHRISTOPHER BOYLE
Technical Director, Training Systems, United States Fleet Forces Command

SUSI DRAPER
Simulation Lead/Program Mgr, 32d Army Air and Missile Defense Joint Training Program – Air and Missile Defense


LT COL UHLER, USAF


COL KOECKRITZ, USAF


COL CARROLL, USAF


WGCDR HENDERSON-BEGG, RAF


WGCDR TULLY, RAAF


DR. SIEGFRIED


MR. BOYLE


MS. DRAPER

As the U.S. and our partner nations transitions from the Counterinsurgency (COIN) fight of the last 20 years to re-focus on preparing for a future peer-peer conflict, the demand for joint and coalition training is stronger than ever before. This event will provide an open forum to discuss what efforts the joint and coalition community have been working on in order to improve both the fidelity and frequency of distributed training among sister services and partner nations. This panel will also discuss current challenges and future opportunities to improve distributed training.

MONDAY, 28 NOVEMBER – THURSDAY, 1 DECEMBER • BOOTH 513

I/ITSECverse

MVTE ORGANIZERS

JENNIFER ARNOLD
NVIDIA Omniverse

TYLER GATES
Chief Futurist, The Glimpse Group
General Manager, Brightline Interactive, A Glimpse Group Company

VISIT ALL DEMOS

AT&T

BOHEMIA INTERACTIVE SIMULATION

BRIGHTLINE INTERACTIVE

CESIUM

DELL

EIGHT360

EMBRY-RIDDLE

EPIC GAMES

ERICSSON

HEWLETT-PACKARD

HTC

IMPROBABLE

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MICROSOFT

NVIDIA

PILOT TRAINING SYSTEM, LLC

UNITY

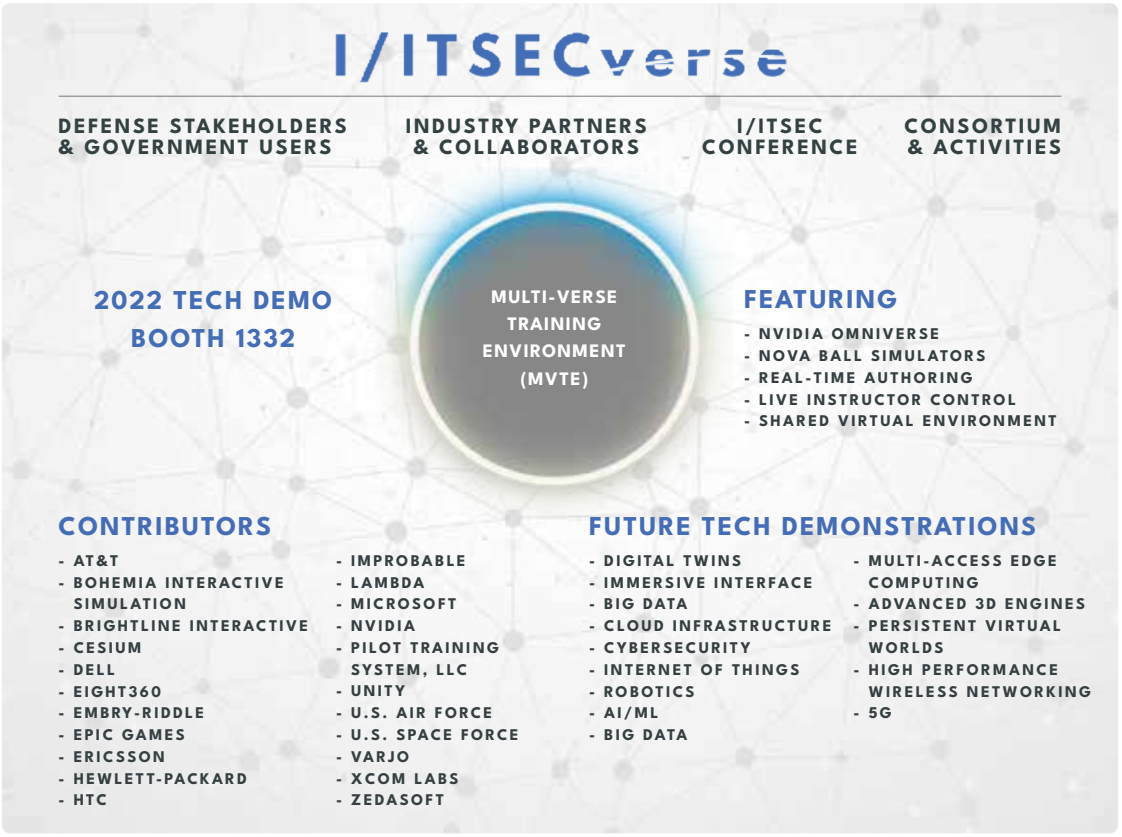
U.S. AIR FORCE

U.S. SPACE FORCE

VARJO

XCOM LABS

ZEDASOFT



I/ITSECverse is NTSA's new, advanced technology-centric ecosystem created to showcase innovative defense and mission capabilities in an immersive, collaborative space. It is an integration of next-generation government and industry solutions that transforms mission and warfighter readiness through the use of persistent virtual spaces that seamlessly integrate numerous types of reality.

The NTSA I/ITSECverse is stood up as an evolutionary, open ecosystem built on array of activities, stakeholders, technologies, and standards. Throughout the year, activities that reflect advancement in metaverse-style training, simulation and rehearsal will occur, with advancements and successes showcased at I/ITSEC. This year, I/ITSEC 2022 launches the I/ITSECverse by setting a metaverse-mentality with a series of collaborative demonstrations on different technical architectures and virtual spaces. For example, the Multi-Verse Training Environment (MVTE) showcases aspects of the I/ITSECverse by combining the powers of cloud, network, spatial technology, and advanced immersive full-motion simulation.

DEVELOPMENT ROOM • MONDAY – WEDNESDAY • W308D
AWARDS CEREMONY • THURSDAY, 1 DECEMBER • 1030 – 1200 • W308A

IRON DEV

MODERATOR

BRIAN VOGT, CMSP
Solutions Architect, SAIC

JUDGES

JOHN MEYERS, SES
Executive Director, Naval Air Warfare Center Training Systems Division

DAVID STARGEL, PH.D.
Deputy Commander, Air Force Agency for Modeling & Simulation

PAUL THURKETTLE
Education & Training Technologies Manager, NATO Allied Command Transformation

AMY PECK
Chief Executive Officer, EndeavorVR

MICHAEL ENLOE
Chief Technical Officer, Synthetic Training Environment Cross-Functional Team

Iron Dev is a team competition similar to competitive cooking shows, where teams will be given a challenge and "secret ingredient" to develop a training solution to improve warfighter readiness. Teams will consist of diverse members with skills in AR/VR development, simulation networking/distribution, graphic design, simulation development, and training development.

Come see the exciting Iron Dev competition show to see the innovative solutions developed and presented by the teams. See the engaging interaction between the teams and the judges, who are senior M&S leaders in DoD, NATO, and industry, as teams present their solutions.

Awards will be presented to the Best Overall Solution, the Most Innovative Solution, and the People's Choice award voted on by the audience at the conclusion of the Iron Dev show!

Be sure to join us for the annual Iron Dev Awards Ceremony, Room W308A, Thursday, 1 December, 1030 – 1200.

WEDNESDAY, 30 NOVEMBER • 1030 – 1200 • ROOM W308C

M&S EMERGING TECHNOLOGIES: INNOVATION OPPORTUNITIES AND CHALLENGES

MODERATOR

WIM HUISKAMP
Chief Scientist M&S, TNO Defence Research, The Netherlands
ETSA Vice-Chair

PANELISTS

ANDY SMITH
ETSA Chairman, Halldale Publications

AGATINO MURSIA
Research Coordinator, Investments & Technology Plan Governance Unit, Leonardo Company, Italy

LUIGI CAPONE, PH.D.
Senior Manager, Leonardo Labs, Italy

SIMON SKINNER
Product Line Manager for Simulation Capabilities and Digital Twins, Thales Training & Simulation UK

DAVID HEAD
Head of Strategic Partnerships and Customer Marketing for Training Solutions, Thales Training & Simulation UK


MR. HUISKAMP


MR. SMITH


MR. MURSIA


DR. CAPONE


MR. SKINNER


MR. HEAD

The European Training and Simulation Association ETSA ("The European Voice" of the Modelling, Simulation & Training community) has invited representatives from several European industries and organisations to discuss the vision on M&S innovation. The presenters will provide an overview of current developments and share examples of applications that leverage the advantages of emerging technologies. 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 current capabilities and implement these innovations within our armed forces.

The ETSA special event panel session will engage with the audience on the way ahead towards bridging the innovation gap between new technology and applications and discuss how to engage with ETSA and leverage its partnership agreements with NTSA and Industry.

WEDNESDAY, 30 NOVEMBER • 1030 – 1200 • ROOM W309AB

JOINT WARGAMING INTEROPERABILITY SHOWCASE

MODERATOR

MATTHEW CAFFREY JR.
Senior Wargamer, HQ AFRL USAF

PANELISTS

CAPTAIN MICHAEL P. O'HARA, PH.D., USN
Chair, War Gaming Department (WGD), Center for Naval Warfare Studies, U.S. Naval War College

LIEUTENANT COLONEL DAVE BLAIR, PH.D., USAF
MORPHEUS Lead (Innovation Strategiest), CSAF Strategic Studies Group USAF

GEORGE BOYARKO, PH.D.
Technical Lead, Advanced Concept Development & Wargames, Space Security & Defense Program (SSDP)

THOMAS "SAM" SZVETECZ
Wargaming Lead, AF Futures, USAF

CHARLES "CHUCK" SANDERS, PH.D.
M&S Subject Matter Expert, Trideum Corporation

BRETT TELFORD
Director, Marine Corps M&S Office (MCMSO) USMC


MR. CAFFREY


CAPT O'HARA, USN


LT COL BLAIR, USAF


DR. BOYARKO


DR. SANDERS


MR. TELFORD

Wargaming is a key M&S enabler for assessing the Department's readiness, training commanders, strategic planning, and supplying analytical data to other simulations. Let us re-examine together how we perceive wargaming, the digital age, and how we bring it all together.

Join us for the Joint Wargaming Interoperability showcase where the nation's leaders in wargaming will share with us the cutting edge in wargaming tools, their insights on improving cross service wargame interoperability, and the impacts wargaming has on the M&S community.

In this event you will learn:

- The latest that wargaming has to offer the M&S community.
- How the tenets of commonality, reusability, and interoperability are impacting wargames.
- Initiatives the services are performing to improve wargaming across the services.

WEDNESDAY, 30 NOVEMBER • 1400 – 1530 • ROOM W310AB

THE NEW FRONTIER: TRAINING FOR THE SPACE MISSION

SPACE TRAINING ACROSS THE FORCES

MODERATOR

TARA KILCULLEN
Principal, ZYGOS Consulting

PANELISTS

CAPTAIN CORY BRUMMETT, USN
Navy Liaison to the U.S. Space Force's Space Education and Training Center (SETC), Naval Information Forces Colorado

COLONEL COREY KLOPSTEIN, USSF
Senior Materiel Leader, Warfighter, Enterprise Division (SSC/SZY), Space Systems Command

JEREMY T. LANMAN, PH.D.
Chief Technology Officer, U.S. Army PEO STRI

DAVID STARGEL, PH.D.
Technical Director, Air Force Agency for Modeling and Simulation


MS. KILCULLEN


CAPT BRUMMETT, USN


COL KLOPSTEIN, USSF


DR. LANMAN


DR. STARGEL

With the emergence of the Space Force, the Department of Defense understands that their mission cannot be successful without cross service cooperation. It is vital for the services to be able to support the space frontier approaching it from a variety of innovative and sophisticated aspects. Hear firsthand the Space Force describe their mission, how they envision training for the mission, and how cross functional partcipation is crucial in its success. Hear from each service how they will support the Space Force training mission and what that means for the future of their training approach and portfolio.

THURSDAY, 1 DECEMBER • 0830 – 1000 • ROOM W308C

SIMULATION STANDARDS: THE PATH TO SEAMLESS INTEROPERABILITY FOR MULTI-DOMAIN OPERATIONS

#GOSTANDARDS

MODERATOR

WIM HUISKAMP
Chief Scientist M&S
TNO Defence Research, The Netherlands
Scientific Advisor to NATO M&S Group (NMSG)

PANELISTS

PATRICK T. ROWE
Executive Director
Simulation Interoperability Standards Organization (SISO)

LIONEL KHIMECHE
Head of the M&S department
DGA (Direction Générale de l'Armement), France
Chair of NMSG M&S Standards Subgroup (MS3)

BJÖRN LÖFSTRAND
Senior Systems Architect in Modelling and Distributed Simulation Design, Pitch Technologies, Sweden

NICO DE REUS
Senior Scientist in the Modelling, Simulation and Gaming Department, TNO Defence Research, The Netherlands

SIMONE M. YOUNGBLOOD
Principal Professional Staff
Johns Hopkins Applied Physics Laboratory, USA


MR. HUISKAMP


MR. ROWE


MR. KHIMECHE


MR. LÖFSTRAND


MR. DE REUS


MS. YOUNGBLOOD

Standards provide interoperability and reduce 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 to be integrated in a short timeframe.

M&S standardization leads from NATO Modelling and Simulation Group (NMSG) and the Simulation Interoperability Standards Organization (SISO) will describe their standardization processes. You will hear from leads and proponents of three NMSG/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 more in-depth understanding of how they are developed, adopted, supported, and maintained. If you attended the NMSG-SISO session last year, plan to attend again this year to get an update of NATO and SISO standards program information.

S&T organization
Modelling and Simulation Group

SISO Simulation Interoperability Standards Organization
"Simulation Interoperability & Reuse through Standards"

THURSDAY, 1 DECEMBER • 0830 – 1000 • ROOM W304GH

EVOLVING MEDICAL TRAINING – BIG DATA, MULTI-DOMAIN OPERATIONS, AND PROLONGED CARE

MODERATOR

MATTHEW HACKETT, PH.D.
Science and Technology Manager, DEVCOM – Soldier Center

PANELISTS

COLONEL KATHLEEN SAMSEY, MD, MPH, MC(FS), USA
Director, Directorate of Simulation (DoS), U.S. Army Medical Center of Excellence

COLONEL PAUL O. KWON DO, MPH, MC, USA
Clinical Advisor, U.S. Army PEO STRI

LIEUTENANT COLONEL STERLING BRODNIAK DO, MBA, FAAFP, MC, USA
Medical Integrator/Director Synthetic Training Environment, Cross Functional Team

BETH PETTITT, PH.D.
Branch Chief, Medical Simulation Research, U.S. Army CCDC SC STTC


DR. HACKETT


COL SAMSEY, USA


COL KWON, USA


LTC BRODNIAK, USA


DR. PETTITT

In recent operations, the U.S. military was able to rapidly evacuate most casualties, allowing medical providers to focus on the 'golden hour' of patient care. Future conflicts with peer and near-peer adversaries will require providers to render care for as long as 72 hours, in a concept known as prolonged casualty care. Additionally, advanced medical capabilities at the point of injury, including the provision of whole blood and ultrasound, require providers to have knowledge and skills beyond current levels of training.

To address these challenges, the military medical community envisions an evolution of the training landscape, with shifting educational paradigms and vastly improved technical capabilities. This session will provide this vision with perspectives from the requirements, acquisition, and research and development communities, and will be appropriate for any audience interested in military or healthcare training.

This session will provide attendees with:

- An overview of current military medical simulation capabilities.
- A discussion of the next generation of medical simulation capabilities, including interfacing with the Synthetic Training Environment (STE).
- Capability gaps from the military medical community and current science and technology efforts addressing them.

THURSDAY, 1 DECEMBER • 1030 – 1200 • ROOM W308C

HUMAN-CENTERED ARTIFICIAL INTELLIGENCE IN TRAINING, SIMULATION, AND EDUCATION

HUMAN-CENTERED AI: RESPONSIBLE AND EFFECTIVE

MODERATOR

TIM WHALEN, PH.D.
Data Scientist / R&D Portfolio Manager, Design Interactive, Inc.

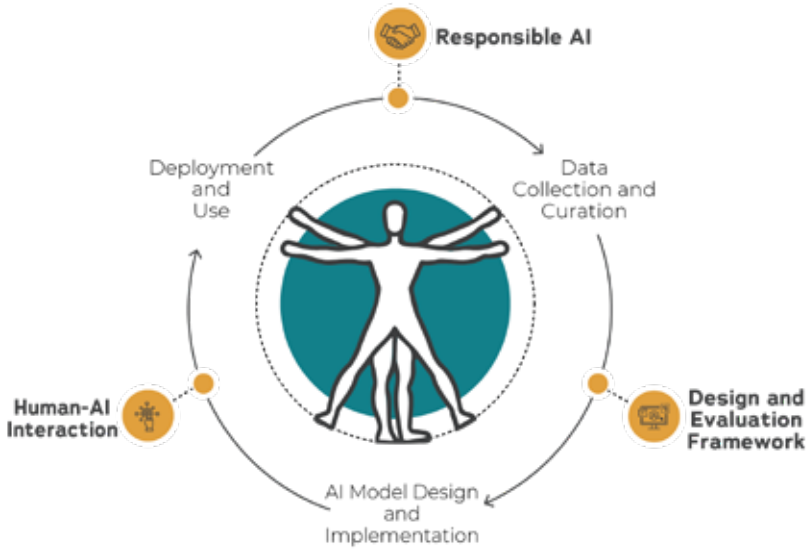
PANELISTS

OZLEM OZMEN GARIBAY, PH.D.
Assistant Professor, University of Central Florida

JOSEPH T. KIDER, JR., PH.D.
Associate Professor Institute for Simulation and Training, School of Modeling, Simulation, and Training, University of Central Florida

IVAN GARIBAY, PH.D.
Associate Professor, Industrial Engineering and Management Systems, University of Central Florida; Director, UCF Artificial Intelligence and Big Data Initiative

STEPHEN M. FIORE, PH.D.
Professor, Cognitive Sciences, Department of Philosophy
Director, Cognitive Sciences Laboratory, Institute for Simulation and Training, University of Central Florida




DR. WHALEN


DR. GARIBAY


DR. KIDER, JR.


DR. GARIBAY


DR. FIORE

Recent events from reinforcement learning algorithms beating humans in aerial dogfighting to AI copiloting the U-2 demonstrate the growing role of AI in defense. However, continuing high-profile problems have demonstrated the need to rethink AI development and implementation, from focusing on algorithm capabilities to repositioning humans at the center of AI systems, augmenting rather than replacing humans, and providing applications that are reliable, safe, and trustworthy.

While such human-centered AI (HCAI) principles have significantly improved AI systems at technology companies, governments, and defense policies, much remains to be done. At this session, attendees will gain a thorough understanding of the need for a human-centered approach to AI, practical implementation strategies, and an understanding of the benefits of HCAI.

Attendees will gain a thorough understanding of the current challenges in AI implementation across training, simulation, and education.

Attendees will have an introduction to the process of implementing HCAI, including:

- Responsible AI, which comprises aspects of explainability, fairness, and ethics.
- Effective AI software interfaces, allowing for high levels of user autonomy and automation.
- Guidance for effective human-machine teaming.
- The benefits of HCAI implementation.

THURSDAY, 1 DECEMBER • 1030 – 1200 • ROOM W304EF

FLYING IN THE METAVERSE: CERTIFYING EXTENDED REALITY

MODERATOR

DANIEL WILLSON
Air Force Global Strike Command Operational Test and Training Infrastructure Lead, Air Force Global Strike Command / Aircrew Training

PANELISTS

COLONEL R. JOE MOSCHELLA, USAF
19AF Pilot Training Transformation Lead, Air Education Training Command

LIEUTENANT COLONEL STEVE BRIONES, USAF
Commander, Detachment 24 (Pilot Training Next), 19th Air Force, Air Education and Training Command

MAJOR DAVID OPERCHAL, USAF
Rotary-Wing Weapons and Tactics Chief, Air Force Global Strike Command

MAJOR JONATHAN LEE, USAF
Det 3 29th Training Systems Squadron Commander, Air Combat Command


MR. WILLSON


COL MOSCHELLA, USAF


LT COL BRIONES, USAF


MAJ OPERCHAL, USAF


MAJ LEE, USAF

Digital Transformation is impacting almost all markets today. Extended Reality (XR) technologies play a crucial role in this transformation, with new communication channels and methods that allow users to be interconnected in real time. While the development over the years of Extended Reality flight training including hardware and digital content has continued to expand the certification regulations and process are following at a much slower rate.

This panel will be led by Mr. Daniel "Frasier" Willson, who will be asking the panelist questions regarding their expertise on the certification of extended reality flight training devices and content followed by a questions and answer session from the I/ITSEC attendees.

THURSDAY, 1 DECEMBER • 1330 – 1500 • ROOM W308C

INFORMATION WARFARE: COMBATING DISINFORMATION VIA INOCULATION TRAINING AND SOCIAL SIMULATIONS

MODELING FOR TARGETING DISINFORMATION

MODERATOR

ALEXANDER V. MANTZARIS, PH.D.
UCF Statistics and Data Science

PANELISTS

IVAN GARIBAY, PH.D.
Associate Professor, Industrial Engineering and Management Systems, University of Central Florida; Director, UCF Artificial Intelligence and Big Data Initiative

GITA SUKTHANKAR, PH.D.
Professor, Department of Computer Science, University of Central Florida

LISA DIEKER, PH.D.
Pegasus Professor and Lockheed Martin Eminent Scholars, College of Community Innovation and Education, University of Central Florida

OZLEM OZMEN GARIBAY, PH.D.
Assistant Professor, University of Central Florida

WILLIAM RAND, PH.D.
Executive Director of the Business Analytics Initiative and Associate Professor of Marketing, NC State University

UNA-MAY O'REILLY
Principal Research Scientist, Massachusetts Institute of Technology Computer Science & Artificial Intelligence Laboratory (MIT CSAIL)


DR. MANTZARIS


DR. GARIBAY


DR. SUKTHANKAR


DR. DIEKER


DR. GARIBAY


DR. RAND


MS. O'REILLY

The integrity of a society is of the most important points of stability which must be maintained. Developments of online social networks allow users to propagate content faster with new advancements. With the potential for disinformation to proliferate it is vital to be able to assess the impact that it can have since it would be a waste of resources to address every possible example of malicious information.

In the effort to model society and the ways which information can shape or direct it, simulations will be of the essence. Given that collections of individuals work together it is a nature choice to consider agent based simulations as a representation of citizens and after training the system it can be used to explore plausible scenarios. The program will showcase new approaches and the results that can be delivered. Challenges and new prospects will be discussed from experts in the field. Key techniques that have proven to be effective are integrating entropic measures, adaptive societal segmentation, and deep learning in an agent context. Agents can be used to simulate the activities on platforms such as Twitter, and also those of github where users can share programming code. An added benefit of the agent based model is the explainability of the model where the intelligence of the agent can be interpreted more easily than in monolithic stochastic models.

TUESDAY, 29 NOVEMBER • 1400 – 1530 • ROOM W308C

PM TRASYS PROGRAM BRIEF

MODERATOR

JOHN TAYLOR
Deputy Program Manager (DPM), Program Manager Training Systems (PM TRASYS) Marine Corps System Command (MARCORSYSCOM)

PANELISTS

LIEUTENANT COLONEL TROY PETERSON, USMC
Product Manager (PdM), Range Training Systems (RTS), Program Manager, Training Systems (PM TRASYS)

LIEUTENANT COLONEL MICHAEL DONALDSON, USMC
Synthetic Training Integration and Management Branch Head, Range and Training Programs Division (RTPD), Training and Education Command (TECOM)

TRACY HARPER
Contracting Specialist, Marine Corps System Command (MARCORSYSCOM)

ROBYN INGERHAM
Product Manager (PdM), Training Systems Sustainment & Support Services (TS4), Program Manager, Training Systems (PM TRASYS)

ELIZABETH TYGART
Product Manager (PdM), Synthetic Training Systems (STS), Program Manager, Training Systems (PM TRASYS)

ARCHIE WHITE
Range and Training Area Management (RTAM), Training and Education Command (TECOM)

This event will provide a brief overview of the acquisition projects managed at/by Program Manager, Training Systems (PM TRASYS) in Orlando, Florida. Our Product Managers (PdM) will provide an update to the projects within their respective portfolios and offer information regarding upcoming procurement activities. As an added bonus, each Product Manager will introduce some of the emerging training requirements being developed by Training and Education Command (TECOM), Range and Training Programs Division (RTPD), and Range and Training Area Management (RTAM) for considerations as new acquisition projects.

TUESDAY, 29 NOVEMBER • 1600 – 1730 • ROOM W308C

USAF ACQUISITION UPDATE

MODERATOR

HEATH MORTON
Training System Technical Advisor

PANELISTS

LEA T. KIRKWOOD
Air Force Program Executive Officer (PEO) for Agile Combat Support (ACS)

COLONEL CHARLES "MATT" RYAN, USAF
Senior Materiel Leader for the Simulators Division, Air Force Program Executive Officer (PEO) for Agile Combat Support (ACS)

This Special Event will provide the latest information from the U.S. Air Force regarding the acquisition initiatives, focus areas, and upcoming training systems acquisition actions. It will feature remarks from Ms. Lea Kirkwood, the Air Force Program Executive Officer (PEO) for Agile Combat Support (ACS). Ms. Kirkwood will share her perspective on the current state of the Air Force acquisition process along with ongoing initiatives that apply to the I/ITSEC community. Colonel Charles "Matt" Ryan, the Senior Materiel Leader for the Simulators Division, will follow the PEO's presentation. Col Ryan and his team will provide updates on Air Force simulator business processes and opportunities.

WEDNESDAY, 30 NOVEMBER • 0830 – 1000 • ROOM W309AB

NAVY TRAINING PROGRAMS' VISION – PLATFORMS, SAILORS, ENVIRONMENT

MODERATOR

MIKE MERRITT
Acquisition Director, Naval Air Warfare Center Training Systems Division (NAWCTSD)

PANELISTS

CAPTAIN JOHN SCHIAFFINO, USN
Program Manager, Training Systems and Simulations
F-35 Joint Program Office

CAPTAIN KHARY HEMBREE-BEY, USN
Program Manager, LCS Modernization and Sustainment (PMS-505)

CAPTAIN KEVIN SMITH, USN
Program Manager, CONSTELLATION Class Frigate Program (PMS-515)

DAVID S. KEMP
Ready Relevant Learning (RRL) Director, PEO MLB, Program Manager, Training Systems Program Office, Ready Relevant Learning (RRL)

YARON KETER
LVC Operational Director, Naval Surface Warfare Center, Coronado

Expanded at this year's I/ITSEC is a second panel of Navy Captains and senior civilian leaders representing key programs and capabilities pertinent to the Navy Training mission spanning weapons platforms, sailors, and the training environments the Navy uses. The panel members will discuss their program'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.

THURSDAY, 1 DECEMBER • 1030 – 1200 • ROOM W304AB

NAVY VISION FROM TRAINING SYSTEMS PROGRAM MANAGERS

MODERATOR

MIKE MERRITT
Acquisition Director, Naval Air Warfare Center Training Systems Division (NAWCTSD)

PANELISTS

CAPTAIN KEVIN McGEE, USN
Program Manager, Naval Aviation Training Systems and Ranges (PMA-205)

CAPTAIN DAN COVELLI, USN
Commanding Officer, Naval Air Warfare Center Training Systems Division (NAWCTSD)

BOB KERNO
Program Manager, Surface Training Systems (PMS-339)

ARNOLD MALLORY
Manpower Personnel and Training Integration Lead, Naval Information Warfare Systems Command (NAVWAR)

Each year at I/ITSEC, a panel of Training Systems Program Managers consisting 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.

THURSDAY, 1 DECEMBER • 0830 – 1200 • ROOM W311ABCD

PEO STRI TSIS PROGRAM BRIEF

MODERATOR

KAREN D. H. SAUNDERS, SES
Program Executive Officer, U.S. Army PEO STRI

PANELISTS

COLONEL CORY BERG, USA
Project Manager Soldier Training, U.S. Army PEO STRI

COLONEL NICKOLAS KIOUTAS, USA
Project Manager Synthetic Environment, U.S. Army PEO STRI

ELANOR "JEANNIE" WINCHESTER
Program Manager Cyber, Test, and Training, U.S. Army PEO STRI

DALE WHITTAKER
Project Lead International Programs Office, U.S. Army PEO STRI

BOB WOLFINGER
Project Lead Training Aids, Devices, Simulators, Simulation (TADSS) Support Operations, U.S. Army PEO STRI

The U.S. Army Program Executive Office Simulation, Training and Instrumentation (PEO STRI), Training and Simulation Industry Symposium (TSIS) updates at I/ITSEC will provide the latest information regarding current and future PEO STRI business opportunities. This will be an update from the June 2022 TSIS and will include presentations from the Project Managers and Project Leads, as well as the Army Contracting Command – Orlando and Program Manager Medical Simulation and Training, Defense Health Agency.

The event will be held in two 90 minute segments, with a 30 minute break.

0830 – 1000 TSIS Briefings
1000 – 1030 Break
1030 – 1200 TSIS Briefings

DOWNLOAD MOBILE APP

SPECIAL EVENTS
INTERNATIONAL

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

INTERNATIONAL PAVILION

ROOM W205ABC

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 lower level of West Concourse. International conference attendees' meeting bags will be available for pick-up at the main registration desk this year.

INTERNATIONAL PAVILION HOURS OF OPERATION

Monday, 28 November	0800 – 1800
Tuesday, 29 November	1200 – 1800
Wednesday, 30 November	0800 – 1500
Thursday, 1 December	0800 – 1500

INTERNATIONAL PAVILIONS

Canada	2260

SPECIAL EVENTS

TUESDAY, 29 NOVEMBER • 1600 – 1730 • ROOM W304AB
SIGNATURE EVENT: Indo-Pacific Training Capability Improvements for Multi-Domain Warfighting

WEDNESDAY, 30 NOVEMBER • 1030 – 1200 • ROOM W308C
COMMUNITY OF INTEREST: M&S Emerging Technologies: Innovation Opportunities and Challenges

WEDNESDAY, 30 NOVEMBER • 1400 – 1530 • ROOM W304EF
SIGNATURE EVENT: Transforming Training with Allies and Partners to Confront and Deter Russian Aggression

WEDNESDAY, 30 NOVEMBER • 1600 – 1730 • ROOM W304EF
FOCUS EVENT: Best from Around the Globe

THURSDAY, 1 DECEMBER • 0830 – 1000 • ROOM W308C
COMMUNITY OF INTEREST: Simulation Standards: The Path to Seamless Interoperability for Multi-Domain Operations

THURSDAY, 1 DECEMBER • 1030 – 1200 • ROOM W309AB
FOCUS EVENT: International Perspectives on Creating and Sustaining Learning Ecosystems in the Wild

THURSDAY, 1 DECEMBER • 1030 – 1200 • ROOM W310AB
FOCUS EVENT: Evolving Distributed Mission Operations Joint DMO Panel

TUTORIALS

MONDAY, 28 NOVEMBER • 1245 – 1415 ROOM W305A
22T21 • Introduction to HLA

MONDAY, 28 NOVEMBER • 1430 – 1600 • ROOM W308C
22T32 • Sharing Environmental Data for LVC using RIEDP

PAPERS

22287 • TUESDAY, NOVEMBER 29 •1700 – 1730 • W307A
SIM 2: WE'RE ONLY HUMANS
Human Behavior Models for Adaptive Training in Mixed Human-Agent Training Environments

22190 • WEDNESDAY, 30 NOVEMBER • 1030 – 1100 • W300-THEATRE
BEST PAPER SESSION 1
ECIT: Building a World With Deepfake Content – Who Needs Real Data?

22325 • WEDNESDAY, 30 NOVEMBER • 1430 – 1500 • W300-THEATRE
BEST PAPER SESSION 2
TRAINING: VR Training System for Rehabilitation and Compensatory Analysis after Stroke

22180 • WEDNESDAY, 30 NOVEMBER • 1400 – 1430 • W307A
SIM 5: SAY DIGITAL TWINS: I DARE YOU
Geospatial Data Pipelines for Urban Digital Twin Applications

DOWNLOAD MOBILE APP

SPECIAL EVENTS

INTERNATIONAL/ EXHIBIT HALL

INTERNATIONAL CONTINUED

PAPERS (CONT.)

22137 • WEDNESDAY, 30 NOVEMBER • 1430 – 1500 • W307D
SIM 6: SIMULATION FOR TRANSFORMING TRAINING
Estimating Relative Combat Effectiveness Using Simulations

22166 • WEDNESDAY, 30 NOVEMBER • 1500 – 1530 • W307A
SIM 5: SAY DIGITAL TWINS: I DARE YOU
Drone Control to Major Tom: Anomaly Detection and Digital Twins

22189 • WEDNESDAY, 30 NOVEMBER • 1500 – 1530 • W307D
SIM 6: SIMULATION FOR TRANSFORMING TRAINING
Context-aware and Perceptually Realistic Synthetic Wrapping for Military Training and Exercises

22285 • WEDNESDAY, 30 NOVEMBER • 1630 – 1700 • W307C
TR 5: TRANSFORMING MILITARY TRAINING THROUGH IMMERSIVE TECHNOLOGIES
Transforming Team Training: The Influence of Virtual Environment Features

22106 • THURSDAY, 1 DECEMBER • 0830 – 0900 • W308A
ECIT 8: POTPOURRI
Recommendation System in an Integrated Digital Training Environment for the 5th Generation Air Force

22235 • THURSDAY, 1 DECEMBER • 0900 – 0930 • W307B
ECIT 9: PATTERNS OF LIFE: TOO HUMAN FOR AI?
Large-Scale Pattern of Life Simulation for Real Time Applications

22175 • THURSDAY, 1 DECEMBER • 0930 – 1000 • W307D
HPAE 6: TRAINING AGENTS INTO ALLIES
Social Media Synthesis using AI for Decision Support

22454 • THURSDAY, 1 DECEMBER • 1130 – 1200 • W307B
ECIT 10: THE THREE C'S: COLLABORATION, COMMUNICATION, AND CLOUD
Automated 3D Terrain Generation at Global Scale Based on Satellite Imagery and Cloud Computing

22282 • THURSDAY, 1 DECEMBER • 1330 – 1400 • W307B
ECIT 11: ENHANCED WARFIGHTING THROUGH AUTOMATED RENDERING, ASSESSMENT AND DATA FUSION
Innovation, It's in VR: How the Spanish Military Health School Is Revolutionizing Workforce Training with VR Immersive Rooms

22138 • THURSDAY, 1 DECEMBER • 1330 – 1400 • W307C
TR 8: DIGITAL THREADING THE NEEDLE
Data-Driven Behavioral Modelling of an Air Defence System

EXHIBIT HALL ACTIVITIES

CYBER PAVILION — BOOTH 2870

NTSA's I/ITSEC CYBER PAVILION is a physical gathering place for government, industry, academia, and international partners engaged in cyber domain and M&S efforts. The Pavilion features panel events and presentations spanning policy, operations, capability acquisition, and workforce development topics. The events highlight needs of the government, capabilities of industry, efforts of academia, research by interns, and collaboration with international partners. And it includes a panel on Information Warfare and an I/ITSEC Special Event for the Department of Defense's Service Principal Cyber Advisors outside of the Exhibit Hall.

- **LEARN:** Hear from Government and Industry leaders about policy, programs, and projects.
- **COMMUNICATE:** Discover opportunities for collaboration in fields such as Electromagnetic Warfare, Cyber Operations, and Information Warfare.
- **PROVIDE:** Demonstrate current capabilities, ongoing work in the pursuit of solutions to meet needs.
- **DEVELOP** – Make contacts to carry beyond I/ITSEC.

The Pavilion is our platform to communicate and cooperate on finding approaches to operate in the dynamic environment of cyberspace. Attendees from the U.S. Government, Department of Defense, Partner Nations, commercial organizations, and academia should come to collaborate at the **CYBER PAVILION**.

NOTABLE ATTENDEES • NETWORKING CONTACTS ALL AT THE CYBER PAVILION:

OUTLOOK – COMMENTS FROM DEFENSE LEADERS, PRINCIPAL CYBER ADVISORS
- NEW for 2022, an I/ITSEC SPECIAL EVENT: Service Principal Cyber Advisors' Panel

OPPORTUNITIES – DISCUSSION ON NEEDS FROM PROGRAMS/ PROJECTS, GOVERNMENT ACQUISITION
- Facilitated Panel – DoD PMs/PEOs & Capability Managers

OFFERINGS – INDUSTRY, GOVERNMENT & ACADEMIA – SOLUTIONS
- Facilitated Panel – Cyber Pavilion Sponsors from Industry
- Facilitated Panel – Information Warfare
- Facilitated Panel – Academia
- Research Updates – Government, Academic Interns

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HEALTHCARE PAVILION

PAVILION LOCATION — **2181, 2281, 2283, 2380, 2382**

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 – WEST HALL B • 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-minute sessions to hear what is new and exciting in M&S! Check the onsite schedule for any changes or updates to the Innovation Showcase schedule.

The most up-to-date information will be available on the mobile app, website, and onsite during I/ITSEC.

MONDAY, 28 NOVEMBER – INTERNATIONAL SHOWCASE		
1400	Forces in Virtual Environment (FIVE)	Quantum3D/HAVELSAN
1440	Unleashing Fully Immersive Multi-user Wireless XR Experiences	XCOM Labs
1520	ISLE-LMS State of the Art Mixed Reality Trainor	Vrgineers
1600	Continuous Time-of-Day Visuals: Seamless Optical Blends	GBVI
1640	Hal S5301	Gaumard Scientific
1720	Metaverse	Microsoft Federal
TUESDAY, 29 NOVEMBER – INNOVATION SHOWCASE		
1230	Microsoft Project AirSim – AI first Simulation Platform to Build Aerial Autonomy	Microsoft Federal
1310	Galea: The Bridge Between Virtual Reality and Neural Interfaces	OpenBCI Inc.
1350	VR, XR and Metaverse Solutions for Defense and Aerospace	Varjo Technologies
1430	Viewpoint, 3D Cybersecurity Data Visualitzation	Ingalls Information Security
1510	Quantum3D Mixed Reality Flight Simulator	Quantum3D/HAVELSAN
1550	Deploying Secure Solutions for VR Training Simulations	HTC VIVE
1630	MASTER Project (M&S Architecture & Services for Training and Experimentation) – A Solution for M&S as a Service (MSaaS)	NATO
1710	Nobody Builds Just One: Leveraging Feature-based Product Line Engineering to Reduce Complexity	BigLever
1750	Augmented Reality Made Easy: Improve Warfighter Readiness with Immersive Technology	Bundlar
WEDNESDAY, 30 NOVEMBER		
1000	Cyber Resilient Training Systems Through Continuous Cyber Supply Chain Risk Management	Fortress Information Security
1040	Creating Unforgettable VR Training Experiences with Hand Tracking	Ultraleap
1120	Powering the Future of British Army Synthetic Training	Hadean Supercomputing LTD
1200	Free DoD Tools to Jumpstart Your Research	CSIAC
1240	M&S in support of CBRN	NATO
1320	CSAR, Your Best Hope for ATO Survival	Ingalls Information Security
1400	Serious Games Technologies for Training and Simulation	Quantum3D/HAVELSAN
1440	EMPACT In Action – Modernizing Critical Training with Virtual Reality Across Sheppard Air Force Base	HTX Labs
1520	Cognitive Performance and Decision Making: A Live Fire Training Approach	910 Factor, Inc.
1600	Trauma Training in a High Stress Environment Using Mixed Reality	Surgical Science
1640	Automated Content Generation for Technical Training Applications	CAE
1720	Building Immersive Apps with ArcGIS Maps SDKs for Game Engines	ESRI
THURSDAY, 1 DECEMBER		
0930	Addressing Zero Trust as the Multi-level Security (MLS) Imperative for Distributed Training	Air Force Agency for Modeling and Simulation
1010	ELMO – Electromagnetic Layer for Multi-domain Operations	NATO
1050	Accelerating Aerial Autonomy with Microsoft Project AirSim	Microsoft Federal
1130	Zero Trust Cloud Communication Solutions	Fognigma
1210	Enabling a Simulation Ecosystem to Simplify Solutions Development	Epic Games, Inc.
1300	Serious Games Showcase and Challenge Award Ceremony	

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.

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TUTORIAL GRID

ROOM	0830–1000	1245–1415	1430–1600
TRACK 1: BEST TUTORIAL			**CHAIR: LEE LACY, PH.D., CMSP**
W307A	Putting the When and Where into Simulations 22T47	A Comprehensive Introduction to Medical Simulation 22T30	Practical Guide to Learning Engineering 22T15
TRACK 2: INNOVATION AND TRAINING DESIGN			**CHAIR: SCOTT HOOPER**
W307B	International Trade Compliance: Regulatory Developments and Key Risk Areas 22T56	Principles for Designing Effective, Efficient, and Engaging Training to Accelerate Expertise 22T45	Operational Impact: Quantifying Training Solution Value 22T46
TRACK 3: DESIGN APPROACHES FOR LEARNING ENGINEERING			**CHAIR: RAMONA SHIRES**
W307C	Avoid the Illusion of Knowing: Reshaping Design in ADDIE 22T39	Introduction to Competency-Based Experiential Learning 22T44	Leading by Design: User Experience (UX) for the Department of Defense 22T43
TRACK 4: BUILDING CONFIDENCE FROM DESIGN TO APPLICATION			**CHAIR: SIMONE YOUNGBLOOD**
W307D	Simulation Conceptual Modeling Theory and Use Cases 22T10	Addressing the Challenges of Rigorous Model Validation 22T26	Accreditation of Simulation-Based Experiments and Training: Beyond the M&S 22T18
TRACK 5: XR			**CHAIR: GORDON KING**
W308A	The WHY & How of eXtended Reality (XR) Enterprise Adoption 22T12	Machine Learning and the Benefits of Applying it to XR Training Systems 22T54	Anytime, Anywhere Adaptive XR Training 22T27
TRACK 6: LET'S GET STARTED			**CHAIR: JAMES COOLAHAN, PH.D.**
W308B	The I/ITSEC Professional Development Primer: M&S Fundamentals, Certification, and Contemporary Applications 22T17	Introduction to Defense Modeling and Simulation 22T22	A History of Games for Military Training: From Sheep Knuckles to the Metaverse 22T31
TRACK 7: THE R FACTOR			**CHAIR: RONALD VENTURA-MOORE**
W308C	Powerful & Accessible Immersive Experiences – Visualizing & Transforming Large Data Sets in eXtended Reality 22T24	Evolution of RF Signal Visualization from Spectrum Analyzers to Augmented Reality 22T34	Sharing Environmental Data for LVC using RIEDP 22T32
TRACK 8: SIMULATION INTEROPERABILITY PART 1			**CHAIR: ROB LECHNER**
W305A	IEEE 1278TM Standard for Distributed Interactive Simulation (DIS): Concepts and Techniques 22T51	Introduction to HLA 22T21	TENA, Interoperability, and Data Management 22T13
TRACK 9: SIMULATION INTEROPERABILITY PART 2			**CHAIR: JOHN DIEM**
W305B	A Process for Distributed LVC Event Integration and Execution 22T23	Live, Virtual and Constructive (LVC) Interoperability 101 22T29	Secure Distributed Simulation Training Systems Anywhere, with OMG DDS 22T28
TRACK 10: FROM C TO SHINING C			**CHAIR: RANDOLPH JONES, PH.D., CMSP**
W306A	An Introduction to Cognitive Systems for Modeling & Simulation 22T25	Secure Private Wireless Network Architecture Applied to LVC Environments 22T53	Transform Your Training by Migrating Content to cmi5 22T41

TUTORIAL SYNOPSES BEGIN ON PAGE 69 • PRESENTER BIOGRAPHIES BEGIN ON PAGE 81

0830 – 1000

TRACK 1: BEST TUTORIAL
0830 – 1000 • W307A

PUTTING THE WHEN AND WHERE INTO SIMULATIONS

22T47

All simulations take place somewhere on terrain or in the sea or atmosphere, amidst natural and man-made structures. The action takes place at a particular time of day and season of the year. These descriptors of the when and where of a simulation are not simply visual effects, but in a constructive or virtual world they provide a real context for the behaviors of humans, vehicles, sensors, communications and weapons. This tutorial is intended to introduce the simulation user and developer to the fine art of creating the environmental playground for a simulation. The tutorial will cover the land, atmosphere and the ocean, citing sources for data and the problems that typically exist in the original source data as well as those that inevitably result from combining information from a variety of diverse sources. The difference between geo-specific and geo-typical will be discussed and why one is chosen over the other. The issues of correlation will be illustrated within a single domain (just land features), across different simulations, and across domains (correlating land, sea, and air). The tutorial illustrates how the environment and its changes affect simulated entities – vehicles and sensors in particular. Finally, the tutorial shows how a dynamic environment can be developed and provided to the simulation. As part of the discussion, the tutorial will direct attention to the DoD-provided sources for creating a reasonably correlated synthetic environment and the emerging international standards for representing environmental data. The effects of the environment span not only the domains of land, sea, and air, but electromagnetics, space, and cyber by way of communications effects.

PRESENTER

S. K. "SUE" NUMRICH, PH.D., CMSP, Institute for Defense Analyses

TRACK 2: INNOVATION AND TRAINING DESIGN
0830 AM – 1000 • W307B

INTERNATIONAL TRADE COMPLIANCE: REGULATORY DEVELOPMENTS AND KEY RISK AREAS

22T56

In this session, we will provide a basic overview of the key export control regimes, the International Traffic in Arms Regulations (ITAR) and the Export Administration Regulations (EAR), as well as the economic and trade sanctions programs administered by the Office of Foreign Asset Control (OFAC). We will provide an explanation of how to determine what controls and authorization requirements apply to particular activities and transactions, and when and how defense contractors may be able to leverage exemptions from the licensing requirements. We will talk through recent regulatory changes and the practical impact of those changes, and provide tips for best practices on risk mitigation in this space.

PRESENTERS

ADELICIA "ADDIE" CLIFFE, Crowell and Moring, LLP
DAVID "DJ" WOLFF, Crowell and Moring, LLP
MARIA ALEJANDRA "JANA" DEL-CERRO, Crowell and Moring, LLP

TRACK 3: DESIGN APPROACHES FOR LEARNING ENGINEERING
0830 – 1000 • W307C

AVOID THE ILLUSION OF KNOWING: RESHAPING DESIGN IN ADDIE

22T39

Often training follows the process of receiving a topic/task list, writing learning objectives, developing lessons by copying in doctrine or regulation as content, writing test questions, and voilà, the course is ready for implementation. What's wrong with this process? If you think about taking a boat ride, first we need to make a plan, launch the boat, map points of interest, refuel, stock supplies, and have experienced personnel steer the boat. Our training development processes need to be very similar to preparing for a boat ride. Following the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model is one way. We cannot stop at getting the boat in the water. What's the learning outcome? Did we design waypoints for learners to practice and get effective feedback? Did we apply scaffolding and chunking? Did we design it for how we learn and how we retrieve learning to transfer to the performance environment? Or in our rush to get the boat in the water did we ignore the learning science that supports designing effective learning? When we skip design, we miss opportunities to create learning experiences that are effective, efficient, and encourage the deep learning required to meet mission readiness. So why do we skip or gloss over the design phase? Sometimes the illusion of knowing creeps into the decision making of inexperienced training developers or senior leadership. We make judgments about what good learning is by instinct and our own personal experience. Often these judgments have very little to do with how the brain learns or how learning theory is applied. Sometimes it is the result of the "that's the way we've always done it" syndrome. This can severely burden the unit level when we make poor design decisions. The goal of the tutorial is to help training developers, their supervisors, and anyone involved in the training development and decision-making process, design effective learning based on evidence from the learning sciences. This introductory tutorial will focus on the psychological and cognitive activities required for effective learning, present common learning myths that prevent us from creating efficient learning products, and provide design strategies that improve the relevance and rigor of the learning experience regardless of delivery method. When we do not use learning science, we only get the boat in the water; it never truly arrives at its destination, steering off course, and burdening another resource to rescue it when it is lost at sea.

PRESENTERS

PATRICIA MULLIGAN-RENAUD, TTD Learning Solutions
HEATHER SEISER, TTD Learning Solutions

TRACK 4: BUILDING CONFIDENCE
FROM DESIGN TO APPLICATION
0830 • 1000 • W307D

SIMULATION CONCEPTUAL MODELING THEORY AND USE CASES

22T10

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

JACK BORAH, Borah Enterprises, LLC

TRACK 5: XR
0830 – 1000 • W308A

THE WHY & HOW OF EXTENDED REALITY (XR) ENTERPRISE ADOPTION

22T12

The business case for adoption of eXtended Reality (XR) technology within Industry 4.0 is compelling… increased productivity, training effectiveness, engagement, retention, and motivation, with decreased time to proficiency, human error, downtime, and operating costs. Yet, adoption has been languid, as barriers to XR implementation abound. While high-quality, affordable, wearable augmented reality (AR) and VR (virtual reality) gear are readily available, high-value use cases are little understood; start-up costs are high; the requisite supply of compelling content and anticipated high-end user experience are yet to be realized; there are a paucity of empirical studies on learning outcomes and performance gains; there are no readily available tools to support scalability and sustainability; and cybersickness is still a challenge. To facilitate adoption, XR ecosystems are needed that can readily overcome the current lack of content by automating the production process. At the same time, content must be coupled with XR enablers, including new XR-specific user experience design paradigms that are contextually rich, intuitive, and uniquely suited to 3D interaction, along with the ability to plug-in to digital twins that reflect the reality and complexity of real-world systems to fuel predictive analytics and close the loop between operator and system. The future of industry relies on the ability of such XR ecosystems and XR enablers to generate value-added use cases that not only justify adoption costs but proportionally outweigh them. This tutorial will dive into how enterprises could derive immense value from XR adoption by providing insights into: key drivers of XR adoption; key barriers to XR adoption; value-added uses cases; and guidelines on where an organization might consider starting their XR adoption journey.

PRESENTERS

KAY STANNEY, PH.D., Design Interactive, Inc.
MATT ARCHER, Design Interactive, Inc.

TRACK 6: LET'S GET STARTED
0830 – 1000 • W308B

THE I/ITSEC PROFESSIONAL DEVELOPMENT PRIMER: M&S FUNDAMENTALS, CERTIFICATION, AND CONTEMPORARY APPLICATIONS

22T17

This Tutorial serves as a holistic primer for Professional Development across the full spectrum at I/ITSEC 2022, whose prevailing theme is *Accelerate Change by Transforming Training – "It's Time to ACTT!!"* Major topics include a notional introduction to core I/ITSEC fundamentals (e.g., M&S basics; the Live-Virtual-Constructive/LVC taxonomy; Model Verification/Validation), followed by an overview of the officially recognized (and recently upgraded) professional designation within the M&S discipline: the Certified Modeling and Simulation Professional (CMSP).

To tie it all together, the primary technological lynchpin for this Tutorial is an example-driven exploration of contemporary applications - culled from peer-reviewed literature - to visualize how core principles (e.g., M&S, LVC, VV&A) are being actively leveraged within diverse fields and disciplines: 1) Engineering Design/Manufacturing, 2) Sustainable Transportation, 3) Education, Training, and STEM, 4) Health Care (e.g., COVID-19), and finally, 5) the Entertainment Industry, for which the greater Orlando region is world-renowned.

PRESENTER

KEVIN HULME, PH.D., CMSP, The Stephen Still Institute for Sustainable Transportation and Logistics (SSISTL)

DOWNLOAD MOBILE APP

0830 – 1000
MONDAY, 28 NOVEMBER
TUTORIALS

TRACK 7: THE R FACTOR
0830 – 1000 • W308C

POWERFUL & ACCESSIBLE IMMERSIVE EXPERIENCES — VISUALIZING & TRANSFORMING LARGE DATA SETS IN EXTENDED REALITY

22T24

Extended Reality (XR) is the umbrella term that covers the technology stack of Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR). XR has seen rapid growth as a new medium for users to see and interact with data that would not be possible through traditional input devices. As adoption of this technology grows, it will drive the need to visualize increasing amounts of data. One of the major challenges to large data visualization in XR is that it either requires a tremendous amount of processing power to fully visualize the content, or extreme scale cuts must be made to show such data sets on lower end hardware like mobile devices or head-worn displays. This tutorial will cover lessons learned in visualizing extremely large data sets using the Unity Real-Time Development Platform, including challenges of visualizing vast amounts of 3D data using the traditional Unity Game Object system, associated limitations, and how to overcome them with Unity's Data Oriented Technology Stack (DOTS). This tutorial will also provide a practical example to cover the visualization of publicly available 3D data from National Oceanic and Atmospheric Administration's Multi-Radar/Multi-Sensor System as a source, including the data extraction process, initial testing with Unity's traditional Game Object System, and the transition to the Unity DOTS that allowed for a jump from displaying a few hundred weather data points in 3D to over one million data points. This tutorial will also discuss the techniques that can be used to view and manipulate this data in XR along, with an evaluation of the benefits and limitations realized from utilizing the capabilities explored.

PRESENTERS

ERIC MARTIN

PEYTON BAILEY, Design Interactive, Inc.

JOANN ARCHER, Design Interactive, Inc.

CLAIRE HUGHES, Design Interactive, Inc.

TRACK 8: SIMULATION INTEROPERABILITY PART 1
0830 – 1000 • W305A

IEEE 1278TM STANDARD FOR DISTRIBUTED INTERACTIVE SIMULATION (DIS): CONCEPTS AND TECHNIQUES

22T51

As any gamer will tell you, it is compelling to connect simulations and play with other actual human participants, whether in the next room or on the next continent. The state of the art for computer networking starting in the 1980's to connect Army tank training simulations over local and wide area networks.

The desire to expand this to all military training and engineering simulations resulted in a large industry and government effort to standardize the network protocol for simulation interoperability. Distributed Interactive Simulation (DIS) was the result, using the IEEE standards process to create technically sound and widely accepted protocol to link military training and engineering simulations. IEEE 1278TM-1995 and additions in 1998 were the first full DIS standards that contained the protocol and rules for real-time simulation interoperability of military land, sea, and air platforms, weapon interactions, radar, radio, IFF, laser designators, underwater acoustics, logistics, simulation management functions, and more.

The success of DIS expanded into the Simulation Interoperability Standards Organization (SISO) in 1996. SISO took over the development of the DIS standard and launched a much wider range of simulation standards. The 2000's saw the development of the next round of improvements, resulting in IEEE 1278.1TM-2012. Continued development within SISO is working toward the next version, referred to as Version 8, expected to be completed in the mid-2020's.

This tutorial explains how DIS achieves real-time high-fidelity interoperability over best-effort networks. The basic concept and some of the technical details will be introduced to give students a foundation for starting and expanding the implementation and use DIS in their simulations. The standards process, history, and future directions of DIS are also presented.

PRESENTER

ROBERT MURRAY, SimPhonics

TRACK 9: SIMULATION INTEROPERABILITY PART 2
0830 – 1000 • W305B

A PROCESS FOR DISTRIBUTED LVC EVENT INTEGRATION AND EXECUTION

22T23

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 defines a process model for developing an event. DSEEP defines a set of seven steps divided into activities. The process model provides representative inputs and outputs for each activity. However, the user still must instantiate the process and develop artifact templates. The development of a robust process based on DSEEP is a substantial effort.

The goal of the process is to produce a verified distributed LVC environment to conduct the event. While distributed LVC environments can be created without using a process, not using a process adds risks to the event. The first risk is that the integration fails, and it may be difficult to discover the reason. The second risk is that the unverified environment produces invalid results that might not be apparent until the results are used.

An instantiation of DSEEP was developed based on the authors' integration and execution of many distributed LVC events. This implementation has nine steps, divided into 27 activities. This process adds two additional steps to the process. One of the steps adds a tabletop wargaming step to work through the requirements. The second additional step develops a digital twin of the target system. A detailed set of processes, templates, and guidance on how to perform the selected activities is provided. The process covers the integration of simulations and tactical systems to meet the objectives of the LVC event.

The tutorial will provide an overview of the complete process. Selected steps are described in more detail. This will provide the detailed inputs, tasks, outputs, and examples for each activity in the step. The process includes issues related to distributed LVC environments using multiple distributed simulation architectures, live entities, and cyber.

The process described in this tutorial was developed to support distributed LVC Test and Evaluation. However, the process applies to research and development, training, and experimentation. 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. Integration and execution of large distributed Live, Virtual, Constructive (LVC) events consume substantial time.

PRESENTERS

MICHAEL O'CONNOR, CMSP, Trideum Corporation
KENNETH LESUEUR, PH.D., U.S. Army Redstone Test Center
ROY ZINSER, Trideum Corporation
BRETT BOREN, Redstone Test Center

AN INTRODUCTION TO COGNITIVE SYSTEMS FOR MODELING & SIMULATION

22T25

There is continuously increasing demand and enabling technology for automated reasoning abilities across the broad spectrum of training, simulation, and education, as well as in battlefield information, command, and control systems. Cognitive systems represent an approach to automation that "raises the bar" from data and information processing to robust, scalable, and adaptive decision making. This tutorial provides an introduction to cognitive systems, concentrating on high-level design and implementation patterns for human-like reasoning systems. We discuss the development cycle and the role of requirements definition for such systems, emphasizing that cognitive systems must encode not just WHAT decisions to make, but also WHY to make them. We draw examples and comparisons from existing cognitive systems, focusing on the trade-offs between cognitive and non-cognitive engineering approaches. We focus on examples that highlight the differences between standard software engineering and a cognitive approach that uses "least-commitment reasoning". We then summarize the criteria by which one can decide which approach is more suitable for a particular problem. 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 most benefit from cognitively based solutions, and they will be better able to assess risks, costs, and benefits of different approaches. This tutorial emphasizes reasoning systems, not learning systems, but it includes a discussion of how the integration of cognitive systems and machine learning can advance the future state of the art. 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 benefit from automation of reasoning and decision making.

PRESENTERS

RANDOLPH JONES, PH.D., CMSP, Soar Technology, Inc.
DYLAN SCHMORROW, PH.D., Soar Technology, Inc.

1245 – 1415

TRACK 1: BEST TUTORIAL
1245 – 1415 • W307A

A COMPREHENSIVE INTRODUCTION TO MEDICAL SIMULATION

22T30

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 their history, learning taxonomies, devices and techniques for representing external and internal anatomy and physiology, the role of team training, specialized military medical applications, the growing role of AI in medical simulation, criteria for current simulation-based medical training accreditation, and their role in preparing for pandemics like COVID-19. The story includes manikins, part-task trainers, game-based systems, 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 innovation and acceleration section shares new tools, techniques, and technologies that are changing the nature of traditional training systems and events.

PRESENTERS

ROGER SMITH, PH.D., in[3] Thinking
DANIELLE JULIAN, AdventHealth Nicholson Center
ALYSSA TANAKA, PH.D., Soar Technology, Inc.

TRACK 2: INNOVATION AND TRAINING DESIGN
1245 – 1415 • W307B

PRINCIPLES FOR DESIGNING EFFECTIVE, EFFICIENT, AND ENGAGING TRAINING TO ACCELERATE EXPERTISE

22T45

Good instruction should be effective, efficient, and engaging (e3) and be based on tasks that fit together to solve real-world problems. However, more often than not, only two priorities can be accomplished at the expense of the third. On the other hand, from surgeons to teachers to warfighters, performance is more complex and more scrutinized than ever. While the systematic design of instruction (SDI) supports the creation of training programs that can move many performers to certifiable competence, it has less to offer the progression from competence to proficiency and expertise. Although enabling effective, efficient, and engaging learning is a priority concern for practitioners and researchers in many performance domains, it remains a constant challenge for instructional designers to create training programs that accomplish all three and at the same time accelerate the development of performers to higher levels of expertise.

This tutorial addresses this challenge. It provides an overview of the systematic design of instruction components as well as expertise studies, specifically the findings from Naturalistic Decision-Making research. The presentation will review the cognitive aspects of learning (such as diagnosis, sensemaking, decision-making, and immediate feedback) to facilitate rapid learning and specifically guide mental model development. It will address the application of these cognitive aspects to the design and development of part-task training programs. The presentation will discuss a scenario-based method of training emerged from Naturalistic Decision-Making research that allows trainees to practice some of these complex cognitive skills and learn from an expert without an actual expert being present (effective) and in a highly accessible (efficient) and engaging environment.

This tutorial is for those interested in using systematic design of instruction model to create training programs and learning technologies that will accelerate expertise. Participants will learn about each component of the SDI model and how theories and methods of the Naturalistic Decision Making can be incorporated to build better training. Trainers, learning developers, instructional technology managers, training managers, researchers, educators, commanders, and decision makers should attend.

LEARNING OBJECTIVES

- Learning components of the systematic design of instruction model.
- Learning different types of knowledge and skill development stages.
- Learning the Naturalistic Decision-Making approach and tools.
- Appreciating the cognitive dimension and mental model development.
- Learning scenario-based method of effective, efficient, and engaging training to accelerate expertise.

PRESENTERS

MOHAMMADREZA JALAEIAN, PH.D., ShadowBox Training, LLC
JOSEPH BORDERS, ShadowBox, LLC
EMILY NEWSOME, ShadowBox, LLC
JOHN SCHMITT, ShadowBox Training, LLC
GARY KLEIN

TRACK 3: DESIGN APPROACHES
FOR LEARNING ENGINEERING
1245 – 1415 • W307C

INTRODUCTION TO COMPETENCY-BASED EXPERIENTIAL LEARNING

22T44

Many competencies related to military and workplace functions require repeated practice under varied conditions to learn, master, and maintain proficiency. These are called experiential competencies, and the process of training these skills through deliberate drills and exercises designed to stimulate their application is called experiential learning. This tutorial will provide an introduction to experiential learning and provide insights into the design and execution of experiential learning, how to gather evidence during the training process, and how to iteratively apply this evidence to improve the training process.

The materials presented draw upon the presenters' involvement in developing the U.S. Army Synthetic Training Environment (STE), and in particular, the

STE Experiential Learning for Readiness (STEEL-R) project, which for the past two years has been working to create a foundation of technologies and methods to maximize the effect of experiential learning across an ecosystem of fully synthetic, semi-synthetic, and live training modalities. A key component of STEEL-R is the development of methods, based on the U.S. Advanced Distributed Learning (ADL) initiative's Total Learning Architecture, the Competency and Skills System (CaSS), and the U.S. Army Research Laboratory's Generalized Intelligent Framework for Tutoring (GIFT), that enable data from training systems in all of these modalities to be captured in a common format and processed to inform both individuals and teams on the best approach to increasing their proficiency.

The tutorial will start by introducing basic concepts of experiential learning, with a practitioner's focus on skills acquisition and decay, spaced repetition, experience design, stress induction, and difficulty variance. The presenters will give examples and discuss the theoretical underpinnings. This will be followed by a segment on competency-based experiential learning, as applied to teams as well as individual roles, and how evidence can be used to reliably detect competence levels. The presenters will then demonstrate how the concepts and theory previously presented can be embodied in tools and interfaces and how evidence can be collected from an array of experiential exercises. This will be followed with a discussion of how to leverage data standards and data structures such as xAPI, xAPI Profiles, and standards relating to competency definitions to model and track experiences. The tutorial will conclude with a general discussion of the experiential learning, the lessons learned, and relevant goals of STE and other U.S. military training initiatives.

PRESENTERS

KEVIN OWENS, Applied Research Laboratories: The University of Texas at Austin
BENJAMIN GOLDBERG, PH.D., U.S. Army DEVCOM SC STTC
SHELLY BLAKE-PLOCK, Yet Analytics, Inc.
ROBBY ROBSON, PH.D., Eduworks Corporation

TRACK 4: BUILDING CONFIDENCE FROM DESIGN TO APPLICATION
1245 – 1415 PM • W307D

ADDRESSING THE CHALLENGES OF RIGOROUS MODEL VALIDATION

22T26

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).
- Validation methods to apply when performing the results/referent comparison.
- Methods to evaluate the performance of selected validation methods.
- 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 YOUNGBLOOD, The Johns Hopkins University Applied Physics Laboratory
MIKEL PETTY, PH.D., University of Alabama in Huntsville

TRACK 5: XR
1245 – 1415 PM • W308A

MACHINE LEARNING AND THE BENEFITS OF APPLYING IT TO XR TRAINING SYSTEMS

22T54

As in many other industries, the use and spending of machine learning (ML) technologies has drastically increased for the Department of Defense. Contract spending for 2019 yielded $973 million for ML related projects and is projected to rise to $2.8 billion by 2023. ML methods and technologies have existed for many years but have quickly become critical in fields such as engineering, medicine, and consumer services. Recently, ML has found enormous benefits in XR-enabled environments used for a variety of purposes such as product and process design as well as training. Understanding the vast field of ML and its specific application to training systems can be extremely challenging. Miscomprehension can lead to poor management and development activities that will result in more costly and disappointing training solutions. Understanding the fundamentals of ML, and its application to Extended Reality (XR), will empower managers to make appropriate strategic and costing decisions and allow designers, developers, and engineers to successfully implement effective training systems.

This tutorial provides an overview of ML technologies from early research to today's modern algorithms. This tutorial will include how ML can be combined with XR environments to fundamentally change how humans interact with training systems. The presentation will review how specific ML and XR tools can produce more immersive training solutions while providing deeper insights from a variety of data that can be collected and analyzed about trainee performance. This tutorial will also present examples demonstrating ML's use in designing, testing, and optimizing XR training systems and evaluate the efficacy of incorporating this technology to aide in warfighter training to improve efficiency, reduce costs and training time.

This tutorial is for a wide range of stakeholders from those interested in gaining a basic understanding of ML for administrative level decision making to those who want detailed methods and integrations within XR-enabled training environments to gain specific performance improvements.

PRESENTERS

ADAM KOHL, Virtual Reality Applications Center
ELIOT WINER, PH.D., Iowa State University
ROSELYNN CONRADY, Iowa State University

TRACK 6: LET'S GET STARTED
1245 – 1415 PM • W308B

INTRODUCTION TO DEFENSE MODELING AND SIMULATION

22T22

This tutorial will describe the fundamental technologies, terms and concepts associated with Modeling and Simulation (M&S) as used in the U.S. Department of Defense (DoD). The tutorial will cover key M&S terms and concepts that describe M&S technology, development, and application. It will include: (a) M&S terminology and concepts; (b) M&S technology, architectures, and interoperability protocols; and (c) The processes for developing valid representations of: DoD warfighting capabilities, threat capabilities, complex systems, and mission environments. 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. This tutorial will highlight the role of Verification, Validation and Accreditation (VV&A) in ensuring credible models and simulations meet the needs of their users, the use of M&S Standards, and the integration of M&S with DoD Mission Engineering and Digital Engineering in the development and acquisition of DoD warfighting capabilities. The tutorial will describe the characteristics and associated challenges of M&S application within DoD functional areas including Training, Analysis, Acquisition, Test and Evaluation, Planning, Medical, Mission Engineering, Autonomy, Artificial intelligence, DoD Research and Development/Employment, and Intelligence. The tutorial will also identify accessible DoD M&S information resources.

PRESENTERS

JOHN DALY, Booz Allen Hamilton
JAMES COOLAHAN, PH.D., Coolahan Associates, LLC

TRACK 7: THE R FACTOR
1245 – 1415 • W308C

EVOLUTION OF RF SIGNAL VISUALIZATION FROM SPECTRUM ANALYZERS TO AUGMENTED REALITY

22T34

We are surrounded by invisible radio frequency signals created by human technology like radio and cellular. Traditionally, we see these signals through spectrum analyzers. However, the capabilities of existing analysis tools are being outpaced by the rapid modernization of wireless networks and topologies like 5G, IoT, and Bluetooth. RF is inherently multidimensional, but conventional analyzers display signals in 2D slices, limiting real-world applicability to highly technical users. Emerging technology that combines Augmented Reality displays and AI/ML algorithms is capable of spatializing RF data into its natural 3D location for easier understanding and communication.

This tutorial will provide an overview of the evolution of RF visualization tools from flat interfaces to immersive ones that can be used to discover and map RF signals and networks. The audience will gain a broad understanding of the emergence of immersive interfaces and how they can be applied successfully to spatial data visualization. Building upon proven UI/UX principles, we will walk participants through challenges with the design and development process, theory behind decisions, and usability issues to overcome in actual deployments. Resulting best practices will be shared openly. Finally, the audience will learn about future applications of these tools and forecasted innovations as the underlying technology matures.

PRESENTERS

JAD MEOUCHY, BadVR
SUZANNE BORDERS, BadVR

TRACK 8: SIMULATION INTEROPERABILITY PART 1
1245 – 1415 PM • W305A

INTRODUCTION TO HLA

22T21

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, space simulation, cyber simulation and air traffic control simulation. This tutorial is intended for all audiences; however, some familiarity with basic principles of distributed computing is recommended.

PRESENTERS

BJÖRN MÖLLER, Pitch Technologies
KATHERINE MORSE, CMSP, JHU/APL

TRACK 9: SIMULATION INTEROPERABILITY PART 2
1245 – 1415 • W305B

LIVE, VIRTUAL AND CONSTRUCTIVE (LVC) INTEROPERABILITY 101

22T29

The purpose of this tutorial is to provide managers the necessary insight needed to support intelligent decision making when employing LVC to solve their needs. The tutorial will discuss the various solutions and domains of the technology and how it can potentially support 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, Trideum Corporation
DAMON CURRY, Pitch Technologies U.S.

TRACK 10: FROM C TO SHINING C
1245 – 1415 • W306A

SECURE PRIVATE WIRELESS NETWORK ARCHITECTURE APPLIED TO LVC ENVIRONMENTS

22T53

More expansive LVC training requirements mandate an increasingly expansive and broadly connected network – connecting many users/devices to data and applications. Users/devices interact with data and applications via a network that spans from edge to cloud. The underlying architecture must enable integration of many types of live and virtual connected systems, connection of users/systems from multiple locations, and means to connect users/devices of differing characteristics (e.g. mobile, fixed, low-latency demand, constrained bandwidth). The employment of a Heterogeneous Network (HetNet) architecture in the demanding LVC environment manages complexity while optimizing performance and security. A HetNet architecture delivers the desired connectivity and performance that enables the entire ecosystem (edge-network-datacenter-cloud) to operate as an integrated, secure LVC training platform. A HetNet approach also allows for a Zero Trust Architecture (ZTA).

A HetNet Architecture brings together wired and multiple wireless access technologies such as LTE, 5G, Wi-Fi 6, LoRaWAN, Ultra-Reliable Low-Latency Communication (uRLLC), and massive Machine-Type Communications (mMTC). The role of the network architecture is to provide secure connectivity between all nodes – most especially ensuring seamless wireless connectivity for mobile nodes. ZTA is an increasingly critical approach to any network architecture employment and can be applied to an LVC HetNet environment. ZTA spans across all components of the LVC Network including training participants and support, user/device connections and connection of data and applications no matter how they connect to the network and associated resource.

Greater adoption of wireless technology by the Department of Defense creates a revolutionary shift for IT operations that the LVC training environment should embrace. These technologies enable operators to exchange data at greater speeds, over increased bandwidths, with secure connectivity, and in support of ubiquitous access methods. LVC training must enable new transformative mission threads and potentially allow for the experimentation of the consumption of the features offered by these mediums while remaining aligned with training objectives. These developments necessitate that the underlying network provides the LVC the ability to host applications using wireless technologies.

A ZTA enables users, devices, and applications to exchange data while integrating into data centers and edge distribution nodes; all based on least-privileged access principles. Integration of massively scalable, low latency-enabled applications opens new mission capabilities and creates new demands on the LVC environment. A comprehensive HetNet architecture able to leverage diverse mobile/fixed connectivity requirements at the edge, with ZT security incorporated, provides the full potential of the LVC environment, ensuring mission success.

PRESENTERS

JASON HESTER, Cisco Systems, Inc.
ANDREW STEWART, Cisco Systems, Inc.

1430 – 1600
TRACK 1: BEST TUTORIAL
1430 – 1600 • W307A

PRACTICAL GUIDE TO LEARNING ENGINEERING

22T15

Alexander Fleming discovered penicillin. However, the Nobel Prize–winning scientist and his colleagues never developed the ability to produce the drug at scale. By June 1942, U.S. labs had only enough penicillin available to treat about ten patients. The urgency of lives being lost in the war meant that production of penicillin needed to move out of the laboratory and into mass-production. This was no longer just a scientific endeavor; it required engineering. The goals of science and engineering are different. The goal of science is to discover the truth about the world as it is. The goal of engineering is to create scalable solutions to problems using science as one tool in that endeavor.

Learning engineering is a process and practice that applies the learning sciences, using human-centered engineering design methodologies and data-informed decision-making, to support learners and their development. Learning engineering brings together professionals from different fields, including the learning sciences, assessment, learning experience design, software engineering, and data science.

Learning engineers design learning experiences, but that's not all they do. They also address the contexts and conditions that lead to great learning. These might include the architecture of physical or virtual learning environments, social structures, and learners' mindsets as well as more obvious targets such as curriculum design, educational technology, and learning analytics.

This tutorial introduces learning engineering, starting with its definition, purpose, and foundations. Next it covers the core components, beginning with the learning engineering process model and followed by the field's primary contributing disciplines: learning sciences, human-centered design, engineering, data collection, data analytics, and ethical design. This initial portion of this tutorial will give attendees a solid understanding of the discipline as well as its definitions, utility, and distinctions from related fields. We will use real-world case studies throughout to illustrate concepts.

Following this, we will outline the steps practitioners can use to form learning engineering teams and to execute applied learning engineering processes. This portion will include tools and recommended practices for uncovering learning challenges, assembling and managing lean-agile learning engineering teams, creating human-centered designs, integrating learning science, motivating learning, implementing learning technology (particularly at scale), instrumenting learning for data, and using learning analytics to continuously improve outcomes.

This tutorial is a primer suitable for anyone involved—directly or indirectly—in training, education, or talent management. This tutorial will give attendees important tools to optimize their work.

PRESENTERS

SAE SCHATZ, PH.D., Bedrock Learning, Inc.
JIM GOODELL, QIP

TRACK 2: INNOVATION AND TRAINING DESIGN
1430 – 1600 • W307B

OPERATIONAL IMPACT: QUANTIFYING TRAINING SOLUTION VALUE

22T46

The goal of training is to establish or increase knowledge and performance of skills, with improved performance realized in an operational setting. But quantifying the impact of training in operational terms is oftentimes seen as unachievable. Stakeholders are left to make acqusition decisions based on requirements met, not on how much of an impact a given training solution will have on operations.

By starting with integrating clear measures of operational impact right at the beginning of an agile product development lifecycle, insightful supporting and transfer documentation can build knowledge and skills based on clear objectives that directly leverage those measures of impact. This can then be assessed in an incremental approach, and the documents become readily adaptable to formal training requirements.

Implementing the key steps, one can best quantify the learning impact on the individual, team and organization. (1) Clearly define the identified performance gap in terms of operational impact; (2) develop impact-based learning objectives to address the gap, and (3) establish clear metrics to measure achievement of learning objectives and anticipated performance outcomes. To be successful, evaluating operational impact requires a transparent upfront needs analysis.

Using Kirkpatrick's model of training evaluation can help to ensure operational impact is evaluated across all four evaluation levels: Reaction (Was the training well received?); Learning (Did the trainees learn?); Behavior (Did this learning result in changed behaviors/transfer of training?); Impact (Did the training make the desired organizational impact?). Through this Operational Impact Analysis, one can align business indicators with skills/knowledge gained, and provide quantitative validation that training will have the desired impact. Stakeholders want to see impact in terms of time, lives, or money saved. Incorporating user-in-the-loop evaluations implementing key metrics of success during early product releases can provide operational impact indicators, and not only show the potential value of the training solution, but also guide development in identifying opportunities for increased training transfer capabilities, often in a more compressed timeline to sustainment.

This tutorial will provide attendees with insights on why Operational Impact is critical for training success, and how measuring Operational Impact can be integrated into the training development process. Implementing methods of evaluation can provide attendees with a means to formulate outcomes that will more clearly demonstrate the value and impact of their training solution - not only with initial knowledge and skill transfer, but also the overarching beneficial impact to the program office and organization.

PRESENTERS

KELLY HALE, PH.D., Draper

AMY TABER, Gemini Technologies, Inc.

TRACK 3: DESIGN APPROACHES FOR LEARNING ENGINEERING
1430 – 1600 • W307C

LEADING BY DESIGN: USER EXPERIENCE (UX) FOR THE DEPARTMENT OF DEFENSE

22T43

As data and technology become increasingly intertwined in everything we do, User Experience (UX) design — the intentional creation of an experience that offers utility and value to the end user — is even more critical to mission success for our warfighters. In the military, poorly designed experiences, often involving software, processes, and tools — those with "bad" UX — have critical consequences for our warfighter. Bad UX serves as a detriment to battlefield outcomes and mission success, overloading warfighter processing capabilities, introducing errors into the mission, and potentially compounding those errors to such an extent that it results in mission failure and loss of life.

In the modeling, simulation and wargaming communities, good UX can help:

- Generate requirements for products that are based on end user input.
- Iteratively design and test experiences with end users.
- Focus solutions on solving the right problem and avoid over-engineering solutions that are solving unnecessary problems.

This tutorial will explain the UX design process and explain how it reduces overall risk to delivery. Participants will also learn how incorporating UX design principles ensures the output of modeling and simulation is aligned to the intended application.

This tutorial is for those interested in understanding the basic principles of UX and how these principles can be applied in processes like waterfall and agile within the modeling and simulation and the U.S. Government. Project managers, software developers, and anyone who wants to deliver better experiences to the warfighter should attend. A knowledge of training is recommended but no background knowledge of UX is required to fully participate in this session.

PRESENTERS

AMANDA HAWKINS, Data Society

VEL PRESTON, CyberWorx

TRACK 4: BUILDING CONFIDENCE FROM DESIGN TO APPLICATION
1430 – 1600 PM • W307D

ACCREDITATION OF SIMULATION-BASED EXPERIMENTS AND TRAINING: BEYOND THE M&S

22T18

The Department of the Army has no individual or organization that accredits a simulation-based experiment (SIMEXp). Army Regulations require that the modeling and simulation (M&S) be accredited – but not any of the other components required to execute a SIMEXp such as the operational scenario, analysis, or computational environment (hardware and network, for example). The purpose of this tutorial is to present a framework for overall SIMEXp or training event accreditation and enable attendees to understand all the areas which must

be accredited for the overall accreditation of a SIMEXp. Accreditation of the M&S will be discussed, as it serves as the foundation for an overall accreditation, but there are other equally important components requiring separate accreditations. After participating in the tutorial, attendees will be able to identify the components of tactical and operational scenarios which must be validated by current warfighters – and that the person who accredits those aspects must have credible knowledge of the current state of doctrine, military organizations, and operational concepts (friendly and enemy) to be studied. Attendees will learn that a properly certified expert must accredit the physical and computational environment- that software, operating system, information assurance, and network updates or changes haven't impacted the performance of a previously accredited simulation. The same applies if the event is being executed in a distributed environment- what other locations have updated or changed in their environment may cause performance changes across the federation. The hardware and network on which they are running to ensure processors are robust enough to execute as required, the network transmission speeds are sufficient, and no packets are being lost during execution. Finally, attendees will learn how to design and assess the analytical methods used during a SIMEXp to ensure accreditation of the analytical portion of the SIMEXp. The analysis plan, data collection and reduction methodology, and computational methods for analyzing the data must all be documented and accredited in a peer-reviewed final report for the overall SIMEXp to be accredited. This tutorial is intended for those interested in gaining a better understanding of proper SIMEXp or training event design and why more than just the M&S must be accredited.

PRESENTERS

THOMAS YANOSCHIK, CMSP, SAIC
MAJOR SEAN FRASER, USA, CMSP, Maneuver Battle Lab, Army Futures Command
CYNTHIA DUNN, CMSP, SAIC
MAJOR LARRY BACA, USA, CMSP, Maneuver Battle Lab
STEPHEN MILLER, SAIC

TRACK 5: XR
1430 – 1600 • W308A

ANYTIME, ANYWHERE ADAPTIVE XR TRAINING

22T27

Training is often consumed in the classroom or remotely in a one-size-fits-all format with limited opportunity to practice hands-on skills in contextualized situations. Providing training which can be used anytime, anywhere and also offers the ability to "act out" or practice critical skills to instill muscle memory, embody actions, and employ critical thinking, is integral to trainees reaching proficiency. Virtual and augmented reality technologies are rapidly being adopted across the DoD for simulation, training, education, and operations, however, these component technologies are often used in isolation and require costly form factors. The benefits of these emerging technologies can be realized more fully by utilizing eXtended reality (XR), which blends a contextualized virtual environment with augmented overlays and real-world objects, on a cost-effective mobile device. When XR training applications are used, an opportunity exists to provide psychomotor practice in a highly engaging environment leading to significant gains in both primary and refresher training. Further, available evidence shows that when these XR training applications are adaptive, varying content and progression as a function of trainee proficiency, substantial gains in training efficacy are expected. This is especially evident when using artificial intelligence (AI) to allow the system to adapt training to the proficiency of the trainee, thereby enhancing training effectiveness and increasing field readiness. Providing trainees adaptive XR training anytime, anywhere using mobile devices enables consumption to be readily available and learner centered, offering an action-oriented supplement to typical classroom and remote training.

It is crucial when developing XR training solutions to evaluate the utility of the novel, contextually-based design elements and embodied interactions afforded by XR. Careful examination of these features can highlight positive and negative experiences in XR, possible improvements to usability, and future directions for evaluating the extensibility of contextualization and embodied cognition principles in the design of XR training solutions.

This Foundations Training tutorial will dive into the key elements of an XR training framework that leverages pedagogically based, formative assessments to infer trainee proficiency by providing insights into: key drivers of adaptive, accessible training in XR; potential barriers to embodied training; value-added case studies with end-user feedback; and user-centered guidelines for designing, developing and implementing mobile XR training systems. By the end of this tutorial, attendees will be able to implement effective techniques for adaptive, accessible XR training applications based on case studies of anytime, anywhere adaptive training being implemented for Tactical Combat Casualty Care training.

PRESENTERS

JOANN ARCHER, Design Interactive, Inc.
FRANK KARLUK, DLH Corporation
CLAIRE HUGHES, Design Interactive, Inc.

TRACK 6: LET'S GET STARTED
1430 – 1600 • W308B

A HISTORY OF GAMES FOR MILITARY TRAINING: FROM SHEEP KNUCKLES TO THE METAVERSE

22T31

There is evidence of games being used for business trade, future prediction, and military strategy for at least 5,000 years. In this tutorial we explore the history of games as tools of military strategy, planning, and training from 3,000BC to the present. We reveal the long evolution of the basic components that are necessary to create a complex game. Concepts that first emerged in India and Asia at the end of the last millennia are still embedded in the games that we create today.

The tutorial has four major sections:

(1) Ancient games from 3,000BC to 500AD, with a focus on the essential mechanics and the emergence of game pieces and rules.

(2) Modern game design and early computer implementations from 500AD to 1980AD, in which the mathematics of wargames emerged and offered a format that was amenable to programming in the earliest analog computers of the 1940s through 1980s workstations.
(3) Serious games and the recent embrace of the technology by military leaders at all levels. In these last forty years computer-based games have been transformed from crude experiments with the technology to a major workhorse for training in all domains and at all echelons.
(4) Finally, we speculate on the possible future impacts of the metaverse, AI, and global mobile connectivity.

PRESENTERS

ROGER SMITH, PH.D., in[3] Thinking
PETER SMITH, PH.D., University of Central Florida

TRACK 7: THE R FACTOR
1430 – 1600 • W308C

SHARING ENVIRONMENTAL DATA FOR LVC USING RIEDP

22T32

Data sharing for distributed simulation remains a difficult problem, especially when dealing with stovepipes or proprietary solutions. As a M&S standards development organization, SISO (the Simulation Interoperability Standards Organization) provides open and standardized solutions to address M&S data sharing issues.

Within SISO, the Reuse and Interoperation of Environmental Data and Processes (RIEDP) specifications simplify the terrain data sharing problems by providing standardized rules, methods, and clear semantics for exchanging data from key stages of the simulation terrain database generation process.

RIEDP concepts and components are embodied in two SISO products: the RIEDP Data Model Foundations and the RIEDP Detailed Features Description.

This tutorial provides an overview of the general terrain database creation process, how RIEDP solves the M&S terrain data sharing problem, and how RIEDP promotes reusability of database generation efforts, while leveraging commonly used GIS and simulation data formats. The tutorial focuses on the fundamental terrain/environment questions that LVC simulation federations have to address.

The key RIEDP concepts covered in this tutorial include the RIEDP Reference Process Model (RPM), the RIEDP Reference Abstract Data Model (RADM), and the use of semantic constructs and attributes to share and exchange environmental data. The tutorial will also highlight how existing formats are leveraged in RIEDP data sharing, data organization on media, use of dedicated metadata constructs, and a set of profiles for specific application sub-domains.

PRESENTERS

JEAN-LOUIS GOUGEAT, Sogitec Industries
FARID MAMAGHANI
CHRISTOPHE RIND, Sogitec Industries

TRACK 8: SIMULATION INTEROPERABILITY PART 1
1430 – 1600 • W305A

TENA, INTEROPERABILITY, AND DATA MANAGEMENT

22T13

The Test and Training Enabling Architecture (TENA) provides an advanced set of interoperability software, interfaces, and connectivity for use in joint distributed testing and training. This tutorial will discuss 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.

In constructive simulation environments, the amount of data collected in each event can be large. But in a live-virtual-constructive test or training event, when data from each individual live entity is collected in addition to range data, telemetry data, and simulation data, the amount of data collected can be astronomical. The estimate for data collected from a 16-ship F-35 formation versus 16-ship aggressor aircraft formation, embedded in a larger LVC scenario, is over 50 terabytes for a two-hour event, about half of which is video. Analyzing this data efficiently, not to mention providing immediate after-action reviews to the participants, requires a new mechanism. TRMC has developed a Knowledge Management/Big Data Analysis architecture and implementation seamlessly connected to both the TENA architecture and other range communication and storage mechanisms to tackle this problem.

PRESENTER

EDWARD POWELL, PH.D., Ed Powell Consulting

TRACK 9: SIMULATION INTEROPERABILITY PART 2
1430 – 1600 • W305B

SECURE DISTRIBUTED SIMULATION TRAINING SYSTEMS ANYWHERE, WITH OMG DDS

22T28

Integrating global simulation training systems can be a formidable challenge. Legacy simulators often use different standards for data, voice, and video. While modern architectures require the use of cloud-based distributed assets. To top it off, security requirements now force integrators to become experts in information assurance.

Winning solutions will be ones who create synthetic training environments that can quickly be assembled and reconfigured from ready-made components. How can simulation systems integrators keep pace by limiting integration time to meet these requirements? Attend this tutorial to learn how the Object Management Group's Data Distribution Service (DDS) can ease integration, while

also delivering National Security Agency tested security for distributed training systems over any transport.

DDS is an open standard that provides interoperability through a connectivity framework that meets the stringent real-time requirements of global defense industries. DDS is currently used in over one thousand deployed defense systems, it seamlessly stitches together legacy defense simulations, while adding humans and hardware in the loop, to create new secure LVC environments that can share real, augmented, and virtual realities. These environments run over DDS, either in a single lab or across multiple sites and transports, unifying disparate data models, all while enabling physics-speed response times.

This tutorial introduces the DDS and DDS Security standards. You will learn how to use the DDS Security standard to securely interoperate with real-world systems that already communicate over DDS, to distributed LVC Simulations. The tutorial will further describe how to integrate DDS with existing simulation standards, simulation object modes, and data models of any kind, allowing for a large suite of 'qualities of service' to help fine-tune performance and scalability, while also providing robust security for individual entities and topics of simulation data.

Next the tutorial will introduce you to the Real-Time WAN Transport that extends DDS capabilities to enable secure, scalable, and high-performance communication over WANs, TDL, RF and public 5G networks. The Real-Time WAN Transport uses UDP as the underlying IP transport-layer protocol to better anticipate and adapt to the challenges of diverse network conditions, device mobility, and the dynamic nature of WAN system architectures. Finally, the tutorial will highlight recent LVC Simulation user experiences with DDS and offer an overview of deployed systems using DDS in systems integration labs, and with LVC training simulators today.

This tutorial is intended for all audiences, though some familiarity with the basic principles of distributed computing is recommended.

PRESENTERS

ROBERT PROCTOR, JR., Real-Time Innovations

JOHN BREITENBACH, Real-Time Innovations

TRACK 10: FROM C TO SHINING C
1430 – 1600 • W306A

TRANSFORM YOUR TRAINING BY MIGRATING CONTENT TO CMI5

22T41

The learning and training landscape is changing rapidly with newer technologies emerging. While SCORM (Sharable Content Object Reference Model) has been the de facto eLearning industry standard, SCORM has not been extensible enough to support these technologies and does not provide enough guidance on capturing robust learner performance data.

Making the transition from SCORM to the more flexible Experience Application Programming Interface (xAPI) standard is key to supporting the vision and goals for modernizing learning within the Department of Defense while meeting the distributed learning policy (DoDI 1322.26) related to learning analytics and interoperability. SCORM and xAPI can be implemented together, but the divide is wide.

The cmi5 specification was modified in 2016 to help bridge the gap and define a set of rules for how online courses are imported, launched, and tracked using an LMS and xAPI. While cmi5 presents a promising solution, adoption across the DoD has been slow, but now there are tools and templates that are freely available from ADL to help migrate legacy content to the improved cmi5 specification.

This tutorial will help attendees better understand how to utilize cmi5 and the freely available course templates from cmi5 CATAPULT to migrate, create and test their courseware to ensure they conform to the cmi5 specification. After an introduction to cmi5 and why eLearning standards are a necessary component of modern learning ecosystems, the tutorial will walk attendees through converting legacy SCORM content to cmi5 using the cmi5 course templates as well as describing the importance of testing in ADL's cmi5 Content Test Suite.

The cmi5 specification plays an important role in the DoD's learning modernization, facilitating progress in migrating from SCORM-based LMS-centric courseware to a distributed learning "ecosystem" that delivers diverse learning opportunities across federated platforms. With the cmi5 Conformance Test Suite and cmi5 example course templates, there are now ways to validate that content conforms to the cmi5 specification and migrate existing courseware, which will help increase adoption of the specification and move toward the DoD's Total Learning Architecture goals.

PRESENTER

BRIAN MILLER, Rustici Software

JOANN ARCHER is a Senior Research Associate in the XR Division at Design Interactive, and has 11 years of experience in system engineering. Her work focuses on the design, development, and usability of AR training and job aid solutions, specifically ensuring that the solutions are optimized for their specific users, tasks, and context of use. She is currently leading multiple efforts to design and develop AR systems that train tactical combat casualty care tasks. She holds a Master's degree from the University of Central Florida in Engineering Management and a Bachelor's degree from the University of Florida in Industrial and Systems Engineering. Besides her work at Design Interactive, she has had a variety of work experience in operational and requirements development and management for NASA working in the Shuttle, Spacelab, and International Space Station programs.

MATT ARCHER has over 25 years of simulation and training experience, primarily military focused, with a proven track record for proposing, developing, and delivering quality software products. Matt did his graduate work with NASA (Kennedy Space Center), which was responsible for introducing simulation systems to orbiter processing. He then went on to 5 years with ECC as a software engineering working on cutting edge simulation systems, including F-16, Javelin, and CCTT. Matt was responsible for proposing and coding the PC-based graphics subsystem for the EST 2000, which is now the Army's pre-eminent simulated marksmanship trainer, with more than 200 systems fielded worldwide. During this time, Matt also focused on PC-based real-time flight simulation and graphics programming. For the past 10 years, Matt has been the Senior Vice President of Engineering and then the COO at Design Interactive. He has been responsible for establishing solid engineering design principles, coding standards, performing system design, and selecting appropriate technologies for over 30 projects. During his tenure, the engineering staff have grown from 6 to over 20, he has been responsible for implementing agile software development, installing a quality assurance department, and ensuring on-time delivery of software projects that include desktop, web, mobile, and augmented reality components. He stays on the cutting edge of augmented and virtual reality technology and has delivered systems to both military and commercial clients that emphasize biometrics, intelligent tutoring, and personalized training to help Design Interactive attain the goal of optimizing the human dimension.

MAJOR LARRY BACA, USA, CMSP, is a graduate of New Mexico State University and holds a Master Degree from the University of Central Florida. He is an active duty Army Modeling and Simulation Officer with a background as both an Infantry and Signal Officer. He has leadership and staff experience at the Company, Battalion, and Division level. MAJ Baca completed two combat deployments to Afghanistan as well as a third peacekeeping mission in Kosovo. His current focus is on experimentation supporting Army Modernization as a project lead in the Modeling and Simulation Branch (MSB) at the Maneuver Battle Lab (MBL), Fort Benning, Georgia. Currently he supports mainly constructive experimentation both locally at the MBL and distributed through the Battle Lab Simulation Collaborative Environment (BLSCE). Larry is a certified Modeling and Simulation Professional (CMSP).

PEYTON BAILEY is a Research Associate II at Design Interactive, Inc. His research supports technology development that augment human performance through adaptive cognitive skills training, empirical evaluation of decision-support tools, and virtual reality (VR) hardware and content guidelines to mitigate cybersickness. Peyton holds two Bachelor of Science degrees studying Biology and Health & Societies, with a focus on physiology, and was an Embrey Engineering Fellows Scholar.

JAKE BORAH is the co-owner of Borah Enterprises LLC. He is a Senior Operational Research, Modeling and Simulation Analyst supporting the Air Force Operational Test and Evaluation Center, Detachment 2. 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 BS from the United States Air Force Academy and a Master of Aeronautical Science degree from Embry-Riddle Aeronautical University.

JOSEPH BORDERS, M.S., ShadowBox LLC, isa cognitive psychologist working with ShadowBox LLC. He studies the development of expertise and creates scenario-based training to bring novices up to speed faster. He is also working on his Ph.D. at Wright State University (Human Factors Psych).

SUZANNE BORDERS is the CEO & founder of BadVR, the world's first immersive data analytics platform. With her background in psychology, she previously led product and UX design at 2D data analytics companies including Remine, CREXi, and Osurv. A recipient of Magic Leap's Independent Creator's Program grant, and an SBIR Phase 1 grant from the National Science Foundation, Suzanne thrives at the intersection of product design, immersive technology, and data. In her spare time, she travels for inspiration (75 countries and counting), and is proud to be a published poet and former punk rocker. Her creative hero is Alejandro Jodorowsky, who has inspired Suzanne to take a completely unique and innovative approach to all of her work. She also has 19 tattoos, and is a big believer in the artistry of technology and the technicality of art.

JOHN BREITENBACH is a Regional Field Application Engineering Manager for Real-Time Innovations, Inc. (RTI). John has over 30 year's experience designing real-time, connected systems for industrial, medical, consumer, and military systems.

ADELICIA "ADDIE" CLIFFE is a partner at Crowell & Moring in its Government Contracts and International Trade practice groups, and she co-chairs Crowell's national security practice. Addie counsels defense contractors on a broad range of government contracts compliance issues, with a particular focus on cross-border issues such as domestic preferences, supply chain security requirements, export controls, Foreign Military Sales and Foreign Military Financing, and national security reviews by the Committee on Foreign Investment in the U.S.

ROSELYNN CONRADY is a Ph.D. candidate in Mechanical Engineering and Human Computer Interaction at Iowa State University and a National Science Foundation Graduate Research Fellow. Her research investigates how extended reality can be used to explore and mitigate human stress responses, especially in neurodivergent populations.

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) in December 2012 after 40 years of service. 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.

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 U.S. 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.

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.

MARIA ALEJANDRA "JANA" DEL-CERRO is a partner in Crowell & Moring's Washington, D.C. office and a member of the firm's International Trade and Government Contracts groups. Jana recently rejoined the firm after serving in the Regulatory and Multilateral Affairs division of the Directorate of Defense Trade Controls (DDTC's) Policy office at the U.S. Department of State. Jana counsels U.S. and non-U.S. clients from a broad range of sectors on all aspects of export compliance, including day-to-day compliance counseling, developing compliance programs, completing commodity jurisdiction and classification analysis, conducting export trainings, and performing M&A due diligence and coordinating related regulatory submissions. She regularly represents companies before the Departments of Commerce, State, and Treasury in responding to government inquiries, conducting internal reviews, and in voluntary disclosures and compliance investigations.

CYNTHIA DUNN, CMSP, currently works for SAIC as the Modeling and Simulation Team Manager for the Modeling and Simulation Branch of the Maneuver Battle Lab (MBL), Fort Benning, GA. She supports constructive experimentation locally at MBL and distributed through the Battle Lab Collaborative Simulation Environment (BLCSE). Cindy holds a B.S. in Computer Science from Keene State College in New Hampshire. She is a graduate of the Defense Language Institute, a former Russian linguist with the U.S. Army, and is a Certified Modeling and Simulation Professional (CMSP).

MAJOR SEAN FRASER, USA, CMSP, is a graduate of the McDaniel College and holds a Master's Degree from the Naval War College on Defense and Strategic Studies. He is an active duty Simulation Operations Officer in United States Army with a background as an Armor Officer. His past assignments include leadership positions in armored, infantry, motorized (Stryker), and sustainment type units. He has combat experience in Iraq and Afghanistan and additional deployments to the Middle-East and Europe supporting other enduring operations. Sean currently focuses on experimentation in support of Army modernization as the Project Leader for the Modeling and Simulation Branch (MSB) of the Maneuver Battle Lab (MBL) on Fort Benning, Georgia. He has participated in live, virtual, and constructive experimentation throughout his career as both a user and provider of M&S capabilities. Currently he supports experimentation locally at the MBL and distributed through the Battle Lab Simulation Collaborative Environment (BLSCE). Sean is a Certified Modeling and Simulation Professional (CMSP).

BENJAMIN GOLDBERG, PH.D., is a Senior Scientist at the U.S. Army CCDC Soldier Center, Simulation and Training Technology Center (STTC) in Orlando, FL. His research in Modeling & Simulation focuses on deliberate competency development, adaptive experiential learning in simulation-based environments, and how to leverage AI tools and methods to create personalized learning experiences. Currently, he is the lead scientist on a research program developing adaptive training solutions in support of the Synthetic Training Environment. Dr. Goldberg is co-creator of the award winning Generalized Intelligent Framework for Tutoring (GIFT) and holds a Ph.D. from the University of Central Florida.

JIM GOODELL is an expert on learning technologies and data standards, and is Vice Chair of the IEEE Learning Technology Standards Committee. As Senior Analyst with Quality Information Partners (QIP) he leads standards development for the U.S. Department of Education sponsored Common Education Data Standards (ceds.ed.gov) and works with stakeholders from early learning, K12, postsecondary, and workforce organizations. He chairs the IEEE Adaptive instructional Systems (AIS) Standards Interoperability Subgroup. He serves on the IEEE IC Industry Consortium on Learning Engineering (ICICLE) Steering Committee, co-chaired the first ICICLE conference, and leads the ICICLE Competencies, Curriculum, and Credentials SIG. In 2016, he co-authored Student-Centered Learning: Functional Requirements for Integrated Systems to Optimize Learning.

JEAN-LOUIS GOUGEAT holds a Master's degree in Electronics and Communications and an Engineering degree in Telecommunications (1987). He has been a senior project manager at SOGITEC since 2001. He has 30 years of experience with R&D projects for the French MoD, and more specifically 25 years in simulation projects for training of military personnel, including company level training with Live simulation, Flight training with Virtual simulation and Command & Staff training with Constructive simulation. He is in charge of the development of Distributed Mission Operation (DMO) and Live Virtual Constructive (LVC) activities at Sogitec. In this area, he was project manager of the AXED project aiming at developing the DMO/LVC in the French Air Force. He has been involved in various international efforts within NATO, from the genesis of the NATO PATHFINDER programme to the on-going MSG-165 on Mission Training via Distributed Simulation among Alliance Air Forces. He is the Chairman of the Simulation Interoperability Standard Organisation (SISO) Product Development Group (PDG) on the Reuse and Interoperation of Environmental Data and Process (RIEDP).

KELLY HALE, PH.D., is a Principal Member of the Technical Staff at the Draper Laboratory, where she is transforming human systems integration through innovative, user-centered solutions to meet challenging customer needs. Previously, Kelly was SVP of Applied Research at Design Interactive, Inc. where she gained 15 years experience in human systems integration research and development across areas of augmented cognition, multimodal interaction, training sciences, and virtual and augmented reality environments. She received her B.S. in Kinesiology/Ergonomics Option from the University of Waterloo in Ontario, Canada, and her Masters and Ph.D. in Industrial Engineering, with a focus on Human Factors Engineering, from the University of Central Florida.

AMANDA HAWKINS currently serves as the Director of Innovation for Data Society. In this position she is responsible for the development and instruction of innovation courses and concepts to organizations globally. Prior to joining Data Society, she was the founder and CEO of Friendly Minds, an educational consulting company founded to help parents during COVID, and Ursus USA, an innovation and human centered design company driving innovation in bureaucracies. She retired from the U.S. Navy as a Commander in 2018. Before starting her businesses, Amanda served in various operational and staff roles in the U.S. Navy as a Naval Flight Officer. Her final operational tour was in command of a maritime and patrol reconnaissance aircraft squadron operating the P-8A Poseidon in Europe engaging in sea control and power projection alongside our allies and partners. Other operational tours include combat operations globally conducting maritime patrol aviation, intelligence and reconnaissance, and aircraft carrier operations as the assistant navigator. Staff tours culminated in her qualification as a Joint Qualified Officer after serving on the Joint Chiefs of Staff creating cyberspace requirements for the warfighter. She also served on the Chief of Naval Operations staff conducting Flag Officer detailing where she developed and implemented strategic career progression and succession planning for executive leaders. During her time in the Navy she participated in several combat and peacekeeping operations across the globe. She has received numerous personal and unit awards for her work including the 2018 Captain Joy Bright Hancock award for inspirational leadership.

JASON HESTER is a Strategist for Defense Business Development and Capture at Cisco Systems, Inc. He develops and implements strategies to support the U.S. Defense Department with effective technology implementations. Prior to joining Cisco, Jason served 25 years on active duty in the U.S. Army, as both an aviator and an IT professional. His numerous past assignments include Chief Information Officer of the U.S. Army War College, and Director of Plans for U.S. Army Network Enterprise Technology Command (NETCOM).

CLAIRE HUGHES is a Research Associate in the eXtended Reality Division at Design Interactive. Her focus is on emerging technology delivery to diverse stakeholders, including the Joint Program Committee, and the Army Futures Command. Her

current work is centered around the design and delivery of XR training technologies across the Department of Defense, with a focus on driving user-centered design for scalable adoption of AR/VR/MR training and job aid solutions. These projects include efforts for the Joint Program Committee producing an AR training program for TCCC Curriculum and for Army Futures Command providing an XR training solution for the M1A2 Abrams Tank. She holds a Master of Science in Human Factors and Systems Engineering from Embry-Riddle Aeronautical University and a Bachelor of Science in Mathematics from Hillsdale College.

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. Currently, he serves as the Program Manager for The Stephen Still Institute for Sustainable Transportation and Logistics at the University at Buffalo, and also serves as the Technical Director for its Motion Simulation Laboratory. 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), simulation for advanced air mobility, experiential learning within next-generation engineering curriculum design, and Design for Additive Manufacturing. Dr. Hulme is a Certified Modeling and Simulation Professional (CMSP).

MOHAMMADREZA JALAEIAN, PH.D., is a Postdoctoral Research Associate at ShadowBox Training and MacroCognition LLC. He works on design and development of learning systems that accelerate expertise in professional domains and higher education. He researches in expertise, decision making, online/distributed simulators, perceptual-cognitive skills, and human-machine interaction. He has had responsibility for consult with business departments to support, develop, and deliver learning solutions, provide strategic support to clients and leaders in moderate situations, and consult in instructional design and project management.

RANDOLPH M. JONES, PH.D., CMSP, Senior Artificial Intelligence Engineer and co-founder at SoarTech, 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 previously 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 M.S. (1987) and Ph.D. (1989) degrees from the Department of Information and Computer Science at the University of California, Irvine.

DANIELLE JULIAN, M.S., is a Research Scientist at AdventHealth's Nicholson Center. Her current research focuses on robotic surgery simulation and effective surgeon training. Her current projects include intelligent tutoring system, rapid prototyping of surgical education devices, and the evaluation of robotic simulation systems. She is a certified instructor for surgical robotics courses delivered to surgeons and OR staff members. Her background includes research in Human Factors and learning and training to enhance the higher-order cognitive skills of military personnel. 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, Graduate Simulation Certificate in Instructional Design, and a B.S. in Psychology.

FRANK J. KARLUK, MA, PMP, NRP has over 30 years' experience in the medical field in multiple areas to include advancing patient care on the battlefield, direct patient care in the hospital setting, instruction, and curriculum development. Twenty-one of these years were in service to the United States Army with various assignments that included combat operations in the Helmand Province of Afghanistan. During this deployment he served as the Non-Commissioned Officer in Charge of an Army MEDEVAC detachment that was tasked to directly support the Special Operations Command during high-risk kinetic operations involving active warfare, including lethal force. He and his unit were the first Army MEDEVAC unit to conduct in flight blood resuscitation and he is credited with being the first flight paramedic to perform an emergency escharotomy in flight under the remote direction of a trauma surgeon. He maintains active licensure and certifications and is currently a faculty member at The George Washington University. Mr. Karluk has been invited to speak at international conferences and has been a spokesperson within the Medical/ Chemical, Biological, Radiological, Nuclear, and high yield Explosives (CBRNE) community before the Joint Chiefs, and other high level governmental leadership post 9/11. Mr. Karluk holds a master's degree in Emergency and Disaster Management and graduated with high honors. He continues to share is experiences in the development of future medical simulation and training efforts and has been cited in multiple efforts that have expanded the abilities of a multidisciplinary practitioner community that includes medical providers both inside and outside the military. Most recently he managed the over $90M efforts within the Defense Health Agency, Medical Simulation portfolio, and designed and implemented curriculum within the U.S. Department of State.

ADAM KOHL, Virtual Reality Applications Center, is a Ph.D. Candidate at Iowa State University in Mechanical Engineering and Computer Engineering.

KURT LESSMANN is the co-founder and Chief Technology Officer of Trideum Corporation headquartered in Huntsville, AL. Trideum, an Honor Roll Member of Inc. 5000, focuses on several core competencies: Live, Virtual and Constructive (LVC) Interoperability, Test & Evaluation (T&E), Training Solutions, Cybersecurity and User Centered Design. 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, and lives in Huntsville, AL.

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.

JAD MEOUCHY is the CTO and co-founder of BadVR. Originally from Virginia, Jad holds dual B.S. degrees in Computer Engineering and Psychology from Virginia Tech, and attended the Thomas Jefferson High School for Science and Technology. Over 15 years, Jad has founded and exited multiple startups, and engaged his healthy passion for user-friendly product innovation and engineering architecture. He specializes in software architecture and development, data analytics, and AR/VR development. As the Principal Investigator for BadVR, he has led the development of proprietary algorithms and techniques for spatialization and visualization of data that has resulted in awarded patents.

BRIAN MILLER is known as one of the world's foremost xAPI thought leaders and a chief contributor to the cmi5 working group. He was the architect and principal engineer for ADL's cmi5 CATAPULT, a freely available, open source cmi5 content player and conformance test suite for use by Department of Defense stakeholders and eLearning technology vendors as a way to test and validate content for cmi5 conformance. He has over 20 years of professional and eLearning industry experience. In 2012, Brian joined Rustici Software and has worked on cmi5 CATAPULT, Project Tin Can, standards support, and open source libraries as well as leading the engineering team.

STEPHEN MILLER is a graduate of the U.S. Army Officer Candidate School and holds a Bachelor's Degree in Psychology from Campbell University, North Carolina. He is currently completing a Master of Business and Technology Degree from the Uni-

versity of Georgia's Terry College of Business. He is a retired Corps of Engineers officer from the United States Army. His assignments included service in various Airborne, Infantry, Armor, and Engineer units as an Infantryman and Combat Engineer. His most recent assignments include Brigade Engineer and Battalion Operations Officer in the 3rd Armor Brigade Combat Team/3rd Infantry Division. Steve currently serves as the Technical Project Manager for the Modeling and Simulation Branch (MSB) of the Maneuver Battle Lab (MBL), Fort Benning, Georgia. He has participated in virtual and constructive experimentation both locally at the MBL and distributed through the Battle Lab Collaborative Simulation Environment (BLCSE). Steve is certified in the U.S. Army Capability Development Course as well as CompTIA A+ CE/Security+ CE.

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.Sc. in computer science and technology after studying at Linkoping University and Imperial College, London. Mr. Moller 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. Moller also served as secretary in the NATO MSG-080 group for Security in Collective Mission Training.

TRISH MULLIGAN-RENAUD is owner and Chief Learning Officer for TTD Learning Solutions, a female owned business bringing back the lost art of design in Instructional Design and Learning Experience Design (LXD). Mrs. Mulligan-Renaud has over 25 years' experience in education, including 5 years as a Special Education Teacher at the elementary level. Over the last 20 years, Mrs. Mulligan-Renaud was an Instructional Systems Specialist (ISS) for the U.S. Army and U.S. Air Force, as well as working for the Advanced Distributed Learning (ADL) Co-Lab. Mrs. Mulligan-Renaud taught the Army's Common Faculty Development - Developer's Course (CFD-DC) and has significant experience in incorporating learning experience design practices for Initial Military Training (IMT) and Professional Military Education (PME) for both Enlisted Personnel and Military Officers, the Transportation Security Administration (TSA), and the U.S. Patent and Trademark Office (USPTO).

ROBERT MURRAY is a retired Boeing Technical Fellow with 33 years of experience in the research and design of flight simulators for high performance military aircraft. He was principal investigator of research for both training and engineering simulators. Bob designed hardware and software solutions for simulation networking and computational systems. He is presently a contract engineer for SimPhonics, working as a primary contributor and draft editor for the upcoming overhaul of IEEE 1278.1 Distributed Interactive Simulation standard, commonly known as DIS Version 8.

EMILY NEWSOME is Assistant Manager and Research Associate with ShadowBox. She is interested in exploring how ShadowBox can improve critical thinking in both established and emerging areas, such as social work, sales, healthcare, and artificial intelligence.

S. K. "SUE" NUMRICH, PH.D., CMSP, began her career at the engineering level of modeling and simulation and moved gradually into parallel and distributed simulation. She led a panel for The Technical Cooperation Program (U.S., UK, CA, AUS, NZ) in distributed simulation and represented the U.S. on the NATO Studies, Analysis and Simulation (SAS) panel as the simulation expert. Sue served as the Director of Technology for the Defense Modeling and Simulation Office. Since 2005 she has been a research staff member at the Institute for Defense Analyses where she has worked with the use of military simulation, the incorporation of human activity and behavior into simulations, and the validation of a variety of simulations. She founded and was the first chair of the Tutorial Board. Sue authored four book chapters and over 50 technical papers and has had two academic appointments. A Fellow of the Acoustical Society of America, Sue was selected as the I/ITSEC 2018 Fellow.

MICHAEL J. O'CONNOR, CMSP, 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, Chairman of the SISO Executive Committee, and Editor of the Gateway Filtering Language standard. He has served as the chair of the I/ITSEC Simulation Subcommittee and 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.

MIKEL D. PETTY, PH.D., is the Senior Scientist for Modeling and Simulation in the Information Technology and Systems Center and an Associate Professor of Computer Science at the University of Alabama in Huntsville. He previously served as Director of UAH's Center for Modeling, Simulation, and Analysis for ten years. 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 development since 1990 in areas that include verification and validation methods, simulation interoperability and composability, human behavior modeling, multi-resolution simulation, and simulation software frameworks. He has published over 235 research articles, chapters, and papers and has been awarded over $17 million in research funding. He served on National Research Council and National Science Foundation committees on modeling and simulation, is a Certified Modeling and Simulation Professional, and is Editor-in-Chief of the scholarly journal SIMULATION: Transactions of the Society for Modeling and Simulation International. He has served as dissertation advisor to twelve graduated Ph.D. students in four different academic disciplines: Modeling and Simulation, Computer Science, Industrial and Systems Engineering, and Computer Engineering. His former students include the first two people to receive Ph.D.s in Modeling and Simulation at Old Dominion University and the first five people to receive Ph.D.s in Modeling and Simulation at UAH.

EDWARD T. POWELL, PH.D., was the 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), and the Joint Simulation System (JSIMS). He then worked in the intelligence community on architectures for integrating large-scale diverse ISR systems. He is currently working on integrating TENA with broader DoD-wide Knowledge Management and Big Data Analysis as well as Cyber Testing systems. Currently, he owns his own consulting company specializing in Simulation and Systems Architecture and Engineering.

VEL PRESTON, GS-15, is the Chief of Innovation and Design for CyberWorx, Department of the Air Force, where since 2017 she has grown an elite, human-centered, future-focused problem-solving practice uniquely capable of solving for complexity. Prior to CyberWorx, Ms. Preston spent 15 years in Silicon Valley teaming with everyone from engineers to executives to envision and build intuitive, useful, compelling, & productive experiences for people. With extensive experience in enterprise & consumer tech, startups, medical & more, Ms. Preston starts with defining the human needs at the core of complex problems, then blends user-centered design, systems thinking, futures, and business logic to unite teams in clear pathways to rapid, actionable ways ahead. Ms. Preston holds an M.S. in Human Factors Psychology with a specialty in Human-Computer Interaction, and a B.A. in Cognitive Psychology. She has designed and delivered the Innovation Design course to USAFA cadets, as well as courses in Statistics, Learning & Memory, Research Methods, Developmental Psychology, and more to students at the University of South Dakota. Ms. Preston believes that there is no single path to solving for complexity, and no single repeatable process to achieve an innovative mindset or solutions.

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PRESENTER BIOGRAPHIES

ROBERT PROCTOR, JR. is a Lead Field Application Engineer for Real-Time Innovations. He received his B.S. from Embry-Riddle Aeronautical University in Aerospace Studies and his M.S. from the University of South Florida in Engineering Management. Rob has over 24 years of experience in A&D Embedded SW development. Prior to his time as a Field Application Engineer, he developed and implemented real time embedded software at major Aerospace and Defense (A&D) Corporations. His roles have included developing software and system designs, mission-management and display processing systems. Rob is also involved with the SISO Layered Simulation Architecture (LSA) Study Group.

SAE SCHATZ, PH.D., is the Chief Product Officer and Cofounder of Bedrock Learning, Inc. From 2015 to 2022, she served as the director of the Advanced Distributed Learning (ADL) Initiative, a government program for research, development, and policy stewardship. Under her leadership, the program grew its impact across the US and international defense sectors, and she sparked the community's pursuit of the "future learning ecosystem." Before joining the civil service, Sae worked as an applied human–systems scientist in both business and academia, and she formerly held an assistant professorship with the University of Central Florida's Institute for Simulation and Training. Sae is a prolific writer and presenter as well as an accomplished graphic designer who often uses those skills to enhance books, presentations, and infographics.

JOHN SCHMITT, ShadowBox Training, LLC — B.S., Journalism, Northwestern University; U.S. Marine Infantry officer; Author: Warfighting (MCDP 1), Expeditionary Operations (MCDP 3), Planing (MCDP 5), Command & Control (MCDP 6), Capstone Concept for Joint Operations (CCJO, 2009 & 2012)

DYLAN SCHMORROW, PH.D., Chief Scientist at SoarTech, 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 MS degrees in Psychology and Philosophy. He retired from the U.S. Navy as a Captain in 2013, after 20 years of service.

PETER SMITH, PH.D., is an Associate Professor of Games and Interactive Media at the University of Central Florida's Nicholson School of Communication and Media. His research is primarily in serious games covering military training, mental health, and prosthetics training for children. Dr. Smith is passionate about increasing awareness and viability of work in serious games. Dr. Smith is a founder of the I/ITSEC Serious Games Showcase & Challenge, runs multiple game jams, is an active member of the local game development community, and a has served as a consultant on or the developer of numerous games. Dr. Smith received his Ph.D. in Modeling and Simulation from the University of Central Florida.

ROGER SMITH, PH.D., has over 30 years of experience creating solutions for the Department of Defense, Intelligence Community, and Healthcare. He is the CEO of in[3], a consulting company focused on the applications of new technologies. He was previously a Chief Technology Officer for AdventHealth System; CTO for the U.S. Army PEO for Simulation, Training, and Instrumentation (STRI); and VP and CTO for Titan Corp (an L3Harris company). He holds a Ph.D. in Computer Science, an M.S. in Statistics, and a B.S. in Applied Mathematics. He has published 3 professional textbooks on simulation, 18 book chapters, and over 100 journal and conference papers. His most recent book is "Thinking About Innovation". He has received service awards from the U.S. Army, NSA, Association for Computing Machinery, Society for Computer Simulation, and AFCEA.

KAY M. STANNEY, PH.D., is CEO and Founder of Design Interactive (DI), Inc., a woman-owned, small business focused on empowering people with innovative technology. She is recognized as a leader in eXtended Reality (XR, Virtual Reality, Augmented Reality, Mixed Reality), especially as related to training, human performance, and cybersickness. In 2019, she was inducted into the National Academy of Engineering (NAE) for her contributions to human factors engineering through virtual reality technology and strategic leadership. In recognition of her impact on the XR field, Stanney was inducted into the inaugural 2022 class of the IEEE Virtual Reality Academy. In 2022, she was honored to receive UB's Distinguished Alumni Award from the School of Engineering and Applied Sciences. In 2021, she was honored by being named an Outstanding Industrial Engineer by Purdue University. Stanney received a B.S. in Industrial Engineering from the State University of New York at Buffalo, after which time she spent three years working as a manufacturing/quality engineer for Intel Corporation in Santa Clara, California. She received her Masters and Ph.D. in Industrial Engineering, with a focus on Human Factors Engineering, from Purdue University, after which time she spent 15 years as an Industrial Engineering professor at the University of Central Florida (UCF). Kay and her husband John have three amazing sons.

ANDREW D. STEWART is a National Security and Government Senior Strategist for Cybersecurity at Cisco Systems, Inc. He has been with Cisco for the last 3 years after retiring from almost 30 years in the U.S. Navy where he last served as the Chief of Cyber Operations for Fleet Cyber Command/U.S. TENTH Fleet. He also served as the Commanding Officer and Program Manager of the Navy Cyber Warfare Development Group (NCWDG). He is a graduate of the Sellinger School of Business, Loyola University Maryland and the Cybersecurity and Policy Executive Program from the Harvard Kennedy School. He is also a graduate from the Naval Postgraduate School Monterey, CA, the United States Naval Academy, the National Defense University, and the Naval War College.

TOM YANOSCHIK, CMSP, is a graduate of the United States Military Academy and holds a Masters Degree from the University of Texas at Austin. He is a retired Artilleryman from United States Army. His assignments included service in cannon artillery and multiple launched rocket system units and as a Fire Support Officer in the 3rd Ranger Battalion. Tom currently serves as the SAIC Site Manager for the Modeling and Simulation Branch (MSB) of the Maneuver Battle Lab (MBL), Fort Benning, Georgia. He has participated in virtual and constructive experimentation both locally at the MBL and distributed through the Battle Lab Simulation Collaborative Environment (BLSCE). Tom is a certified Program Management Professional (PgMP), Project Management Professional (PMP) and Modeling and Simulation Professional (CMSP).

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, Simone Youngblood 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 U.S. 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.

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TUESDAY, 29 NOVEMBER

PAPERS

ROOM	SESSION/CHAIR	1400	1430	1500
W 307 A	**SIM 1: Lighting Up Cyber Across the Network** Chair: Ray Compton	22117 A Cyber Attack Forecasting System	22408 Simulated Cyber Analyst for Network Vulnerability Assessment	22299 The Software-Based Cyber-Physical Interface for ICS/SCADA: Delivering High Quality Cyber Training, Testing, and Mission Rehearsal Using Gaming Interfaces
W 307 B	**ECIT 1: Cloudy then Raining Bits and Bytes** Chair: Simon Skinner	22450 Hardware Optimization for Immersive Simulation & Photogrammetric Environment Generation	22438 Reducing Image Generator Footprint with Virtualization	22380 Building a Cloud-Native Toolset for Flexible, Continuous, Automated Simulation-Based Testing
W 307 C	**TR 1: Sharing the Global Training Ecosystem** Chair: Perry McDowell	22252 Development of a Searchable, Web-Based Repository for Sharing AR/VR Training Assets	22297 Cloud Full of Predators: Virtualizing RPAs for Constructed Training Exercises	22313 DoD Learning Enclave: Realizing the Defense-wide Learning Ecosystem
W 307 D	**HPAE 1: Combining Realities to Improve Performance** Chair: Jeffrey Raver	22376 The Effect of Environment Immersivity on Perspective-Taking Task Performance	22253 Mixed Reality and the Multi-Capable Aircraft Maintainer	22110 Resident or Virtual: The Impact of Foundational Education Modality on Army Instructor Job Performance Outcomes
W 308 A	**ED 1: Change at High Speed: Re-Modeling Learning in the Air Force** Chair: Sandra Velez	22256 The Future of U.S. Air Force Public Affairs Media Training Using Real-Play Immersive Technology	22265 A Multi-method Learning Framework for Multi-capable Airmen	22284 Modernizing High-end Flight Training for the Contested Fight
W 308 B	**ECIT 2: Unsupervised ML: Should We Trust the Machines?** Chair: Jeremy Lanman, Ph.D.	22127 Machine Learning at the Edge: UAV Automatic Takeoff and Landing	22173 The AI Director: From Document to Documentary	22184 Correlated Histogram Clustering

ROOM	SESSION/CHAIR	1600	1630	1700
W 307 A	**SIM 2: We're Only Humans** Chair: Gordon Gattie, Ph.D.	22174 Human Mobility 2049 – It's Time to "ACTT" (Aeronautical Conceptualization for Tomorrow's Transportation)	22331 Human Fatigue Modeling in Wargaming Simulations	22287 Human Behavior Models for Adaptive Training in Mixed Human-Agent Training Environments
W 307 B	**ECIT 3: Bootcamp for AIs** Chair: Marcus Boyd	22243 Trends in Machine Learning for Adaptive Automated Forces	22469 Peering through the Fog of War	22351 High-Level Orders for Intelligent Agents to Rapidly Generate a Realistic Battlespace
W 307 C	**TR 2: All Train, No Pain: The Future of Medical Simulation** Chair: Mark Parsons	22142 Virtual Advancement of Learning for Operational Readiness: Implementation and Transition of a VR Medical Simulation Capability for TCCC Responders	22182 A Vision for the Future of Military Medical Simulation	22308 Identifying Unique Physiological Indicators of Virtual Reality Sickness
W 307 D	**HPAE 2: Gaming: The Human** Chair: Benjamin Goldberg, Ph.D.	22398 Accessing the States of Enhanced Cognition: Implications for Military Mission Preparation	22410 Inferring Player and Team Models in a Minecraft Search-and-Rescue Task	22407 Exploring the Ability to Employ Virtual Entities Outdoors at Ranges Beyond 20 Meters
W 308 A	**ED 2: Solving Thorny Problems in Distributed Health Care** Chair: William Pike, Ph.D.	22228 Can You Standardize Military Health System Training and Education Data Collection While Allowing the Services to Control how Training is Administered and Conducted?	22342 Challenging the Status Quo in Nursing Education: Digital Transformation with Virtual Reality	
W 308 B	**PSMA 1: Technological Enhancement for Readiness — Finding the Balance** Chair: Robert Epstein	22123 Effectively Integrating Technology into Wargames	22283 Strategic Planning for Aircrew Readiness: How MS&T Must Be Balanced with Live-Fly Experiences to Support Future Mission Goals	

ROOM	SESSION/CHAIR	0830	0900	0930
W 307 A	**SIM 3: Intelligent Agents Make Smarter Models** Chair: Mark Covey	22234 Using Agent-Based Modeling and Simulation to Evaluate Collision Avoidance in UAS Swarms	22367 Multi-agent Reinforcement Learning with a Scout Mission Scenario in RIDE	22409 Autonomous Generation of Intelligent Patterns of Life
W 307 B	**ECIT 4: Interfacing with End Users: Use Cases in Practice** Chair: LCDR Michael Natali, Ph.D., USN	22304 An Approach and Three-Dimension Taxonomy for Adaptive User Interfaces	22378 Perspectives for the Future: Considerations for UAM Aircraft Information Requirements	22475 AI Enabled Maneuver Identification via the Maneuver ID Challenge
W 307 C	**TR 3: VR Training for the Wild Blue Yonder** Chair: Liz Gehr, Ph.D.	22116 Emulation of a Flying Boom Operator: The Dynamic Effects	22195 Quantitative Analysis of Virtual-Reality Device Effectiveness for Cockpit Procedures Training	22231 Pilot Training Transformation: Early Results and Lessons Learned
W 307 D	**HPAE 3: A Performance Problem: Look at the Data** Chair: Andrew Koch	22371 A Smart Approach for After Action Review Visualization and Analysis	22126 Designing HMI for Mission Assessment of Human-Machine Teaming	22289 Tackling the Human Performance Data Problem: A Case for Standardization
W 308 A	**ED 3: Data Driven Transformations** Chair: Aaron Presnall, Ph.D.	22133 Machine Learning for Automated Generation of Multiple Choice Test Items	22251 Redefining Journeyman and Master Craftsman Competency Models	22467 Implementation and Importance of Science of Learning Best Practices within Learning Organizations

ROOM	SESSION/CHAIR	1030	1100	1130
W 300–THEATRE	**Best Paper Session 1** Chair: Jennifer Winner	22190 ECIT: Building a World With Deepfake Content – Who Needs Real Data?	22157 SIMULATION: Semantic Fidelity Reckoning: Toward Normalized Simulation Interoperability in Digital Engineering	22461 PSMA: Enhancing the Total Learning Architecture for Experiential Learning
W 307 A	**SIM 4: You Can't Handle the Ground Truth** Chair: Tim Woodard	22306 Adversarial Scene Generation for Virtual Validation of Off-Road Autonomous Vehicles	22273 Creating Common Ground: The Impact of Terrain on Distributed Mission Operations	22345 Using One World Terrain in Live Training Exercises
W 307 C	**TR 4: Getting Better All the Time: Strategies for Improving Individual Training** Chair: Jimmy Moore, CMSP	22460 Individualized Training – The Missing Link of True Training Effectiveness & Capability Sustainment	22437 Operational Assessment of a CV-22 Virtual Maintenance Training Solution	
W 307 D	**HPAE 4: Gray's Autonomy** **Chair: Robert Wallace**	22328 Multimodal, Adaptable, and Dynamic Human Autonomy Team Relationships	22232 Automation and Augmentation on Human Performance in eVTOL Flight	22269 Modeling Operator Performance Considering Autonomy Level in Partially Autonomous Vehicles
W 308 A	**ED 4: Don't Be Lame Get Your Head in the Game** Chair: Marryam Chaudhry	22271 Influence of Physicality on Neuroplasticity and Cognitive Gains in Virtual Environments	22277 Can Priming Learners Prior to Learning Lead to Higher Learning Gain?	

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ROOM	SESSION/CHAIR	1400	1430	1500
W 300–THEATRE	**Best Paper Session 2** Chair: Steve Godby	22218 EDUCATION: How, When, and What to Adapt: Effective Adaptive Training through Game-Based Development Technology	22325 TRAINING: VR Training System for Rehabilitation and Compensatory Analysis after Stroke	22258 HPAE: Automated Assessment of Team Performance Using Multimodal Bayesian Learning Analytics
W 307 A	**SIM 5: Say Digital Twins: I Dare You** Chair: Nathan Jones	22180 Geospatial Data Pipelines for Urban Digital Twin Applications	22242 An Immersive Content Creation Pipeline for Information Age Training	22166 Drone Control to Major Tom: Anomaly Detection and Digital Twins
W 307 B	**ECIT 5: Analysis Against Deep Threats and Adversarial Attacks** Chair: Monique Brisson	22203 Probabilistic Analysis for Structuring an Effective Defense against Adversarial Attacks	22230 The Use of AI/ML to Replicate Threat Behavior for Nonlinear Simulation	
W 307 D	**SIM 6: Simulation for Transforming Training** Chair: Toni Hawkins-Scribner, Ph.D.	22257 Streamlining Point Cloud Post-Processing Using Principal Component Variance, Distribution Evaluation, and Other Statistical Metrics	22137 Estimating Relative Combat Effectiveness Using Simulations	22189 Context-aware and Perceptually Realistic Synthetic Wrapping for Military Training and Exercises

ROOM	SESSION/CHAIR	1600	1630	1700
W 307 A	**SIM 7: Fueling Future Simulation** Chair: Huntley Bodden	22316 Modeling Fuel Replenishment Logistics and Impacts of Alternative Synthetic Fuels	22233 Driving Vehicle Maintenance Decisions using Predictive and Prognostic Maintenance Technology	22485 Sensor Fuzed Munition Modeling Framework
W 307 B	**ECIT 6: Improving Capabilities through AI** Chair: Ashley Howell	22466 Designing a Rapid Adaptive Content Registry (RACR) for Adaptive Learning	22394 Application of Artificial Intelligence for Dynamic Military Information Prioritization	22468 An Empirical Evaluation of the PERvasive Learning System (PERLS): Perceptions of Impact
W 307 C	**TR 5: Transforming Military Training through Immersive Technologies** Chair: Marwane Bahbaz	22164 Augmented Reality for Marine Fire Support Team Training	22285 Transforming Team Training: the Influence of Virtual Environment Features	22280 Blending AR and VR to Increase Situational Awareness during Training
W 307 D	**HPAE 5: Medical Mayhem and Meta Cognition** Chair: Paul Andrzejewski	22431 Adaptability for Human Performance Excellence: Updating the Conceptual Model of Expertise for the Modern Work Environment	22171 Eye Motion Tracking for Desktop-Based Medical Image Interpretation Training	22338 EEG Features for Assessing Skill Levels During Laparoscopic Surgical Training
W 308 A	**ECIT 7: XR: Improving the Way We Train** Chair: Evan Oster	22229 Translating AR/VR Research into Useable Information for Non-researchers	22281 Novel Method For Modular Integration of Tactile Input Devices into Portable AR/VR Training Systems	22357 Improve Aircraft Maintenance Sortie Production Rates with Mixed Reality and Artificial Intelligence Assistance in Maintenance Processes
W 308 B	**PSMA 2: Fragile Data, Fragile Behavior** Chair: Nick Giannias	22114 Step One: Install Plumbing – Criticality of Data Management for AI/ML	22124 State Antifragility: An Agent-Based Modeling Approach to Understanding State Behavior	

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THURSDAY, 1 DECEMBER

PAPERS

ROOM	SESSION/CHAIR	0830	0900	0930
W 307 A	**SIM 8: I, Too, Like to Live Dangerously** Chair: Jennifer Murphy, Ph.D.	22302 Cybernetic Distortion: Training in an Uncanny Virtual World	22405 Anomalous Responses to Highly Immersive Virtual Reality Displays	
W 307 B	**ECIT 9: Patterns of Life: Too Human for AI?** Chair: Tyson Kackley	22111 Detecting Patterns of Life Using Deep Learning	22235 Large-Scale Pattern of Life Simulation for Real Time Applications	22372 Achieving Intelligent Behavior in Multi-Domain Electromagnetic Warfare Environments Through Neural Network-Informed Search and Self-Play
W 307 C	**TR 6: NextGen Training** Chair: Mike Thorpe	22412 Directed Self-Regulated Learning Via Learning System Support	22427 Training Alchemy – Effectively Converting Traditional Training Content to Gold	22434 Game Jams – A New Form of Rapid Prototyping
W 307 D	**HPAE 6: Training Agents Into Allies** Chair: Abhishek Verma	22323 Human-Autonomy Teaming in Immersive Environments	22240 Virtual Reality Testbed for Multi-Human Multi-Agent Adaptive Teamwork and Training	22175 Social Media Synthesis Using AI for Decision Support
W 308 A	**ECIT 8: Potpourri** Chair: Erica Dretzka	22106 Recommendation System in an Integrated Digital Training Environment for the 5th Generation Air Force	22381 Enhancing Warfighter Training and Performance using Motion Tape Elastic Fabric Sensors	
W 308 B	**PSMA 3: Training: Accelerate, Optimize, Transform** Chair: Paul Butler	22188 Enabling a Sharing Economy to Accelerate Change in Immersive Training	22213 Optimizing Simulators Logistics & Product Support	22340 Realizing Training Transformation through Feature Based Product Line Engineering

ROOM	SESSION/CHAIR	1030	1100	1130
W 307 A	**SIM 9: Modern Computing** Chair: Justin Tygart	22403 Real-time Simulation Executive Architecture and Subsystem Containerization	22448 Leveraging Parallel Processing to Accelerate Large-Scale Simulations on GPUs	22293 Dr. Strangemodel: Assessing Model Based Systems Engineering (MBSE) in the U.S Air Force Simulator Common Architecture Requirements and Standards (SCARS) Initiative – the Way Forward
W 307 B	**ECIT 10: The Three C's: Collaboration, Communication, and Cloud** Chair: Deri Draper-Amason, Ph.D.	22436 Improving Measurement of Trust Dynamics in Human-Agent Teams	22353 Enhancing Wargaming Fidelity with Communication Modeling Services	22454 Automated 3D Terrain Generation at Global Scale Based on Satellite Imagery and Cloud Computing
W 307 C	**TR 7: The Tipping Point: Learning Synergy** Chair: Nir Keren, Ph.D.	22324 Don't Judge a Book by its coVR: Learning and Training in Virtual Reality; the Effects of Two Levels of Immersion	22379 What's My Status? – Best Practices for Self-Led Debriefs	22459 Multimedia and Immersive Training Materials Influence Impressions of Learning but Not Learning Outcomes
W 307 D	**SIM 10: Test and Assess from Land, Sea, and Air** Chair: Jonathan Schlueter	22147 Simulation-based Approach to Synthesizing Maritime Interaction Scenarios for Testing Autonomy	22207 Development and Validation of a Rapid Threat Assessment Simulation	22449 LOD and Texture Mapping for Real-Time Radar Ground Map Simulation
W 308 B	**PSMA 4: It's about the Data — and the Standards Too!** Chair: David Roberts		22141 Analyzing the Motivation for Adaptive Instructional System (AIS) Standards	22202 Technology is the Easy Part: Transforming Business Processes for Interoperability

ROOM	SESSION/CHAIR	1330	1400	1430
W 307 A	**SIM 11: Blending Training Environments** Chair: Mike Fagundes	22161 Integration of Live and Synthetic Environments for Improved Cyberspace Training	22215 Simulation for Security Force Assistance Climate Adaptation Training	22361 A Federated Multimodal Simulation Environment for Studying Interactions between Different Modes of Travel
W 307 B	**ECIT 11: Enhanced Warfighting Through Automated Rendering, Assessment and Data Fusion** Chair: Beth Pettitt, Ph.D.	22282 Innovation, It's in VR: How the Spanish Military Health School is Revolutionizing Workforce Training with VR Immersive Rooms	22292 Automating Video After Action Reviews for Military Medical Training Exercises	22330 ORB-Recon: Live 3D Reconstruction from Wearable Video
W 307 C	**TR 8: Digital Threading the Needle** Chair: Scott Schutzmeister	22138 Data-Driven Behavioral Modelling of an Air Defence System	22239 Using Digital Twins in Maintenance Operations and Training	

BEST PAPERS

BP 1 WEDNESDAY, 30 NOVEMBER • 1030 • W300-THEATRE

BEST PAPER SESSION 1

Session Chair: Jennifer Winner, USAF
Session Deputy: Duke Tucker, Pinnacle Solutions

22190 ECIT: Building a World With Deepfake Content – Who Needs Real Data?
Graham Long, Thales

22157 SIMULATION: Semantic Fidelity Reckoning: Toward Normalized Simulation Interoperability in Digital Engineering
Ric Roca, Daniel Winton, The Aerospace Corporation

22461 PSMA: Enhancing the Total Learning Architecture for Experiential Learning
Mike Hernandez, Robby Robson, Ph.D., Timothy Welch, Fritz Ray, Eduworks Corporation; Benjamin Goldberg, Ph.D., U.S. Army DEVCOM SC STTC; Kevin Owens, Applied Research Laboratories: The University of Texas at Austin; Shelly Blake-Plock, Yet Analytics, Inc.

BP 2 WEDNESDAY, 30 NOVEMBER • 1400 • W300-THEATRE

BEST PAPER SESSION 2

Session Chair: Steve Godby, USAF
Session Deputy: Brian Overy, Aechelon Technology, Inc.

22218 EDUCATION: How, When, and What to Adapt: Effective Adaptive Training through Game-Based Development Technology
Summer Rebensky, Ph.D., Samantha Perry, Ph.D., Aptima, Inc.; Wink Bennett, Ph.D., Air Force Research Laboratory (711 HPW/RHW)

22325 TRAINING: VR Training System for Rehabilitation and Compensatory Analysis after Stroke
Gabriel Cyrino, Najara Zago, Roberta Aramaki, Lísias Camargo, Alexandre Cardoso, Edgard Lamounier, Alcimar Soares, Federal University of Uberlândia

22258 HPAE: Automated Assessment of Team Performance Using Multimodal Bayesian Learning Analytics
Caleb Vatral, Gautam Biswas, Naveeduddin Mohammed, Institute for Software Integrated Systems – Vanderbilt University; Benjamin Goldberg, Ph.D., U.S. Army DEVCOM SC STTC

EDUCATION

ED 1 TUESDAY, 29 NOVEMBER • 1400 • W308A

CHANGE AT HIGH SPEED: RE-MODELING LEARNING IN THE AIR FORCE

Session Chair: Sandra Velez, Arorae Corporation
Session Deputy: Josh Looper, AFLCMC/WLZT

22256 The Future of U.S. Air Force Public Affairs Media Training Using Real-Play Immersive Technology
Lori Hodge, U.S. Air Force; Andrew S. Clayton, Air University

22265 A Multi-Method Learning Framework for Multi-Capable Airmen
Richard B. Ayers, Booz Allen Hamilton

22284 Modernizing High-End Flight Training for the Contested Fight
JJ Walcutt, Ph.D., Jay Spohn, SAIC; Thomas Harley, USAF

ED 2 TUESDAY, 29 NOVEMBER • 1600 • W308A

SOLVING THORNY PROBLEMS IN DISTRIBUTED HEALTH CARE

Session Chair: William Pike, Ph.D., U.S. Army DEVCOM SC STTC
Session Deputy: Tim Cooley, Dynamx Consulting

22228 Can you Standardize Military Health System Training and Education Data Collection While Allowing the Services to Control how Training is Administered and Conducted?
Amanda van Lamsweerde, Erin Baker, NAWCTSD; Jeffrey Beaubien, Ph.D., Aptima, Inc.; Ruben Garza; Brett Lord, Defense Health Agency; Cali Fidopiastis, Katmai Corp; Michael Guest, Sandra Hughes, U.S. Navy

22342 Challenging the Status Quo in Nursing Education: Digital Transformation with Virtual Reality
Juliet Kolde, Jeffrey Olsen, Nightingale College; Jack Pottle, Molly Schleicher, Oxford Medical Simulation

ED 3 WEDNESDAY, 30 NOVEMBER • 0830 • W308A

DATA DRIVEN TRANSFORMATIONS

Session Chair: Aaron Presnall, Ph.D., Jefferson Institute
Session Deputy: Steve Monson, The Boeing Company

22133 Machine Learning for Automated Generation of Multiple Choice Test Items
Sowmya Ramachandran, Jeremy Ludwig, Stottler Henke Associates

22251 Redefining Journeyman and Master Craftsman Competency Models
Ted Dennis, TED text LLC; Deri Draper-Amason, Ph.D., Katherine Smith, Jessica Johnson, Virginia Modeling, Analysis & Simulation Center – Old Dominion University

22467 Implementation and Importance of Science of Learning Best Practices within Learning Organizations
Robert Siegle, Scotty Craig, Arizona State University; Noah Schroeder, Wright State University

ED 4 WEDNESDAY, 30 NOVEMBER • 1030 • W308A

DON'T BE LAME GET YOUR HEAD IN THE GAME

Session Chair: Marryam Chaudhry, XR2LEAD
Session Deputy: Randy Billard, Virtual Marine

22271 Influence of Physicality on Neuroplasticity and Cognitive Gains in Virtual Environments
Leslie Van Peteghem, Edwards AFB; Andrew S. Clayton, Air University

22277 Can Priming Learners Prior to Learning Lead to Higher Learning Gain?
Tavion Yrjo, Nir Keren, Ph.D., Angela Leek, Peter Evans, Andrew Lawson, Iowa State University

EMERGING CONCEPTS & INNOVATIVE TECHNOLOGIES

ECIT 1 TUESDAY, 29 NOVEMBER • 1400 • W307B

CLOUDY THEN RAINING BITS AND BYTES

Session Chair: Simon Skinner, Thales Training and Simulation
Session Deputy: Neil Stagner, Marine Corps Systems Command

22450 Hardware Optimization for Immersive Simulation & Photogrammetric Environment Generation
Jonathan Hawes, Karl Rosenberger, RAVE Computer

22438 Reducing Image Generator Footprint with Virtualization
Matt Moy, RAVE Computer

22380 Building a Cloud-Native Toolset for Flexible, Continuous, Automated Simulation-Based Testing
Jeremy Loomis, Alex Matthews, NextGenFederal Systems

ECIT 2 TUESDAY, 29 NOVEMBER • 1400 • W308B

UNSUPERVISED ML: SHOULD WE TRUST THE MACHINES?

Session Chair: Jeremy Lanman, Ph.D., U.S. Army PEO STRI
Session Deputy: Shannon Craig, MAK Technologies

22127 Machine Learning at the Edge: UAV Automatic Takeoff and Landing
Anastacia MacAllister, Ph.D., Rey Nicolas, General Atomics; Alicja Kwasniewska, SIMAai

22173 The AI Director: From Document to Documentary
David Noever, Joseph Regian, PeopleTec, Inc.

22184 Correlated Histogram Clustering
Randal Allen, Ph.D., CMSP, Brice Brosig, Lone Star Analysis

ECIT 3 TUESDAY, 29 NOVEMBER • 1600 • W307B

BOOTCAMP FOR AIS

Session Chair: Marcus Boyd, CAE USA
Session Deputy: Eugene Pursel, USSTRATCOM

22243 Trends in Machine Learning for Adaptive Automated Forces
Austin Starken, United States Army; Sean Mondesire, Bruce Caulkins, Annie Wu, University of Central Florida

22469 Peering through the Fog of War
Deanna Franceschini, Cole Engineering Services, Inc.; Song Park, Anne Logie, Manuel Vindiola, Priya Narayanan, DEVCOM Army Research Lab

22351 High-Level Orders for Intelligent Agents to Rapidly Generate a Realistic Battlespace
Brian Mills, Robert Ducharme, CAE USA Defense and Security

ECIT 4 WEDNESDAY, 30 NOVEMBER • 0830 • W307B

INTERFACING WITH END USERS: USE CASES IN PRACTICE

Session Chair: LCDR Michael Natali, Ph.D., USN, NAWCTSD
Session Deputy: John Killilea, Ph.D., NAWCTSD

22304 An Approach and Three-Dimension Taxonomy for Adaptive User Interfaces
Spencer Kohn, Athena Johnson, Robert Jacobs, Perceptronics Solutions; Ewart de Visser, De Visser Research, LLC

22378 Perspectives for the Future: Considerations for UAM Aircraft Information Requirements
Maria Chaparro Osman, Maureen Namukasa, Kendall Carmody, Bhoomin Chauhan, Gervauhgn Berkel, Meredith Carroll, Ph.D., Florida Institute of Technology

22475 AI Enabled Maneuver Identification via the Maneuver ID Challenge
Jeremy Kepner, MIT Lincoln Laboratory Supercomputing Center; Kaira Samuel, Yan Wu, Morgan Schaefer, MIT; Kyle "Gouge" McAlpin, MIT USAF AI Accelerator; Matthew LaRosa, Devin Wasilefsky, USAFA; Brandon Swenson, USAF; Dan Zhao, NYU

ECIT 5 WEDNESDAY, 30 NOVEMBER • 1400 • W307B

ANALYSIS AGAINST DEEP THREATS AND ADVERSARIAL ATTACKS

Session Chair: Monique Brisson, AFRL
Session Deputy: Eugene Pursel, USSTRATCOM

22203 Probabilistic Analysis for Structuring an Effective Defense against Adversarial Attacks
Nickolas Vlahopoulos, University of Michigan; Syed Mohammad, Ph.D., DHS Science and Technology Directorate; Geng Zhang, Sungmin Lee, Michigan Engineering Services

22230 The Use of AI/ML to Replicate Threat Behavior for Nonlinear Simulation
Charles Etheredge, William Marx, Kyle Russell, Timothy Hill, Daron Drown, Intuitive Research and Technology

ECIT 6 WEDNESDAY, 30 NOVEMBER • 1600 • W307B

IMPROVING CAPABILITIES THROUGH AI

Session Chair: Ashley Howell, ADL Initiative
Session Deputy: Wesley Fine, Momentum Aviation Group (MAG), Inc.

22466 Designing a Rapid Adaptive Content Registry (RACR) for Adaptive Learning
Benjamin Nye, Ph.D., Aditya Jain, Dilan Ramirez, Daniel Auerbach, Mark Core, Ph.D., William Swartout, Ph.D., University of Southern California, Institute for Creative Technologies

22394 Application of Artificial Intelligence for Dynamic Military Information Prioritization
Jennifer M. Riley, Ph.D., Timothy Whalen, Audrey Zlatkin, Design Interactive, Inc.

22468 An Empirical Evaluation of the PERvasive Learning System (PERLS): Perceptions of Impact
Scotty Craig, Wendy Barnard, Arizona State University; Dawn Riddle, Ph.D., Laura Milham, Ph.D., Karen Gordon, Advanced Distributed Learning Initiative

ECIT 7 WEDNESDAY, 30 NOVEMBER • 1600 • W308A

XR: IMPROVING THE WAY WE TRAIN

Session Chair: Evan Oster, Aptima, Inc.
Session Deputy: Johnny Powers, LMCO

22229 Translating AR/VR Research into Useable Information for Non-researchers
James Belanich, Ph.D., Frank Moses, Ph.D., Emily Fedele, Institute for Defense Analyses; Brian Flowers, Susannah Hoch, Aptima, Inc.; Wink Bennett, Ph.D., Air Force Research Laboratory (711 HPW/RHW)

22281 Novel Method for Modular Integration of Tactile Input Devices into Portable AR/VR Training Systems
Jad Meouchy, Suzanne Borders, BadVR

22357 Improve Aircraft Maintenance Sortie Production Rates with Mixed Reality and Artificial Intelligence Assistance in Maintenance Processes
Dane Stevenson, USAF

ECIT 8 THURSDAY, 1 DECEMBER • 0830 • W308A

POTPOURRI

Session Chair: Erica Dretzka, Chief Digital & AI Office
Session Deputy: Monique Brisson, AFRL

22106 Recommendation System in an Integrated Digital Training Environment for the 5th Generation Air Force
Dirk Thijssen, Rik Bosma, Netherlands Aerospace Center (NLR)

22381 Enhancing Warfighter Training and Performance using Motion Tape Elastic Fabric Sensors
Kenneth Loh, Ph.D., Shih-Chao Huang, Yun-An Lin, UC San Diego

ECIT 9 THURSDAY, 1 DECEMBER • 0830 • W307B

PATTERNS OF LIFE: TOO HUMAN FOR AI?

Session Chair: Tara Kilcullen, ZYGOS Consulting
Session Deputy: Tyson Kackley, MCSC DC, SEAL, M&S Division

22111 Detecting Patterns of Life Using Deep Learning
Javier Garza, Patrick Rupp, Lockheed Martin; Anastacia MacAllister, Ph.D., General Atomics

22235 Large-Scale Pattern of Life Simulation for Real Time Applications
Nick Giannias, Evan Harris, CMSP, CAE; Stijn Herfst, uCrowds; Roland Geraerts, Utrecht University; Alistair Thorpe; Aidan Hobson Sayers, Hadean Supercomputing

22372 Achieving Intelligent Behavior in Multi-Domain Electromagnetic Warfare Environments Through Neural Network-Informed Search and Self-Play
Michael Ganger, Gerardo Leal, General Dynamics

ECIT 10 THURSDAY, 1 DECEMBER • 1030 • W307B

THE THREE C'S: COLLABORATION, COMMUNICATION, AND CLOUD

Session Chair: Deri Draper-Amason, Ph.D., Virginia Modeling, Analysis & Simulation Center – Old Dominion University
Session Deputy: Mike Lokuta, CAE

22436 Improving Measurement of Trust Dynamics in Human-Agent Teams
Cherrise Ficke, Kendall Carmody, Daniel Nguyen, Isabella Piasecki, Arianna Addis, Mohammed Akib, Amanda Thayer, Ph.D., Jessica Wildman, Meredith Carroll, Ph.D., Florida Institute of Technology

22353 Enhancing Wargaming Fidelity with Communication Modeling Services
Ha Duong, Keysight Technologies; Jeffrey Weaver, SCALABLE Network Technologies

22454 Automated 3D Terrain Generation at Global Scale Based on Satellite Imagery and Cloud Computing
Arno Hollosi, Thomas Menzel-Berger, Hannes Walter, Daniel Lahm, Blackshark.ai GmbH

ECIT 11 THURSDAY, 1 DECEMBER • 1330 • W307B

ENHANCED WARFIGHTING THROUGH AUTOMATED RENDERING, ASSESSMENT AND DATA FUSION

Session Chair: Beth Pettitt, Ph.D., U.S. Army CCDC SC STTC
Session Deputy: Luis Velazquez, Marine Corps Systems Command

22282 Innovation, It's in VR: How the Spanish Military Health School is Revolutionizing Workforce Training with VR Immersive Rooms
David Moreno, Maria Madarieta, Virtualware; Valentín Gonzalez Alonso, Antonio del Real Colomo, EMISAN Spanish Military Health School

22292 Automating Video After Action Reviews for Military Medical Training Exercises
Nicholas Walczak, Brian VanVoorst, Elias Noyes, Raytheon BBN Technologies; Mark Mazzeo, Jack Norfleet, Ph.D., U.S. Army DEVCOM SC STTC

22330 ORB-Recon: Live 3D Reconstruction from Wearable Video
David Ramirez, General Dynamics Mission Systems

HUMAN PERFORMANCE, ANALYSIS AND ENGINEERING

HPAE 1 TUESDAY, 29 NOVEMBER • 1400 • W307D

COMBINING REALITIES TO IMPROVE PERFORMANCE

Session Chair: Jeffrey Raver, SAIC
Session Deputy: Tyler Gates, Brightline Interactive

22376 The Effect of Environment Immersivity on Perspective-Taking Task Performance
Michael Kozhevnikov, Norfolk State University; Maria Kozhevnikov, Harvard Medical School

22253 Mixed Reality and the Multi-Capable Aircraft Maintainer
Thomas O'Brien, United States Air Force

22110 Resident or Virtual: The Impact of Foundational Education Modality on Army Instructor Job Performance Outcomes
Christina Parker, USAACE (U.S. Army Aviation Center of Excellence), Leonard Momeny, WOCC (Warrant Officer Career College), Davin Knolton, ACCMA (Army Civilian Career Management Activity)

HPAE 2 TUESDAY, 29 NOVEMBER • 1600 • W307D

GAMING: THE HUMAN

Session Chair: Benjamin Goldberg, Ph.D., U.S. Army DEVCOM SC STTC
Session Deputy: Samantha Dubrow, Ph.D., The MITRE Corporation

22398 Accessing the States of Enhanced Cognition: Implications for Military Mission Preparation
Maria Kozhevnikov, Harvard Medical School

22410 Inferring Player and Team Models in a Minecraft Search-and-Rescue Task
David Pynadath, Ph.D., Volkan Ustun, USC Institute for Creative Technologies; Nikolos Gurney; Stacy Marsella; Hala Mostafa, Raytheon Technologies Research Center; Pedro Sequeira; Peggy Wu

22407 Exploring the Ability to Employ Virtual Entities Outdoors at Ranges Beyond 20 Meters
John Morris, United States Army; Perry McDowell, MOVES Institute; Quinn Kennedy, Clay Greunke, Naval Postgraduate School; Kevin Hernandez, Michael Maulbeck, Virtual Reality Rehab

HPAE 3 WEDNESDAY, 30 NOVEMBER • 0830 • W307D

A PERFORMANCE PROBLEM: LOOK AT THE DATA

Session Chair: Andrew Koch, NAWCAD
Session Deputy: Klainie Nedoroscik, Dignitas

22371 A Smart Approach for After Action Review Visualization and Analysis
Christopher Young, Lockheed Martin Rotary and Mission Systems; Richard Schaffer, Lockheed Martin; Jennifer Phillips, Ph.D., Allison Hancock, Ph.D., Marc Pfahler, Cognitive Performance Group; Marcus Mainz, Luke Cardelli, Breck Perry, Covan Group, LLC; Gwen Campbell, Ph.D., Audrey Zlatkin, Costas Koufogazos, Design Interactive, Inc.

22126 Designing HMI for Mission Assessment of Human-Machine Teaming
Amy Dideriksen, Ph.D., Collins Aerospace; Adriana Avakian, TheIncLab; Thomas Schnell, Ph.D., University of Iowa Operator Performance Lab

22289 Tackling the Human Performance Data Problem: A Case for Standardization
Alexxa Bessey, Luke Waggenspack, Brian Schreiber, Aptima, Inc.; Wink Bennett, Ph.D., Air Force Research Laboratory (711 HPW/RHW)

HPAE 4 WEDNESDAY, 30 NOVEMBER • 1030 • W307D

GRAY'S AUTONOMY

Session Chair: Robert Wallace, 29 Training System Squadron
Session Deputy: Sean Carey, USAF/AMC/A3TD

22328 Multimodal, Adaptable, and Dynamic Human Autonomy Team Relationships
Daniel Barber, Lauren Reinerman-Jones, Ryan Wohleber, Jeremiah Folsom-Kovarik, Soar Technology, Inc.

22232 Automation and Augmentation on Human Performance in eVTOL Flight
Samantha Emerson, Ph.D., Cait Rizzardo, Kent Halverson, Aptima, Inc.; Maria Chaparro Osman, Florida Institute of Technology; Steve Ellis, Andrew Anderson, Don Haley, AETC Det 62

22269 Performance Considering Autonomy Level in Partially Autonomous Vehicles
Jessie E. Cossitt, Ph.D., Viraj R. Patel, Daniel W. Carruth, Ph.D., Victor J. Paul, Cindy L. Bethel, Ph.D., Mississippi State University

HPAE 5 WEDNESDAY, 30 NOVEMBER • 1600 • W307D

MEDICAL MAYHEM AND META COGNITION

Session Chair: Paul Andrzejewski, HigherEchelon, Inc.
Session Deputy: Susan Harkrider, Director, Modeling and Simulation Division, Night Vision & Electronic Sensors Directorate (NVESD)

22431 Adaptability for Human Performance Excellence: Updating the Conceptual Model of Expertise for the Modern Work Environment
Coreen Harada, Ashley Inbody, Andrea Ray, SAIC

22171 Eye Motion Tracking for Desktop-Based Medical Image Interpretation Training
Chanler Cantor, Matthew Schultz, William Marx, Intuitive Research and Technology Corporation; Junjian Huang, Andrew Smith, University of Alabama at Birmingham

22338 EEG Features for Assessing Skill Levels During Laparoscopic Surgical Training
Takahiro Manabe, Yaoyu Fu, University at Buffalo SUNY; Pushpinder Walia; Xavier Intes; Suvranu De; Lora Cavuoto; Anirban Dutta

HPAE 6 THURSDAY, 1 DECEMBER • 0830 • W307D

TRAINING AGENTS INTO ALLIES

Session Chair: Abhishek Verma, Airbus
Session Deputy: Tiffany Peterson, Arorae Corporation

22323 Human-Autonomy Teaming in Immersive Environments
Haochen Wu, Bogdan Epureanu, The University of Michigan, Ann Arbor; Charne Folks; Jonathon Smereka; A. Emrah Bayrak

22240 Virtual Reality Testbed for Multi-Human Multi-Agent Adaptive Teamwork and Training
Joseph Salisbury, Ross Bobb, Virgil Barnard, William Casebeer, Ph.D., David Huberdeau, Riverside Research Institute

22175 Social Media Synthesis using AI for Decision Support
Evan Harris, CMSP, Maher Chaouachi, Martin Durocher, Alex Emirov, Nick Giannias, Jaspreet Kaur, Rakesh Tiwari, CAE

POLICY, STANDARDS, MANAGEMENT AND ACQUISITION

PSMA 1 TUESDAY, 29 NOVEMBER • 1600 • W308B

TECHNOLOGICAL ENHANCEMENT FOR READINESS - FINDING THE BALANCE

Session Chair: Robert Epstein, Leidos
Session Deputy: Syed Mohammad, Ph.D., DHS Science and Technology Directorate

22123 Effectively Integrating Technology into Wargames
Jennifer McArdle, CMSP, Eric Hilmer, Improbable

22283 Strategic Planning for Aircrew Readiness: How MS&T Must be Balanced with Live-fly Experiences to Support Future Mission Goals
JJ Walcutt, Ph.D., Clay Percle, William Mott, Merrick Green, CMSP, Jay Spohn, SAIC; Thomas Harley, USAF

PSMA 2 WEDNESDAY, 30 NOVEMBER • 1600 • W308B

FRAGILE DATA, FRAGILE BEHAVIOR

Session Chair: Nick Giannias, CAE
Session Deputy: Gregory Kratzig, Ph.D., Royal Canadian Mounted Police

22114 Step One: Install Plumbing – Criticality of Data Management for AI/ML
Anastacia MacAllister, Ph.D., General Atomics; Daniel Javorsek, Ph.D., USAF AFOTEC DET 6/CC; Louis Dube, USAF AFOTEC DET 6/SD; Patrick Rupp, Lockheed Martin

22124 State Antifragility: An Agent-Based Modeling Approach to Understanding State Behavior
Rebecca Law, Ph.D., Research Innovations, Inc.

PSMA 3 THURSDAY, 1 DECEMBER • 0830 • W308B

TRAINING: ACCELERATE, OPTIMIZE, TRANSFORM

Session Chair: Paul Butler, The MITRE Corporation
Session Deputy: Marco Lassus, U.S. Air Force Simulators Division

22188 Enabling a Sharing Economy to Accelerate Change in Immersive Training
Krissa Watry, Christina Padron, Victoria Claypoole, Ph.D., Stephen Hopp, Dynepic, Inc.; Margaret Merkle, AFLCMC/WNS

22213 Optimizing Simulators Logistics & Product Support
Richard Swain, Joseph Gerling, Christal Green, Christopher Covert, Michael Baldwin, Tonita Davis, U.S. Air Force Simulators Division

22340 Realizing Training Transformation through Feature Based Product Line Engineering
Brett Tainter, Boeing; Randy Pitz, BigLever Software

PSMA 4 THURSDAY, 1 DECEMBER • 1030 • W308B

IT'S ABOUT THE DATA - AND THE STANDARDS TOO!

Session Chair: David Roberts, Transform Affinity
Session Deputy: Kevin Gupton, Applied Research Laboratories: The University of Texas at Austin

22141 Analyzing the Motivation for Adaptive Instructional System (AIS) Standards
Robert Sottilare, Ph.D., Soar Technology, Inc.

22202 Technology is the Easy Part: Transforming Business Processes for Interoperability
Ashley Howell, Andy Johnson, The Advanced Distributed Learning Initiative (SETA Contractor); Lockwood Hills; Anne Marie Dinardo, The Advanced Distributed Learning Initiative (SETA Contractor); SimIS; Sae Schatz, Ph.D., Former ADL Director; Lora Muchmore, Department of Defense Chief Information Officer (DoD CIO)

SIMULATION

SIM 1 TUESDAY, 29 NOVEMBER • 1400 • W307A

LIGHTING UP CYBER ACROSS THE NETWORK

Session Chair: Ray Compton, LMI
Session Deputy: Miranda Frost, LogiCore Corporation

22117 A Cyber Attack Forecasting System
C Savell, GCAS Incorporated; Ambrose Kam, Lockheed Martin; Brett Tucker, Nataliya Shevchenko, Carnegie Mellon University - Software Engineering Institute – CERT Division

22408 Simulated Cyber Analyst for Network Vulnerability Assessment
Ning Wang, University of Southern California; Eric Holder, U.S. Army Research Laboratory

22299 The Software-Based Cyber-Physical Interface for ICS/SCADA: Delivering High Quality Cyber Training, Testing, and Mission Rehearsal using Gaming Interfaces
Scott Thompson, Rembrandt Bukowski, CACI, Inc.

SIM 2 TUESDAY, 29 NOVEMBER • 1600 • W307A

WE'RE ONLY HUMANS

Session Chair: Gordon Gattie, Ph.D., NAVSEA
Session Deputy: Thomas Kehr, Ph.D., CESI

22174 Human Mobility 2049 – It's Time to "ACTT" (Aeronautical Conceptualization for Tomorrow's Transportation)
Kevin Hulme, Ph.D., CMSP, The Stephen Still Institute for Sustainable Transportation and Logistics (SSISTL)

22331 Human Fatigue Modeling in Wargaming Simulations
Megan Morris, AFRL; Bella Veksler, Tier1 Performance Solutions; Birken Noesen, Cubic; Jessica Tuttle, University of Dayton Research Institute; Bruce Carpenter, RCG; Phitina Tran, Glenn Gunzelmann, Ph.D., AFRL

22287 Human Behavior Models for Adaptive Training in Mixed Human-Agent Training Environments
Joost van Oijen, Royal Netherlands Aerospace Centre

SIM 3 WEDNESDAY, 30 NOVEMBER • 0830 • W307A

INTELLIGENT AGENTS MAKE SMARTER MODELS

Session Chair: Mark Covey, Krush Acquisitions
Session Deputy: Jennifer Riley, Ph.D., Design Interactive, Inc.

22234 Using Agent-Based Modeling and Simulation to Evaluate Collision Avoidance in UAS Swarms
Luis Osegueda, Mustafa Akbas, Embry-Riddle Aeronautical University

22367 Multi-agent Reinforcement Learning with a Scout Mission Scenario in RIDE
Volkan Ustun, Rajay Kumar, Lixing Liu, USC Institute for Creative Technologies; Nicholas Patitsas, 22nd Marine Expeditionary Unit

22409 Autonomous Generation of Intelligent Patterns of Life
David Pynadath, Ph.D., Ali Jalal-Kamali, USC Institute for Creative Technologies

SIM 4 WEDNESDAY, 30 NOVEMBER • 1030 • W307A

YOU CAN'T HANDLE THE GROUND TRUTH

Session Chair: Tim Woodard, NVIDIA
Session Deputy: Eric Jarabak, PM TRASYS

22306 Adversarial Scene Generation for Virtual Validation of Off-Road Autonomous Vehicles
Ted Sender, Ram Vasudevan, Bogdan Epureanu, University of Michigan; Mark Brudnak, Ground Vehicle Systems Center; Reid Steiger, Ford Motor Company

22273 Creating Common Ground: The Impact of Terrain on Distributed Mission Operations
Emilie Reitz, Joint Staff, J6; Kevin Seavey, JS J6 Joint Fires Integration Division; Marcus Young, USSOCOM AFSOC SOJ2/J3 TE-S; Leonas Venckus, U.S. Special Operations Command, J3 Operations Directorate, Training and Education Division/Mission Preparation Section; Justin Wright, Huntington Ingalls Industries

22345 Using One World Terrain in Live Training Exercises
Marwane Bahbaz, Tagg LeDuc, U.S. Army PEO STRI; Julie Kent, The MITRE Corporation; Clayton Burford, Gage Jenners, Keith Nielsen, Simulation & Training Technology Center (STTC)

SIM 5 WEDNESDAY, 30 NOVEMBER • 1400 • W307A

SAY DIGITAL TWINS: I DARE YOU

Session Chair: Nathan Jones, Problem Solutions, LLC
Session Deputy: Sara Dechmerowski, Design Interactive, Inc.

22180 Geospatial Data Pipelines for Urban Digital Twin Applications
Joanna Hobbins, Nick Giannias, CAE; Melisa Kopan; Simon Merrick; Ralph Coleman; Sean Lilley, Shehzan Mohammed, Cesium

22242 An Immersive Content Creation Pipeline for Information Age Training
Deepak Haste; Sudipto Ghoshal, Qualtech Systems, Inc.; Valarie Yerdon, Maartje Hidalgo, Jeffrey Beaubien, Ph.D., Aptima, Inc.; Jason Wong, Naval Information Warfare Center Pacific

22166 Drone Control to Major Tom: Anomaly Detection and Digital Twins
Eeshaan Verma, Thales UK

SIM 6 WEDNESDAY, 30 NOVEMBER • 1400 • W307D

SIMULATION FOR TRANSFORMING TRAINING

Session Chair: Toni Hawkins-Scribner, Ph.D., Air University/Squadron Officer School
Session Deputy: Jacob Miracle, DAF CMSO

22257 Streamlining Point Cloud Post-Processing Using Principal Component Variance, Distribution Evaluation, and Other Statistical Metrics
Michael Holm, Jack Miller, Eliot Winer, Ph.D., Iowa State University; Adam Kohl, Virtual Reality Applications Center

22137 Estimating Relative Combat Effectiveness Using Simulations
Per-Idar Evensen, Marius Halsør, Dan Helge Bentsen, Norwegian Defence Research Establishment (FFI)

22189 Context-aware and Perceptually Realistic Synthetic Wrapping for Military Training and Exercises
Olaf Visker, Annemarie Burger, Anne Merel Sternheim, Ruben Smelik, Remco van der Meer, TNO

SIM 7 WEDNESDAY, 30 NOVEMBER • 1600 • W307A

FUELING FUTURE SIMULATION

Session Chair: Huntley Bodden, Marine Corps Logistics Command (MARCORLOGCOM)
Session Deputy: Tammie Smiley, CMSP, Trideum Corporation

22316 Modeling Fuel Replenishment Logistics and Impacts of Alternative Synthetic Fuels
Brant Horio, Stephanie Brown, Lucas McCabe, Simon Whittle, Michael Anderson, Chris Johnson, Stuart Funk, LMI

22233 Driving Vehicle Maintenance Decisions Using Predictive and Prognostic Maintenance Technology
Diana Perera; Kyle Whirlow, Timothy Whalen, Claire Hughes, James Cooper, Design Interactive, Inc.

22485 Sensor Fuzed Munition Modeling Framework
Cesar Sosa, Antonio Aguirre, U.S. Army – Picatinny Arsenal

SIM 8 THURSDAY, 01 DECEMBER • 0830 • W307A

I, TOO, LIKE TO LIVE DANGEROUSLY

Session Chair: Jennifer Murphy, Ph.D., Quantum Improvements Consulting
Session Deputy: Samuel Halverson, L3Harris Technologies

22302 Cybernetic Distortion: Training in an Uncanny Virtual World
Brian Flowers, Summer Rebensky, Ph.D., Michael Keeney, Jeffrey Beaubien, Ph.D., Aptima, Inc.

22405 Anomalous Responses to Highly Immersive Virtual Reality Displays
Angus Rupert, Ph.D., Embry-Riddle Aeronautical University; John Brill, Ph.D., AFRL

SIM 9 THURSDAY, 1 DECEMBER • 1030 • W307A

MODERN COMPUTING

Session Chair: Justin Tygart, PM TRASYS
Session Deputy: Petra Robinson, NAVSEA HQ

22403 Real-time Simulation Executive Architecture and Subsystem Containerization
Zack Kirkendoll, CymSTAR

22448 Leveraging Parallel Processing to Accelerate Large-Scale Simulations on GPUs
Brad Suchoski, Heidi Gurung, Steve Stage, Sid Baccam, IEM

22293 Dr. Strangemodel: Assessing Model Based Systems Engineering (MBSE) in the U.S. Air Force Simulator Common Architecture Requirements and Standards (SCARS) Initiative – the Way Forward
William Riggs, SAIC; George Ayers, AFLCMC/WNS; Joseph Doak, Austin Abraham, Tangram Flex, Inc.

SIM 10 THURSDAY, 1 DECEMBER • 1030 • W307D

TEST AND ASSESS FROM LAND, SEA, AND AIR

Session Chair: Jonathan Schlueter, Schlumberger
Session Deputy: Jeff Ruediger, Overmatch, Inc.

22147 Simulation-based Approach to Synthesizing Maritime Interaction Scenarios for Testing Autonomy
Benjamin Hargis, Yiannis Papelis, Old Dominion University

22207 Development and Validation of a Rapid Threat Assessment Simulation
Nickolas Vlahopoulos, University of Michigan; Syed Mohammad, Ph.D., DHS Science and Technology Directorate; Sungmin Lee, Geng Zhang, Michigan Engineering Services

22449 LOD and Texture Mapping for Real-Time Radar Ground Map Simulation
Radu Visina, Jameson Bergin, David Kirk, Information Systems Laboratories; Peter Skangos, ISL, Inc.

SIM 11 THURSDAY, 1 DECEMBER • 1330 • W307A

BLENDING TRAINING ENVIRONMENTS

Session Chair: Mike Fagundes, DEVCOM Aviation and Missile Center / USINDOPACOM J321
Session Deputy: Miranda Frost, LogiCore Corporation

22161 Integration of Live and Synthetic Environments for Improved Cyberspace Training
James Geddes, Michael Boyce, Ph.D., U.S. Army DEVCOM SC STTC; Omar Hasan, Jeffrey Welch, Dignitas Technologies, LLC

22215 Simulation for Security Force Assistance Climate Adaptation Training
Neil Sleevi, U.S. Army Security Force Assistance Proponent; Howard Lee, Threattec, LLC; Melvin Cape, TRADOC G-2, Modeling and Simulation Office (M&SO) and Operational Environment Laboratory (OEL)

22361 A Federated Multimodal Simulation Environment for Studying Interactions between Different Modes of Travel
Jacklin Stonewall, Michael Dorneich, Eliot Winer, Ph.D., Jack Miller, Vijay Kalivarapu, Stephen Gilbert, Anuj Sharma, Iowa State University; Adam Kohl, Virtual Reality Applications Center

TRAINING

TR 1 TUESDAY, 29 NOVEMBER • 1400 • W307C

SHARING THE GLOBAL TRAINING ECOSYSTEM

Session Chair: Perry McDowell, MOVES Institute
Session Deputy: Koren Odermann, Cubic Mission and Performance Solutions

22252 Development of a Searchable, Web-Based Repository for Sharing AR/VR Training Assets
Jeffrey Beaubien, Ph.D., Aptima, Inc.; Wink Bennett, Ph.D., Air Force Research Laboratory (711 HPW/RHW); Richard B. Ayers, Booz Allen Hamilton; Rick Keithley, CymStar; Kevin Audrain, USAF ACC TRSS/INNOV; James Belanich, Ph.D., Institute for Defense Analyses

22297 Cloud Full of Predators: Virtualizing RPAs for Constructed Training Exercises
Lillian Campbell-Wynn, Ph.D., AFAMS; Margaret Merkle, AFLCMC/WNS

22313 DoD Learning Enclave: Realizing the Defense-wide Learning Ecosystem
Brent Smith, Advanced Distributed Learning (ADL) Initiative, Sae Schatz, Ph.D., Former ADL Director

TR 2 TUESDAY, 29 NOVEMBER • 1600 • W307C

ALL TRAIN, NO PAIN: THE FUTURE OF MEDICAL SIMULATION

Session Chair: Mark Parsons, SAIC
Session Deputy: Brian Vogt, CMSP, SAIC

22142 Virtual Advancement of Learning for Operational Readiness: Implementation and Transition of a VR Medical Simulation Capability for TCCC Responders
Karthik Sarma, Michael Barrie, John Dorsch, Talia Weiss, Jason Ribeira, Jennifer Polson, Srihari Namperumal, Ryan Ribeira, SimX, Inc.

22182 A Vision for the Future of Military Medical Simulation
Matthew Hackett, Ph.D., Beth Pettitt, Ph.D., Jack Norfleet, Ph.D., U.S. Army CCDC SC STTC; Paul Kwon, U.S. Army PEO STRI, Clinical Advisor; Sterling Brodniak

22308 Identifying Unique Physiological Indicators of Virtual Reality Sickness
Olivia Fox Cotton, Kevin Durkee, Justin Morgan, Sarah Meyer, Sheila Galbreath, Aptima, Inc.; Brennan Cox, Ph.D., Naval Medical Research Unit Dayton; Gabriella Severe-Valsaint, Ada Mishler, LCDR Michael Natali, Ph.D., USN, NAWCTSD; Leanne Hirshfield, G S Rajshekar Reddy, Cara Spencer, Gavin Zimmerman, University of Colorado Boulder

TR 3 WEDNESDAY, 30 NOVEMBER • 0830 • W307C

VR TRAINING FOR THE WILD BLUE YONDER

Session Chair: Liz Gehr, Ph.D., The Boeing Company
Session Deputy: Brian Vogt, CMSP, SAIC

22116 Emulation of a Flying Boom Operator: The Dynamic Effects
Hung Tran, CAE USA

22195 Quantitative Analysis of Virtual-Reality Device Effectiveness for Cockpit Procedures Training
Mark Budgeon, Brandon Wolf, USAF/307th Operations Support Squadron; Margaret Merkle, AFLCMC/WNS; Donna Senft, AFGSC/ST

22231 Pilot Training Transformation: Early Results and Lessons Learned
Samantha Emerson, Kent Halverson, Cait Rizzardo, Ramisha Knight, Julia Brown, Audrey Reinert, Aptima, Inc.; Mark Hoelscher, Tracy Schmidt, Lisa Tripp, Air Education and Training Command, United States Air Force; David Mills, The Perduco Group

TR 4 WEDNESDAY,30 NOVEMBER • 1030 • W307C

GETTING BETTER ALL THE TIME: STRATEGIES FOR IMPROVING INDIVIDUAL TRAINING

Session Chair: Jimmy Moore, CMSP, PeopleTec
Session Deputy: Gernai Bledsoe, AFLCMC/WNS

22460 Individualized Training – The Missing Link of True Training Effectiveness & Capability Sustainment
Jenna Tuck, 4C Strategies

22437 Operational Assessment of a CV-22 Virtual Maintenance Training Solution
Beth Hartzler, CAE USA; Wink Bennett, Ph.D., Air Force Research Laboratory (711 HPW/RHW)

TR 5 WEDNESDAY, 30 NOVEMBER • 1600 • W307C

TRANSFORMING MILITARY TRAINING THROUGH IMMERSIVE TECHNOLOGIES

Session Chair: Marwane Bahbaz, U.S. Army PEO STRI
Session Deputy: Christina Perera, Army Modeling and Simulation Office

22164 Augmented Reality for Marine Fire Support Team Training
Colin Sullivan, Parker Fisher, Richard Schaffer, Sean Cullen, Lockheed Martin Corporation; Supun Samarasekera, Kevin Kaighn, Taragay Oskiper, Rakesh Kumar, SRI International

22285 Transforming Team Training: The Influence of Virtual Environment Features
Beata-Noemi Balint, Helen Dudfield, QinetiQ; Brett Stevens, University of Portsmouth

22280 Blending AR and VR to Increase Situational Awareness during Training
Austin Garcia, Eliot Winer, Ph.D., Iowa State University

TR 6 THURSDAY, 1 DECEMBER • 0830 • W307C

NEXTGEN TRAINING

Session Chair: Mike Thorpe, SERCO, Inc.
Session Deputy: Susan Myers, Accenture Federal Services

22412 Directed Self-Regulated Learning via Learning System Support
Jennifer Fowlkes-Ratliff, Lockwood

22427 Training Alchemy – Effectively Converting Traditional Training Content to Gold
Cait Rizzardo, Summer Rebensky, Ph.D., Brian Flowers, Jonathan Reynolds, Peter Neubauer, Kent Halverson, Aptima, Inc.

22434 Game Jams – A New Form of Rapid Prototyping
Mike Bianchini, Dignitas Technologies; Chad Hoover, FENIX Digital Studios; Austin Pinzon

TR 7 THURSDAY, 01 DECEMBER • 1030 • W307C

THE TIPPING POINT: LEARNING SYNERGY

Session Chair: Nir Keren, Ph.D., Iowa State University
Session Deputy: Wendy Johnson, Ph.D., AETC/A5X

22324 Don't Judge a Book by Its CoVR: Learning and Training in Virtual Reality; The Effects of Two Levels of Immersion
Kendall Carmody, Meredith Carroll, Ph.D., Florida Institute of Technology

22379 What's My Status? – Best Practices for Self-Led Debriefs
Elaine Choy, Embry-Riddle Aeronautical University; Emily Anania, Ph.D., Beth Atkinson, NAWCTSD; Ryan Wohleber, Ph.D., Brian Stensrud, Ph.D., Kay Michel, Ph.D., Soar Technology, Inc.

22459 Multimedia and Immersive Training Materials Influence Impressions of Learning but Not Learning Outcomes
Benjamin Clegg, Alex Karduna, Ethan Holen, Jason Garcia, Matthew Rhodes, Francisco Ortega, Colorado State University

TR 8 THURSDAY, 1 DECEMBER • 1330 • W307C

DIGITAL THREADING THE NEEDLE

Session Chair: Scott Schutzmeister, Institute for Defense Analysis
Session Deputy: Mike Merritt, NAWCTSD

22138 Data-Driven Behavioral Modelling of an Air Defence System
Annemarie Burger, Maarten Schadd, Nico de Reus, TNO

22239 Using Digital Twins in Maintenance Operations and Training
Deepak Haste; Sudipto Ghoshal, Qualtech Systems, Inc.; Jeffrey Beaubien, Ph.D., Valarie Yerdon, Maartje Hidalgo, Aptima, Inc.; Jason Wong, Naval Information Warfare Center Pacific

FRIDAY, 2 DECEMBER 2022 — PROFESSIONAL DEVELOPMENT WORKSHOPS

LOCATION:	Orange County Convention Center, West Concourse, note room assignments below.
DATE:	Friday, 2 December
TIMES:	0700 – 0800 Continental Breakfast and Registration 0800 – 1200 All Sessions
WHO MAY ATTEND?	All registrants of I/ITSEC are welcome to attend, and I/ITSEC badge is required for entry.
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 $50 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

Workshop Schedule:

0700	**Continental Breakfast and Registration**
0800 – 1200	**All Sessions** • Harnessing the Power of Data Analytics to Optimize Training • Live-Virtual-Constructive (LVC) Interoperability Techniques • Distributed LVC Event Process • Using Object Management Group's Data Distribution Service (OMG DDS) for Distributed Training simulators • Serious Game Design Work Shop • Introduction to Mathematical Modeling for Analysts and Educators • Certified Modeling and Simulation Professional 3.0 • VR Trainee Attention and Cognitive Load Assessment Using Headset Integrated Eye Tracking and Biophysiological Sensors

PDW 1 • ROOM W307A

HARNESSING THE POWER OF DATA ANALYTICS TO OPTIMIZE TRAINING

Presenters: Liz Gehr, Ph.D., Barbara Buck, Ph.D., Laurie Dunagan, Ranjan Paul, Ph.D.

Data analytics offers a principled approach to examining 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 a learning ecosystem, including competency based learning and adaptive learning. Although this is not a class on how to use Artificial Intelligence (AI) or xAPI, we will touch on how these topics relate to data analytics. 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, the role of learning analytics in competency-based learning, and privacy issues.

PDW 2 • ROOM W307B

LIVE-VIRTUAL-CONSTRUCTIVE (LVC) INTEROPERABILITY TECHNIQUES

Presenters: Randy Saunders, Edward Powell, Ph.D.

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), 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.

PDW 3 • ROOM W307C

DISTRIBUTED LVC EVENT PROCESS

Presenters: Roy Zinser, Kenneth LeSueur, Ph.D., Brett Boren, Michael O'Connor, CMSP

Integration and execution of distributed Live, Virtual, Constructive (LVC) events consume substantial time and resources. While the underlying distributed LVC technologies are mature, the methods for planning and integrating

events are not. The IEEE Std 1730-2010 Distributed Simulation Engineering and Execution Process (DSEEP) standard defines a process model for developing an event. DSEEP defines a set of seven steps divided into activities. The DSEEP process model provides representative inputs and outputs for each activity. However, the user still must instantiate the DSEEP process model and develop artifact templates. The development of a robust instantiation of the DSEEP process model is a substantial effort. The goal of the DSEEP model is to produce a verified distributed LVC environment to conduct the event. While distributed LVC environments can be created without using a well-defined process, not using a one adds risks to the event. The first risk is that the integration fails, and it may be difficult to discover the reason. The second risk is that the unverified environment produces invalid results that might not be apparent until the results are used. Based on years of distributed LVC event experience, the authors have created an instantiation of the DSEEP process model. This workshop will describe the complete nine step instantiated process and provide examples of the artifacts created by its execution. Lessons learned from executing the instantiated process and how they have been incorporated will be provided. This workshop will provide the detailed inputs, tasks, outputs, and examples for each activity in the step. The process presented includes issues related to distributed LVC environments using multiple distributed simulation architectures, live entities, and cyber.

PDW 4 • ROOM W307D

USING OBJECT MANAGEMENT GROUP'S DATA DISTRIBUTION SERVICE (OMG DDS) FOR DISTRIBUTED TRAINING SIMULATORS

Presenters: Robert Proctor, Jr., Dan King, John Breitenbach

Are you building the next generation of distributed simulation systems?

Open Architectures (OA) improve system affordability by reducing integration, maintenance and upgrade costs, while promoting reuse and competition. With its interoperability, portability, loose coupling and real-time Quality of Service (QoS), the Object Management Group's (OMG) Data Distribution Service (DDS) standard is the preeminent foundation for distributed mission-critical OA systems. OMG DDS allows defense contractors to maintain an open and competitive acquisition capability and ensure that systems integrators focus their innovation efforts on program objectives.

This Professional Development Workshop will focus on the genesis of the DDS Standard and the capabilities it provides to developers who are building distributed systems. Attendees will view demonstrations of the technology to explain the behaviors and benefits of DDS for real-time mission-critical OA systems. The second half of the seminar will be a hands-on session walking users through the creation of their first DDS application. This will include developing an application from scratch and showing publish/subscribe of topics dynamically on a Local Area Network. We will also explore how Quality of Service (QOS) settings affect how data is transmitted between endpoints.

PDW 5 • ROOM W308A

SERIOUS GAME DESIGN WORKSHOP

Presenter: Radhakishan Shetty, Vance Souders

During this workshop, participants will be introduced to key concepts, steps, and processes involved in designing a game for learning. Through hands-on activities and working together in groups, participants will work through the initial phases of the design process. Participants will identify training requirements and learning objectives, creating an effective story, determining instructional and gaming strategies, designing key game mechanics, and choosing the appropriate delivery technology.

PDW 6 • ROOM W308B

INTRODUCTION TO MATHEMATICAL MODELING FOR ANALYSTS AND EDUCATORS

Presenters: Amanda Beecher, Ph.D., Victor Piercey, Ph.D., J.D., Michelle Isenhour, Ph.D., Kathleen Snook, Ed.D.

For more than 40 years the Consortium for Mathematics and Its Applications (COMAP), a non-profit education organization, has been an advocate for the integration of applied problem-solving and modeling in mathematics classrooms. COMAP's overall mission is to improve mathematics education for students of all ages, and its programs and resources support the development and preparation of both our current and our future STEM and M&S workforce. As an industry leader in the publication of curricular and professional development materials for educators and modeling professionals, COMAP recognizes that professional organizations need analysts who understand mathematical modeling processes and can model, simulate, and solve tough problems. COMAP strives to prepare analysts with the requisite skills, abilities, and knowledge to do so, and develop educators similarly to integrate modeling into the classrooms of these future analysts. To this end, COMAP has recently initiated program development and outreach activities aimed at the industry analyst and education communities. COMAP has been engaged with I/ITSEC through the STEM Pavilion and America's Students and Teachers for several years. At I/ITSEC 2021, COMAP organized seven virtual modeling workshops and webinars for teachers and students. COMAP is excited to offer this in-person workshop at I/ITSEC 2022.

During the workshop, we will discuss the concept of a modeling mindset in applying mathematical skills to solve open-ended problems using quantitative and qualitative modeling techniques. Workshop leaders will introduce and discusses mathematical modeling processes analysts use in solving problems. Topics include defining and restating the problem, determining required data and resources, pre-model analysis, model selection and application, evaluation of model and results, and analysis and communication of results. Participants will engage in applying these processes to real-world example problems. This workshop is relevant for entry level/junior industry analysts, as well as school and undergraduate level educators.

PDW 7 • W308C

CERTIFIED MODELING AND SIMULATION PROFESSIONAL 3.0

Presenter: Ivar Oswalt, Ph.D., CMSP

The Certified Modeling and Simulation Profession (CMSP) certification program has been reinvented and reintroduced to the M&S community as CMSP 3.0. The certification's application process has been streamlined, the examination updated, and an approach to ensure readily available reference material developed, amongst many other additional improvements. This proposal is to conduct a CMSP 3.0 Professional Development Workshop. This four-hour session will describe the requirements needed to achieve this valuable certification. It will cover the application and examination processes including education, work experience, and reference requirements; application processes; how the exam is administered and scored; and the role of continuing education in certificate renewal. It will also provide timely insights into preparing for and achieving this certification. In addition, it will describe the certification levels offered, discuss sample exam questions, and include several relevant simulation videos. Finally, the workshop concludes with an enjoyable interactive game-show style contest to summarize the material covered, complete with prizes, as well as a round-table discussion on the certification's future.

PDW 8 • W308D

VR TRAINEE ATTENTION AND COGNITIVE LOAD ASSESSMENT USING HEADSET INTEGRATED EYE TRACKING AND BIOPHYSIOLOGICAL SENSORS

Presenters: Matthias Pusch, Andrew Beall, Ph.D., Sado Rabaudi, Todd Hartwig

We invite I/ITSEC researchers and developers to join a forum to discover how state-of-the-art HMDs are capable of measuring the attention and cognitive load of users through eye tracking and other biophysiological measurements. Several HMDs now have robust eye tracking built in, and exciting new products such as the new Omnicept offering by HP have a battery of measurements that provides a meaningful real-time estimate of cognitive load. During the workshop, all participants will have the opportunity to test out HMD hardware options, and participate in a data collection VR experience that will expose them to a few environments in which their attention and cognitive load measurements will be recorded. Then, using several different open source tools, everyone will be able to quickly dive in and analyze their own, and others, data to extract a few key metrics. Finally, we will give a review of how to construct a VR scenario that connects to these devices and displays various environments and collects the data. For this we will survey tools such as Unity and the Python based Vizard VR engine.

NTSA EcosySTEM OF LEARNING
AT I/ITSEC

The EcosySTEM of Learning (EoL) focuses on strategically and tactically building interest and educational momentum through a wide breadth of Science, Technology, Engineering and Mathematics (STEM) initiatives. The EoL mission is to establish, nourish, and maintain a solid foundation for launching future leaders and fostering the future workforce.

Designed for agility and diversity, the EoL is built upon four major cornerstones. Each cornerstone is comprised of initiatives which provide impactful substance to the EoL architecture and to those who engage.

OUTREACH
ENCOUNTERS THROUGH OBSERVATION, INTERACTION, AND IMMERSION.

- Student Tours
- Interaction with STEM focused organizations
- Path for year round engagement opportunities

DISCOVERY DEN
PLATFORMS PROMOTING PRESENTATION SKILLS AND SHARING OF SUBJECT MATTER EXPERTISE.

- Informative Exhibits
- Serious Games Showcase & Challenge
- Presentation Theatre

FOCUSED WORKSHOPS
CURRICULUM THROUGH CLASSES, SHORT COURSES, SEMINARS AND MORE.

- Teacher Focused
- Student Focused
- Workforce Development

CAREER INVESTMENT
ADVANCEMENTS WITH LONG TERM PROFESSIONAL GOALS IN MIND.

- Tutorials
- Professional Development Workshops
- Scholarship Program
- Career Fair
- Continuing Education Units (CEUs)
- University Collaboration

BOOTHS 2880 – 3191

NTSA EcosySTEM OF LEARNING AT I/ITSEC

Launching Future Leaders • Fostering the Future Workforce

NTSA recognizes the need to maintain a strong workforce to enable the growth and development of the modeling, simulation, and training (MS&T) industry. Doing so requires strong, productive Science, Technology, Engineering and Mathematics (STEM) programs that are impactful to all phases of learning: absorption, nurturing, practicing. Disciplines applicable to current, emerging, and future requirements of MS&T are experienced through observation, interaction, and immersion.

NTSA enables a significant multidimensional STEM program platform which offers many opportunities at I/ITSEC and throughout the year. Initiatives are tailored to support (1) self-motivated learners that prefer independent learning, (2) friendly competitions, and (3) peer collaboration.

The EcosySTEM for Learning provides both physical and virtual platforms for global participation by students, teachers, and industry professionals. Experiences include observation, interaction, and situation immersion which tax the human sensory systems — which then becomes knowledge driven by curiosity and ambition.

At I/ITSEC, the EcosySTEM of Learning demonstrates applications of DoD technology through education initiatives, sample national initiatives highlighting military/community partnerships in education, benchmark outreach programs by companies to support education, undergraduate, graduate. and post graduate opportunities in STEM to support the future workforce. The program continues to adapt and incorporate the latest sciences and technologies into the many initiatives fostered with the ecosystem.

TEACHER FOCUSED: Teachers inspire and educate the modeling and simulation community's future professionals. Educator training, mentorship, and experiential opportunities support development and community engagement.

STUDENT FOCUSED: Programming is comprised of live, online, and on-demand opportunities for students to share their own experiences, to learn about what others are doing, and to interact with professionals.

WORKFORCE DEVELOPMENT: Building upon networks and relationships, today's workforce continues to thrive through life-long learning.

EcosySTEM OF LEARNING SCHEDULE

MONDAY, 28 NOVEMBER

ROOM W107A
0830 – 1700 K-12 Teacher Training

ROOM W107B
0830 – 1700 K-12 Teacher Training

TUESDAY, 29 NOVEMBER

ROOM W107A
0900 – 1600 STARBASE Teacher Training

ROOM W107B
0900 – 1600 STARBASE Teacher Training

ROOM TBD
1230 – 1300 Teacher Mentorship Meet and Greet
1300 – 1400 Intro to Modeling and Simulation for Teacher Mentorship Program

WEDNESDAY, 30 NOVEMBER

ROOM W107A
0900 – 1600 STARBASE Teacher Training

ROOM W107B
0900 – 1600 STARBASE Teacher Training

ROOM W110A
1200 – 1700 Career Fair

THURSDAY, 1 DECEMBER

ROOM W107A
0830 – 0915 Student Problem Challenge Launch
0930 – 1030 Career Panel
1030 – 1200 Student Problem Challenge

ROOM W107B
1030 – 1200 Student Problem Challenge

BOOTH 2588
1300 Serious Games Showcase & Challenge Awards Ceremony

DISCOVERY DEN BOOTH 3185
1300 – 1400 Student Problem Challenge Presentations/Awards

THROUGHOUT THE CONFERENCE
Booth 2880 Serious Games Showcase & Challenge

VISIT BOOTH 3185, THE DISCOVERY DEN INFO DESK, FOR THE LATEST EOL LINE-UP.

WEDNESDAY, 30 NOVEMBER • 1200–1700 • ROOM W110A

NTSA CAREER FAIR AT I/ITSEC

Job opportunities are on the rise for the defense industry – leading the way for developing cutting-edge solutions. The career fair welcomes you to be part of the fast-growing Simulation and Training community.

Meet with industry and government organizations with opportunities for new graduates and transitioning professionals on Wednesday, 30 November from 1200 – 1700 at the OCCC in Room W110A for the I/ITSEC Career Fair. Contact Carol Dwyer at cdwyer@NTSA.org to register in advance.

This event provides:
- an opportunity to learn more about open jobs available from government and industry partners,
- networking for businesses with subcontracting needs,
- a space to learn about the government's perspective and process, and
- an environment to grow your network.

Career Fair attendees who didn't get a chance to register in advance are welcome to register onsite at Registration. Participating Organizations will be added as they are confirmed; please visit the I/ITSEC website for the most up-to-date information. If you have any questions while onsite, please visit the Career Fair in room W110A.

PARTICIPATING ORGANIZATIONS ARE LISTED ONLINE AT
https://www.iitsec.org/education/career-investment/career-fair and onsite at the Discovery Den Info Desk in Booth 3185.

SERIOUS GAMES
SHOWCASE & CHALLENGE

The Serious Games Showcase and Challenge (SGS&C) invites you to Booth 2880 to play this year's finalist games, immerse yourself in exciting PC, XR, and mobile learning experiences, meet the developers, and cast your vote for the People's Choice Award.

Visit the SGS&C to learn how games can address your serious learning needs and experience the games first hand!

Founded in 2006, the SGS&C aims to bring awareness of the impact that games have on learning, and to provide quality exemplars. Within a casual and interactive setting, the SGS&C provides a showcase of best-in-class learning games submitted by businesses, students, and government organizations while offering the developers recognition of their achievements as finalists and award winners.

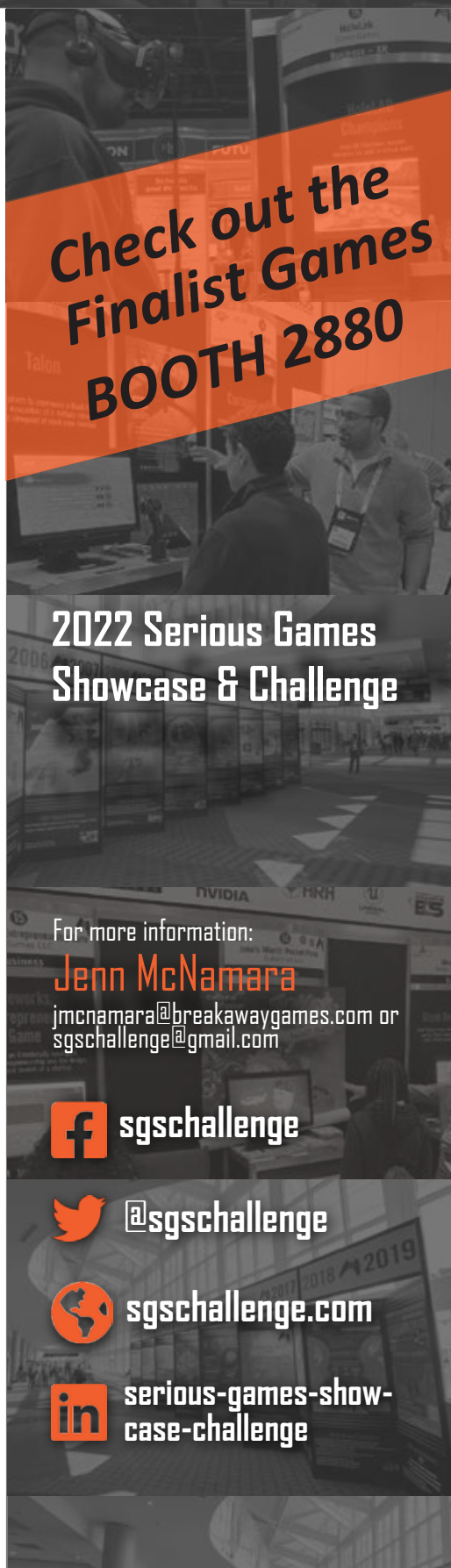
Play the games and cast your vote for the People's Choice Award by 1800 Wednesday, November 30th.

The People's Choice Award is based on votes from attendees like you. Your I/ITSEC badge includes your ballot. Be sure to visit the booth to play the games and vote!

Hear the SGS&C awards announced live on Thursday, December 1st.

Join us at 1300 in the Innovation Showcase (Booth 2588) for the Awards Ceremony.

- Best General Audience Serious Game
- Best Government Audience Serious Game
- Best Student-developed Serious Game
- Best XR Serious Game
- Innovation Award
- Students' Choice Award
- People's Choice Award



For more information:
Jenn McNamara
jmcnamara@breakawaygames.com or
sgschallenge@gmail.com

sgschallenge

@sgschallenge

sgschallenge.com

serious-games-showcase-challenge

33RD 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.

Joseph Bakhtiar
Georgia Institute of Technology
Operations Research/Systems Analysis/Mathematics

Crystal Fausett
Embry-Riddle Aeronautical University
Human Factors

Paige Lawton
Embry-Riddle Aeronautical University
Human Factors

Christopher Campanelli
University of Central Florida
Engineering

Ryan Hilger
Colorado State University
Engineering

Feena Phakasoum
University of San Diego
Cyber Security

Daniel Colvett
University of Alabama in Huntsville
Engineering

Cory Ilo
Virginia Tech
Engineering

Maxwell Stolarenko
University of Central Florida
Engineering

7TH ANNUAL LEONARD P. GOLLOBIN POSTGRADUATE SCHOLARSHIP RECIPIENTS

The **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. The awards are offered at a Masters level in the amount $5,000, and at a Doctoral level in the amount $10,000.

Sydney Begerowski
Clemson University
Human Factors

Dillon Hill
University of California, Davis
Instructional Design and Training Methodology

Chase Burciaga
Texas A&M George HW Bush School of Government and Public Service
Engineering

Kenzie Hurley
Clemson University
I/O Psychology

Nathan Colvin
Old Dominion University
International Relations

Betta Lyon Delsordo
Georgia Institute of Technology
Computer Science/Information Sciences

Cherrise Ficke
Florida Institute of Technology
Human Factors

Briana Sobel
University of Central Florida
Human Factors

Allison Garibaldi
University of Central Florida
Human Factors

BARBARA McDANIEL UNDERGRADUATE SCHOLARSHIP

NTSA continues the **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 third year, NTSA awarded $10,000 to each of three universities:

- **Georgia Institute of Technology,** Atlanta, GA
- **Texas A&M University,** College Station, TX
- **University of Colorado Colorado Springs,** Colorado Springs, Colorado

NTSA CMSP SCHOLARSHIP AT I/ITSEC

Tyler Kleinsasser
SD School of Mines and Technology
Engineering

The Certified Modeling & Simulation Professional (CMSP) certification program was created in 2002 to provide the Modeling & Simulation (M&S) industry with its own professional certification that remains valid for four years before recertification is required. The CMSP designation recognizes professionals with extensive experience and expertise in M&S. The award is offered at the Masters level in the amount $5,000.

For more information about the CMSP program, visit **www.NTSA.org/CMSP**.

IMPORTANT DATES FOR 2023

(DON'T DELAY!)

When to Apply Applications must be submitted by 23 June 2023.

How to Apply
See **https://www.iitsec.org/education/career-investment/scholarships** for complete application details.

Award Announcement 4 August 2023

POSTGRADUATE 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 2023). See Study Disciplines at **https://www.iitsec.org/education/career-investment/scholarships**

Award Amounts Available for Fall 2023
$10,000 (Doctoral Candidates)
$5,000 (Masters Candidates)
Be our guest at I/ITSEC
27 November – 1 December 2023

Direct Further Inquiries To
I/ITSEC Scholarship Program
c/o The National Training and Simulation Association
2101 Wilson Boulevard, Suite 700
Arlington, VA 22201
(703) 247-9490 or **rdespot@NTSA.org**

Scholarship Chair
Janet Spruill, Aptima, Inc.

ANNUAL I/ITSEC 5K RUN/WALK/ROLL

WEDNESDAY, 30 NOVEMBER 2022
OCCC, West Concourse, Hall D
0530 Packet Pickup
0645 Start Time

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.

REGISTER BY 14 OCTOBER TO GET A SHIRT

Until 18 November (shirt size subject to availability)	$40
19 November – 29 November (shirts may not be available)	$50
Onsite, 30 November (shirts not available)	$60

ONSITE DAY OF EVENT IS CASH ONLY.

CHARITIES THE 5K WILL SUPPORT

NTSA EcosySTEM OF LEARNING AT I/ITSEC

Tunnel to Towers Foundation
TUNNEL2TOWERS.ORG

TITLE SPONSOR

ASTi

Email Sean Osmond for Race Information at
iitsec5k@gmail.com
or Shannon Burch for Sponsorship information at
sburch@NTSA.org

Earle L. Denton Memorial Golf Tournament

Organized by Central Florida Chapter NDIA • Sunday, 27 November **OR** Monday, 28 November

Shingle Creek GOLF CLUB

Rosen Shingle Creek Golf Club
9939 Universal Blvd, Orlando, FL 32819 • 407-996-9933 • www.shinglecreekgolf.com

DEADLINES

Golf On-Line Registration	21 November
Sponsorship	18 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 11 November to receive 50% refund. No refunds thereafter. Substitute golfers are permitted.

ON-LINE REGISTRATION

- Register and/or select sponsorship at **https://www.iitsec.org/attend/registration-fees**
- Register one to four players per login.

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 **iitsec.org**

Select hole, beverage cart, lunch, putting contest or a sponsorship package.

Fees start as low as $500.

SPONSORS

Send your logos via email to **debbie.berry@lmco.com** no later than 18 November. Do not bring your own sign.

**Scholarships and additional qualified initiatives supported through tournament proceeds. For a full list of initiatives (STEM, etc.), contact Central Florida Chapter NDIA.*

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	Army	Karen D.H. Saunders, SES, Program Executive Officer for Simulation, Training and Instrumentation, U.S. Army PEO STRI
	Navy	CAPT Dan Covelli, USN, Commanding Officer, NAWCTSD and NSA Orlando
	Marine Corps	LtCol Marcus J. Reynolds, USMC, Program Manager, PM TRASYS MARCORSYSCOM
OSD/Joint Executive		Gregory Knapp, OSD (P&R) Force Readiness & Training
Service Principals	Air Force	Heath Morton, USAF AFMC
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	Navy	Kent Gritton, NAWCTSD
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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.

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1981 Kurt Merl
1982 James A. Gardner, Ph.D.
1983 John Todd *(Deceased)*
1984 Ralph T. Davis *(Deceased)*
1985 John W. Hammond
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The NTSA, an affiliate of NDIA, represents and promotes the business interests of companies in the modeling, simulation, training, mission planning/rehearsal, and support service industries. NTSA's corporate members enjoy reduced fees on all NTSA events as well as a subscription to the NTSA monthly e-newsletter and NDIA's 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. **Visit us in Booth 2580.**

For NTSA membership information visit **www.NTSA.org** or contact Carol Dwyer at **cdwyer@NTSA.org**.

NATIONAL DEFENSE INDUSTRIAL ASSOCIATION

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Based in Arlington, Virginia, the National Defense Industrial Association (NDIA) is a non-profit, educational association representing industry, government, and academia. More than 1800 companies and 66,000 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 two 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. **Visit us in Booth 2580.**

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WOMEN IN DEFENSE

A NATIONAL SECURITY ORGANIZATION

WID WOMEN IN DEFENSE

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 20 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. **Visit us in Booth 2580.**

www.womenindefense.net

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For more information or to apply, visit **NTSA.org/CMSP** or contact Carol Dwyer at **cdwyer@NTSA.org**

CMSP at I/ITSEC 2022

Join us at our events this week to learn more about CMSP, what's new, and how to join the CMSP Nation.

MONDAY, 28 NOVEMBER • 1245 – 1415 • ROOM W300 THEATRE

FOCUS EVENT

This special event is a panel discussion of Senior M&S Professionals providing their views on the process, value, and future of CMSP.

MONDAY, 28 NOVEMBER • 1415 – 1515 • ROOM W201

MEET AND GREET

All are welcome to attend! Mingle with CMSPs and get your questions answered as we gather to celebrate significant CMSP accomplishments achieved over this past year.

FRIDAY, 2 DECEMBER • 0800 – 1200 • ROOM W308C

PROFESSIONAL DEVELOPMENT WORKSHOP

This workshop provides insights into CMSP topic areas, exam preparation and sample questions, includes relevant videos, and concludes with two game-show style competitions.

EXHIBIT BOOTH 2580 • EXHIBIT HALL WEST CONCOURSE

Visit the NTSA booth 2580 for CMSP information and materials. Learn more about becoming a CMSP, what's new with CMSP, and how you can apply. CMSP professionals are at the booth daily from 1200 – 1330.

LINKEDIN

Be sure to follow us on LinkedIn (NTSA.org/CMSPLinkedIn) to keep up with what's new in the CMSP world, what the committees are doing, and what's ahead. Join the LinkedIn CMSP Nation today!

NOTES

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CONFERENCE LOGISTICS

ATTENDEE LUNCHEON

Lunch will be served Tuesday, 29 November – Thursday, 1 December at 1200. You must enter and 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 $45 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. The Connections Lounge & Grill will be located in Booth 100, West Exhibit Hall.

SHOW MANAGEMENT OFFICE

206AB • 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.

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 2022

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 West Lobby A of the West 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 are only 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 the Hyatt Regency and the Rosen Centre, adjacent to hotel check in, from Sunday noon through Tuesday. These stations will be staffed to assist you whether you need to start your registration from scratch or just need to pick up your nametags.

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

- I/ITSEC Shuttle Bus located on **https://www.iitsec.org/attend/planning-your-stay/transportation**
- 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 detailed parking information (to the right).
- Most of the hotels are within walking distance (wear comfortable shoes).

ATTENDANCE WAIVER – Participation at I/ITSEC 2022 includes possible exposure to and illness from infectious diseases, including but not limited to COVID-19. While particular rules and personal discipline may reduce this risk, the risk of serious illness and death does exist. As an attendee at I/ITSEC, you freely assume all such risks related to illness and infectious diseases, such as COVID-19, even if arising from the negligence or fault of the Released Parties. By attending I/ITSEC, you hereby knowingly assume the risk of injury, harm, and all loss associated your attendance. Review full waiver at https://www.iitsec.org/attend/covid-19-safety-attendance-information.

ATTENDANCE POLICIES

NTSA will no longer require proof of vaccination status or negative test result in order to attend a NTSA in-person meeting, conference, or event. Mask-wearing at NTSA meetings and events will be optional. NTSA expects attendees to take responsibility themselves for following guidance from the Centers for Disease Control (CDC) on measures to reduce infection from COVID-19 and to protect against severe complications. NTSA urges all members to follow the CDC's recommendation that everyone over age 12 receive the updated bivalent vaccine as soon as they are eligible to do so (e.g., 2 months past their last shot). For more information, please review the guidelines at **https://www.cdc.gov/coronavirus/2019-ncov/vaccines/stay-up-to-date.html**. Attendees who are not feeling well are asked to take an at-home COVID-19 rapid antigen test before traveling to a NTSA meeting and should not attend if they test positive or have symptoms of COVID-19. NTSA will not be requiring proof of these measures, however, but calls on the community to act responsibly and with consideration for the health and safety of others.

NTSA reserves the right to adjust these guidelines, as necessary.

Please check before traveling (internationally) to the USA for any travel restrictions related to vaccine types. Requirements for Proof of COVID-19 Vaccination for Air Passengers: **https://www.cdc.gov/coronavirus/2019-ncov/travelers/proof-of-vaccination.html**

For complete information about I/ITSEC attendance policies, please review **https://www.iitsec.org/attend/covid-19-safety-attendance-information**

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

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

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

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2022 per diem rate is $129, rates are subject to change.

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You may also call our central agents Monday – Friday at 855-992-3353.

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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.

THE I/ITSEC SHOW DAILY

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, W207A, for more information.

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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/attend** post-conference.

STAY IN TOUCH

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

Complimentary WiFi is available in the lobby and I/ITSEC session rooms (look for signage). WiFi signal strength is not guaranteed, 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.

- Visit Show Daily staff onsite in room W207A.
- Dino Pignotti, Show Daily Editor, **pignotti.dino@gmail.com**
- Check out more details on the I/ITSEC News page of **http://www.iitsec.org**.

The I/ITSEC Media Room is W207A, phone **(407) 685-4013**.

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 2022 they will be located near registration, in Med Room 4, near the escalators at the A2 entrance. 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 presenters or exhibitors will be dealt with according to security procedures, to possibly include confiscation of materials and removal from the premises.

NTSA NATIONAL TRAINING AND SIMULATION ASSOCIATION
THE VOICE OF THE TRAINING & SIMULATION COMMUNITY

27 NOVEMBER – 1 DECEMBER 2023 | ORLANDO, FLORIDA
WWW.IITSEC.ORG

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Interservice/Industry Training, Simulation and Education Conference
The National Training and Simulation Association (NTSA)
An Affiliate of the National Defense Industrial Association (NDIA)
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