

Continuing Education Units: An I/ITSEC Opportunity

“CEUs are a convenient and efficient way to keep track of my participation in professional development activities.”

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/or 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.

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.

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 Todd Freece, todd.freece@ucf.edu or 407-882-0236 for additional information



The completion of CEUs has long been used to demonstrate dedication and career interest to supervisors, employers or rating officers. CEUs earned at I/ITSEC can be applied towards CMSP Recertification.

EARNING THE CMSP DESIGNATION WILL:

- Demonstrate expertise in the field of M&S to your employer and the larger M&S community
- Provide opportunities for professional advancement

Requirements include 3-8 years of work experience (depending on level of highest collegiate degree), 3 professional letters of reference, and successful completion of an online examination.

CMSP Applicants now have a choice between CMSP-Technical and CMSP-Management exams.

TO LEARN MORE ABOUT THE REQUIREMENTS AND TO APPLY, PLEASE VISIT WWW.SIMPROFESSIONAL.ORG OR CONTACT PATRICK ROWE AT PROWE@NDIA.ORG.



OPEN TO ALL ATTENDEES

I/ITSEC Tutorials are designed to serve three purposes:

- Provide foundational educational material, including material essential in preparation as a Certified Modeling & Simulation Professional (CMSP).
- Serve as a refresher and more advanced learning opportunity for those seeking to maintain their certification.
- Bring topics of special interest in Training, Simulation and Education to I/ITSEC attendees.

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

✦ Tutorial from International author(s)

TUTORIALS SCHEDULE

ROOM	TRACK/CHAIR	0830 – 1000	1245 – 1415	1430 – 1600
S320A	Track 1: Be Safe Charles Cohen	2018 Update - Trade Compliance Challenges in Training and Simulation Continue (1848)	Risk Management Framework: Cybersecurity Compliance for Modeling, Simulation, and Training Systems (1830)	Addressing the Challenges of Rigorous Simulation Validation (1851)
S320B	Track 2: Do it Right Jim Coolahan	Introduction to DoD Modeling and Simulation (1820)	Design of Experiments: Applications in the Simulation Profession (1814)	A Functional Approach to Distributed Network Architectures for LVC (1829)
S320C	Track 3: LVC Roy Scudder	Cybersecurity Best Practices to Protect LVC Networks, Training and Simulation Systems (1817)	Live, Virtual and Constructive (LVC) Simulation Interoperability 101 (1832) ✦	Planning and Execution for Large LVC Multi-Architecture Distributed Events (1822)
S320D	Track 4: Concepts & Dialogue Sue Numrich	Simulation Conceptual Modeling (1809)	Spoken-dialogue Interaction for Serious Games and Virtual Training Simulators (1847) ✦	
S320E	Track 5: Architectures Robert Lutz	Distributed Interactive Simulation (DIS) 101 (1840)	Introduction to HLA (1825)	TENA/JMETC: Live-Virtual-Constructive Integration for Test and Training (1818)
S320F	Track 6: In Practice Juliana Slye	Introduction to Data Standards and Standards Organization in Modeling and Simulation (1838)	A Complete Introduction to Medical Simulation (1828)	Team Training Environment Specification and Selection (1843) ✦
S320GH	Track 7: Best Tutorials Lee Lacy	An Introduction to Cognitive Systems for Modeling & Simulation (1849)	The Science of Thrills: Applied M&S in the Entertainment Industry (1811)	Harnessing Transmedia Learning: How to Optimize Your Productivity with Learning Science, Media, and Technology (1845)
S310AB	Track 8: Fundamentals Bob Richbourg	Securing Distributed LVC Simulations with Data Distribution Service (DDS) (1826)	Road Map for Innovators in Cloud-Based Modeling and Simulation (1821) ✦	Fundamentals of Modeling and Simulation (1819)
S310C	Track 9: Innovations Jim Wall	3D Printing/Manufacturing Process Primer for the M&S Practitioner (1810)	The Truth About Blockchains and How They Apply to Training (1833)	Machines Crave Big Data (1850)

TUTORIALS



TRACK 1: BE SAFE
0830 - 1000 • ROOM S320A

2018 Update - Trade Compliance Challenges in Training and Simulation Continue

(1848)

Despite generally positive statements from the U.S. Government concerning encouragement of international trade, 2018 continued to present challenges in navigating the export requirements associated with trade in the simulation and training industry. This tutorial will focus on understanding the application of the ITAR and the EAR as well as the potential changes associated with changing national security and foreign policy priorities, including continued ambiguity with the definition of “defense services” in the ITAR. The tutorial will examine the scope of the U.S. export laws, how the U.S. Government applies them to the simulation industry, including controls on software, hardware, services and activities at trade shows such as I/ITSEC, as well as discuss examples of products and services, and associated licensing strategies, in this shifting regulatory environment. New for this year, we will walk through a practical exercise to apply the “order of review” and determine the export jurisdiction and classification of a relevant product.

Presenter

DARREN P. RILEY, J.D., is a founding member and partner of Huffman Riley PLLC. Mr. Riley concentrates his practice advising U.S. and foreign clients concerning all aspects of the U.S. export control laws, including the International Traffic in Arms Regulations (“ITAR”); Export Administration Regulations (“EAR”); and the Office of Foreign Assets Control (“OFAC”) regulations. Mr. Riley has extensive experience assisting high technology, defense industry and other clients to navigate applicable U.S. export statutes and regulations.

TRACK 2: DO IT RIGHT
0830 - 1000 • ROOM S320B

Introduction to DoD Modeling and Simulation

(1820)

This tutorial will describe the fundamental technologies, terms and concepts associated with Modeling and Simulation (M&S); and describe M&S development and application in the Department of Defense (DoD). It will discuss various aspects of M&S use and interoperability, presenting their role in enabling DoD functions and enhancing reuse.

This tutorial will identify key policies and procedures for DoD M&S, and present the Verification, Validation and Accreditation (VV&A) process that ensures that models and simulations meet the needs of their users. It will present the role of DoD M&S standards in DoD M&S tools and functional use; and the relationship to the Joint Information Enterprise (JIE) and cloud-based DoD IT. It will describe the characteristics and associated challenges of M&S and applications within the DoD functional areas of: Training, Analysis, Acquisition, Test and Evaluation, Experimentation, Medical, Planning and Intelligence. This tutorial will also identify accessible DoD M&S information resources.

Presenter

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, operational decision support, visualization of complex phenomena, test and evaluation, and performing acquisition functions. John also worked as a research engineer at the Naval Research Laboratory; specializing in advanced simulation-based C2 training, WMD analysis applications, and EW technologies.



TRACK 3: LVC
0830 - 1000 • ROOM S320C

Cybersecurity Best Practices to Protect LVC Networks, Training and Simulation Systems

(1817)

Cyber adversaries have a vast array of tools and a keen sense of when to use each one for maximum effect. You may not be able to stop all attacks but, you can minimize risk and impact of threats by constraining adversaries' operational space. Given LVC's inherently connected nature and the increasing dependence on commercial technologies, cybersecurity is critical to training and simulation.

Network flow data provides a wealth of behavioral information that is useful in understanding normal operation and detecting abnormalities. Cybersecurity is driven by a continuum of what actions can be taken before an attack occurs, during the attack to ensure continued operations while mitigation takes place, and after an attack to detect and defend against threats occurring in the future.

The ability to collect flow data and contextual information about users, applications and devices enables the network to serve as a powerful security resource. New technology and techniques allow today's network infrastructure to leverage embedded security capabilities to enable the entire network to serve as an invaluable security resource that can sense abnormalities and threats and automatically enforce security policies in response. Integration and communication between network control and security are absolutely essential.

Presenters

AARON WARNER is a Systems Engineer at Cisco Systems, Inc. He works with the U.S. Army and Joint DOD Organizations to develop secure enterprise architectures. He served in the Army for 12 years. Aaron holds multiple industry leading certifications including CISSP, OSCP and multiple CCIE's.

LEO LEBEL is a senior Cybersecurity Engineer for Cisco Systems. Leo is a retired Marine Corps warrant officer and holds a bachelor's degree in Information Technology and several industry Cybersecurity certifications.

KURT KOLLMANSBERGER is a systems engineer at Cisco Systems, Inc. He works with all services to identify requirements, provide technical guidance on the future direction of networking technologies and assists in implementation, testing and validation of proposed solutions. He served almost 14 years in the U.S. Air Force as a communications and network engineer and nearly 20 years at Cisco.

JOE BEEL is a strategic programs manager at Cisco Systems, Inc. He develops and implements strategies to support the DoD. He is a retired naval officer who served as a naval aviator and acquisition professional serving in command in both NAVAIR and SPAWAR.

TRACK 4: CONCEPTS & DIALOGUE
0830 - 1000 • ROOM S320D

Simulation Conceptual Modeling

(1809)

Simulation conceptual modeling is a critical step in simulation development frequently overlooked in the rush to demonstrate program progress. A simulation conceptual model is an abstraction from either the existing or a notional physical world that serves as a frame of reference for further simulation development by documenting simulation-independent views of important entities and their key actions and interactions. A simulation conceptual model describes what the simulation will represent, the assumptions limiting those representations, and other capabilities needed to satisfy the stakeholder's requirements. It bridges between these requirements, and simulation design.

This tutorial will present the theory and application of simulation conceptual modeling as documented during the research done by the NATO MSG 058. In addition, Use Cases that have been drawn from previous conference presentations will be presented to illustrate how conceptual modeling has been performed. Additional work is necessary to mature the state-of-the-art of simulation conceptual modeling before a recommended practices guide could be standardized. This tutorial has been created to continue the maturation of the simulation conceptual modeling best practices.

Presenter

JAKE BORAH is the Co-owner of Borah Enterprises LLC. He is a Senior Simulations/Learning Architect for the US Army PM ITTS Persistent Cyber Training Environment. Jake teaches Dual Enrollment Aeronautical Science courses for Embry-Riddle Aeronautical University. He has frequently supported US 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.

TRACK 5: ARCHITECTURES
0830 - 1000 • ROOM S320E

Distributed Interactive Simulation (DIS) 101 (1840)

The Distributed Interactive Simulation (DIS) protocol is a well-established IEEE standard for packet-level exchange of state information between entities in military simulations. DIS facilitates simulation interoperability through a consistent over-the-wire format for information, widely agreed upon constant enumeration values, and community-consensus semantics.

Anyone can obtain the IEEE-1278 standard and implement their own compliant, interoperable, DIS application. A large variety of tools and codebases simplify this effort, and enable multi-architecture integration of simulations using the DIS stand baseline. DIS focus begins with real-time, physics-based, entity-scale simulations, providing state update and interaction mechanisms which can scale to large virtual environments.

This tutorial is a “DIS 101” introduction for software implementers and an introduction to the DIS philosophy for simulation systems integrators. Examples are provided using the open-source Open-DIS library for DIS v7 support, available in multiple programming languages. Ongoing work is included in WebRTC browser streaming, experimental implementation of DIS v8, plus Web-based implementations using 2D maps and X3D Graphics.

Presenters

DON BRUTZMAN, Ph.D., is a computer scientist and Associate Professor of Applied Science working in the Undersea Warfare Academic Group and Information Sciences Department at the Naval Postgraduate School (NPS) in Monterey California. He has worked with DIS standard since 1993 and is co-designer of Open-DIS library and X3D DIS Component. He is cochair for the Extensible 3D (X3D) Graphics Working Group for the non-profit Web3D Consortium. Building on the open X3D International Standard, group efforts are working to make 3D printing and 3D scanning compatible with CAD, modeling, simulation and the Web. He is lead author of the book X3D Graphics for Web Authors, published April 2007 by Morgan Kaufmann. He is a retired naval submarine officer and principal investigator for the Network-Optional Warfare (NOW) project. His research interests include underwater robotics, real-time 3D computer graphics, high-performance networking, and artificial intelligence for ethical autonomy.

DON MCGREGOR is a Research Associate at the Naval Postgraduate School. He has been the lead programmer on the public, open source Distributed Interactive Simulation (DIS) Open-DIS project. Open-DIS has implementations of DIS in Java, C + + , Objective-C, C#, Python, and JavaScript. He engages in research topics including Live, Virtual, Constructive (LVC) simulation, web-based applications, and cloud-based deployment.

TRACK 6: IN PRACTICE
0830 - 1000 • ROOM S320F

Introduction to Data Standards and Standards Organization in Modeling and Simulation (1838)

Simulation programs and vendors are increasingly adopting and promoting their support for data standards. Data standards have the potential to normalize and increase compatibility between simulation systems and programs. Each standard is adopted and maintained by their own “Standards Body” or “Standards Organization”, and many types of these entities exist. Not only are there many standards organizations, there are many different types of standards, some of which have required and optional components. Additionally, specifications, including those that are ad hoc, or de facto are often incorrectly referred to as standards.

Each organization has their own membership levels, and their own processes for adopting, maintaining, publishing, and changing the standards.

This tutorial will explain the background, focus, membership, terminology, and processes of several standards organization that are relevant to Modeling and Simulation (M&S). It will help the audience understand what it means to support a standard. Additionally, it will provide a basis for individuals and organizations to those who desire to be involved in the adoption, changes, and/or maintenance of data standards.

Presenters

KEVIN BENTLEY is the founder and president of Cognitics, Inc. He has over 25 years of experience in architecting software in Geographical Information Systems (GIS), simulation, and games. His expertise includes terrain modeling and geospatial data analysis. He is the chief architect and lead engineer for research and development at Cognitics. He is a member and active participant in geospatial and simulation standards working groups within the Open Geospatial Consortium.

RONALD MOORE is currently the Chief Architect on U.S. Army Synthetic Environment (SE) Core program. He has over 35 years of experience in the modeling, simulation and training industry with expertise in software development, computer graphics, computer image generation, geospatial terrain database production, sound simulation, streaming audio and video, and PC and console game development.

JAY FREEMAN is the Synthetic Environment Technical Authority for CAE USA. He serves as the CAE’s Technical Lead for Joint Staff J7 Environmental Development Division’s development of a Terrain Generation Service and USSOCOM Geospatial Services where both capabilities leverage OGC CDB. Mr. Freeman previously served as the System and Software Architect for SE Core Database and Virtual Environment Development (DVED) program. Prior to working for CAE USA, Mr. Freeman has worked at TERREX, Lockheed Martin, and Intergraph.



TUTORIALS

TRACK 7: BEST TUTORIALS
0830 - 1000 • ROOM S320GH

An Introduction to Cognitive Systems for Modeling & Simulation

(1849)

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

Presenters

RANDOLPH M. JONES, Ph.D., Senior Artificial Intelligence Engineer and co-founder at SoarTech, has developed cognitive systems as principal investigator for a variety of advanced R&D projects funded by ONR, ARI, AFRL, DARPA and other DOD agencies. He has previously held academic positions at Colby College, University of Michigan, 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 MS (1987) and Ph.D. (1989) degrees from the Department of Information and Computer Science at the University of California, Irvine.

DYLAN SCHMORROW, Ph.D., Chief Scientist at 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 serves as a Potomac Institute for Policy Studies Senior Fellow, Editor of the Theoretical Issues in Ergonomics Journal, and 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. He holds a Ph.D. in Experimental Psychology from Western Michigan University, as well as M.S. degrees in Psychology and Philosophy. He retired from the U.S. Navy as a Captain in 2013, after 20 years of service.

TRACK 8: FUNDAMENTALS
0830 - 1000 • ROOM S310AB

Securing Distributed LVC Simulations with Data Distribution Service (DDS)

(1826)

Integrating simulation and training systems is hard. Legacy systems use differing standards for data, voice, and video. Modern architectures demand the use of cloud-based and distributed assets. New security requirements challenge integrators to become experts in information assurance. While these challenges drive integration time up, meeting today's emerging threats requires training environments that can be quickly assembled and reconfigured from ready-made components. Attend this tutorial to learn how Data Distribution Service (DDS) eases integration while providing NSA-tested security in real-time systems.

The Data Distribution Service (DDS) is an open standard managed by the Object Management Group. DDS is the connectivity framework that successfully meets the stringent interoperability and real-time requirements of the defense industry in hundreds of deployed systems. DDS seamlessly stitches together legacy simulations while adding humans and hardware in the loop to create new secure live, virtual, and constructive environments sharing real, augmented, and virtual realities. These run in a single lab or across multiple sites while matching physics-speed response times.

This tutorial introduces the DDS and DDS Secure standards. You will learn how to use DDS Secure to secure real-world Hardware-In-Loop (HIL) systems that already communicate over DDS to distributed Live, Virtual, Constructive (LVC) Simulations. The tutorial will describe how to integrate DDS with existing simulation-based standards such as HLA and DIS while adding robust security. Finally, the tutorial will provide some recent experiences of the use of DDS and an overview of deployed systems using DDS today. This tutorial is intended for all audiences; however, some familiarity with basic principles of distributed computing is recommended.

Presenter

ANDRE ODERMATT is a Technical Marketing Engineer for Real-Time Innovations (RTI). He received his B.S. in Electrical Engineering from the Lucerne School of Engineering and Architecture, and Diploma of advanced studies in software engineering from the Bern University of Applied Science. Andre has over 20 years of experience in embedded software development and communication software. Prior to RTI, he worked on Telecom protocols at Alcatel where he developed test systems for Asynchronous Transfer mode systems and Trillium Digital Systems where he was responsible for the SS7 product line. Andre is also involved in the FACE consortium where he participates in the IWS working group, and works on multiple integration projects for the TIM and BITS events.

TRACK 9: INNOVATIONS
0830 - 1000 • ROOM S310C

3D Printing/Manufacturing Process Primer for the M&S Practitioner (1810)

3D Printing, sometimes referred to as Additive Manufacturing (AM), is a process used to construct a solid object where material is joined (additively) under the control of a computer, layer-by-layer, to form the desired part or component. Over the past 40 years, we have witnessed a renaissance in the types of processes available for AM, and simultaneously, accelerated advancements in 3D printer technologies and base material alternatives. As a result, AM has transformed the manner in which we approach the practice of Design for Manufacturability, from conceptual modeling, to preliminary design, to final (printed) prototype.

In this Tutorial, we present a primer on the essentials of AM. Topics will include the history/origins of 3D printing, current applications, a detailed description of the AM process, associated technical and logistic challenges, and future avenues of application and research. Note that this presentation is offered with M&S subject matter experts in mind. Accordingly, the Tutorial will culminate with an offering of five practical and diverse Case Studies which will quantify how 3D Printing adds tangible benefit to Training for a variety of domain experts (academic, industry, military) who utilize models and simulations in their respective careers (e.g., education, manufacturing, aerospace, health care, medicine).

Presenter

KEVIN F. HULME, Ph.D., received his Ph.D. from the Department of Mechanical and Aerospace Engineering at the University at Buffalo (UB). He currently oversees the UB Digital Manufacturing Laboratory, with technical areas of concentration including: 3D Printing/Additive Manufacturing, Computer-aided Design and Engineering, Design for Additive Manufacturing, and experiential learning/STEM. In November of 2015, Dr. Hulme became a Certified Modeling and Simulation Professional (CMSP).

Co-authors

HAILEY KILIAN received her B.S. from the Department of Biomedical Engineering at UB, and is a Graduate Associate at the UB Digital Manufacturing Laboratory. **ASHLEY SEYMOUR** is pursuing her B.S. in Accounting and Business Management at UB, and is an Undergraduate Associate at the UB Digital Manufacturing Laboratory. **CONNIE-ROSE DEANE** is pursuing her B.S. in Mechanical Engineering at UB, and is an Undergraduate Associate at the UB Digital Manufacturing Laboratory. **MAGGIE LIU** received her B.A. in the Department of Linguistics and the Department of Communicative Disorders and Sciences at UB, and is a Graduate Associate at the UB Digital Manufacturing Laboratory. **SOURABH SAPTARSHI** received his M.S. from the Department of Industrial and Systems Engineering at UB and is a Development Engineer at Sumitomo Rubber, USA.

TRACK 1: BE SAFE
1245 - 1415 • ROOM S320A

Risk Management Framework: Cybersecurity Compliance for Modeling, Simulation, and Training Systems (1830)

Cybersecurity, it is everywhere we look in today's world and when it comes to government systems it commonly evokes fears of insurmountable regulation which ultimately provide little benefit. This tutorial aims to educate the audience with an understanding of the ultimate goals of the Risk Management Framework (RMF) and how it was designed to relieve excessive regulation and costs. An area of focus will be on understanding the requirements for the Cybersecurity RMF and how it applies to modeling, simulation, and training systems. We will detail the reasons for Cybersecurity compliance, the key concepts, and why it is critical for military, government, and even civilian applications.

The tutorial will explain the general process of approaching RMF compliance and how the Cybersecurity implementation plans are created and revised in the requirements gathering phases of a project. Using these RMF requirements and concepts, the tutorial will then take it a step further and analyze the documentation deliverables associated with RMF, their purposes, and finally the government processes necessary to submit a system for an Authority-to-Operate decision. Attendees will gain a strong foundational understanding of the Cybersecurity Risk Management Framework and how to apply it in their own programs.

Presenters

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

CHARLES COHEN is Cybernet's Chief Technology Officer, and has been a technical lead and project manager in the fields of modeling and simulation, cybersecurity, image processing, sensors, robotics, human-computer interaction, and artificial intelligence for over a decade. At Cybernet, he has led projects for the United States Department of Defense (Army, Air Force, and Navy), National Aeronautics and Space Administration, Homeland Security, and other government agencies. Dr. Cohen also currently serves on the Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) Tutorial Board. He holds a Ph.D. in Electrical Engineering.



TUTORIALS

TRACK 2: DO IT RIGHT
1245 - 1415 • ROOM S320B

Design of Experiments: Applications in the Simulation Profession

(1814)

Design of Experiments (DOE) provides new types of information to modeling and simulation developers and users. DOE is used to calculate relatively accurate models of a system quickly, identify the most significant inputs (factors) that affect the outputs (responses), find optimal solutions, and calculate settings to meet target values. The models of the systems are sets of equations that determine the relationships between the responses and the factors. These models can be used to characterize (calculate) the response values anywhere in the region modeled. The benefits of using DOE include a thorough upfront analysis process; a wide variety of possible designs that can be used; a straightforward way to estimate needed sample sizes; development of equations that can be tuned to optimize or otherwise hit targeted values; and a wide array of use cases. The use cases for DOE include simulation, training, education, test and evaluation, systems engineering, consumer product design, quality improvement, cybersecurity, model validation, and human factors design information. All of these use areas will be mentioned in the briefing and several will be included in the example case studies in this tutorial.

This tutorial will discuss the upfront analysis steps for the DOE process, key benefits of using DOE, and current use cases. These use cases include the development of functional models of systems or processes in order to characterize how the systems or processes perform within the region modeled. The tutorial will then provide examples to illustrate how DOE models are developed and used to define a relationship between factors and responses for the purpose of analysis, tradespace studies, evaluation, and optimization. Response surface graphs will be used to illustrate how human-systems integration issues can be detected. Use cases such as Model Based Systems Engineering, education, training, cybersecurity, and validation of models will be mentioned. There are no prerequisites for mathematical or statistical knowledge for this tutorial.

Presenter

STEVEN GORDON, Ph.D., is the Orlando Field Office Manager and a Principal Research Engineer for Georgia Tech Research Institute. He retired from the Air Force in 1998 and served as the first Technical Director for the Air Force Agency for Modeling and Simulation. Dr. Gordon has a Bachelor's Degree in Mathematics (Marymount); Master's Degrees in Education (Vanderbilt), Industrial Engineering/Operations Research (Purdue), and Business (University of Florida); and a Ph.D. in Aero and Astro Engineering (Purdue).

TRACK 3: LVC
1245 - 1415 • ROOM S320C

Live, Virtual and Constructive (LVC) Simulation Interoperability 101

(1832) ✈

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

Presenters

STEFAN SANDBERG is the President of Pitch Technologies, the leading provider of innovative and standards-based interoperability products and services. Before joining Pitch he has a long experience in working with flight simulators at Saab Aerosystems where he established a program to provide Mission Flight Simulators to all operators of the Gripen fighter aircraft. He has also managed a Swedish government IPT with the aim to coordinate all simulation resources and software development tools used in the development process for the Gripen Aircraft. He has served on the RAeS Flight Simulation Group Committee (FSGC) for a number of years and is active within SISO in the Executive Committee and SISO Inc. Board of Directors. Stefan Sandberg has studied Industrial Engineering and Management at the Linköping Institute of Technology and is a holder of a PPL flight certificate.

KURT LESSMANN is the co-founder and Chief Technology Officer of Trideum Corporation headquartered in Huntsville, AL. For the 6th time, Trideum has made the 2018 Inc. 5000 list of the fastest-growing private companies in America and focuses on four core competencies: LVC Interoperability, Test & Evaluation (T&E), Training Solutions & Engineering Analysis. Mr. Lessmann has supported the Modeling and Simulation (M&S) and LVC communities for the past 25 years where he has been involved in interoperability standards development and deployment for DIS, HLA and TENA. His primary focus has been applying M&S and LVC technologies to enhance weapons system test and evaluation effectiveness. He is currently focusing on developing solutions that provide an operationally realistic distributed LVC environment that supports weapon system cybersecurity vulnerability assessments. He holds a Bachelor of Aerospace Engineering Degree from Auburn University, lives in Huntsville, AL with his wife of over 25 years and their three children.





TRACK 4: CONCEPTS & DIALOGUE
1245 - 1415 • ROOM S320D

Spoken-dialogue Interaction for Serious Games and Virtual Training Simulators

(1847) ✦

Recent advances in deep learning have opened people's minds to new levels of interaction within many Virtual Training Environments (VTEs)/Serious Games. Unfortunately, allowing users to fully interact through speech is a challenge for computers, particularly when the task is unconstrained or performed under adverse conditions. Speech is therefore often neglected as a modality, in spite of its naturalness.

Furthermore, user-based evaluations of speech interfaces are intrinsically difficult. The recent AI revolution brings hope that, despite these shortcomings, there will at least be some areas of R&D that will lead to real improvements in both the design and implementation of spoken interactions in training systems. This tutorial will explain: how deep learning has transformed dialogue/chat systems; the components of a typical dialogue system; the challenges in enabling spoken dialogue as a modality for hands-free interaction; the major usability issues for AI/dialogue interaction within VTEs/serious games; opportunities for researchers and developers to enhance system interactivity through AI/dialogue; and how to enable dialogue interaction within immersive, mixed-reality environments.

Presenters

GERALD PENN is a professor of computer science at the University of Toronto, and a visiting research scientist at the International Computer Science Institute at the University of California, Berkeley. His research interests are spoken language processing and mathematical linguistics. He is a past recipient of the Ontario Early Researcher Award, a senior member of IEEE, a senior member of AAAI, and has led numerous research projects funded by Avaya, Bell Canada, CAE, the Connaught Fund, Microsoft, Natural Sciences and Engineering Research Council of Canada, the German Ministry for Training and Research, SMART Technologies, the U.S. Army and the Office of the Director of National Intelligence.

COSMIN MUNTEANU is an assistant professor at the Institute for Communication, Culture, Information, and Technology (University of Toronto at Mississauga). Until 2014 he was a research officer with the National Research Council of Canada where he led several projects on the use of speech interaction for infantry and public safety immersive training systems. His area of expertise is at the intersection of automatic speech recognition (ASR) and human-computer interaction (HCI), having extensively studied the human factors of using imperfect speech recognition systems, and having designed and evaluated systems that improve humans' interaction with immersive technologies through speech and natural language (such as advanced learning systems and mixed reality training simulators).

TRACK 5: ARCHITECTURES
1245 - 1415 • ROOM S320E

Introduction to HLA

(1825)

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

Presenters

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

ROBERT LUTZ is a principal staff scientist at The Johns Hopkins University Applied Physics Laboratory in Laurel, MD. His background includes 38 years of practical experience in the development, use, and management of models and simulations across all phases of the DoD systems acquisition process. He currently serves as the Airspace Integration Modeling and Simulation (M&S) lead for the Navy's Triton program and as an advisor on several LVC development projects. Mr. Lutz also served as the technical editor for IEEE 1516.2 (HLA Object Model Template) and as the product development group (PDG) chair for IEEE 1730 (DSEEP). Mr. Lutz is presently the chair of the Simulation Interoperability Standards Organization (SISO) Board of Directors, serves on the Tutorial Board and Fellows Committee at the Interservice/Industry Training, Simulation and Education Conference (I/ITSEC), and is a guest lecturer on M&S-related topics.

TRACK 6: IN PRACTICE
1245 - 1415 • ROOM S320F

A Complete Introduction to Medical Simulation

(1828)

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 have been supplemented with teaching methods targeted at modern patient-based practices and team-based learning. This tutorial is a comprehensive overview of medical simulation to include its history, proposed system taxonomies, devices and techniques for representing external and internal anatomy and physiology for medical interventions, the role of team training, and criteria for current simulation accreditation programs. The tutorial concludes with a predictive view into the future of the devices and practices as outlined by forward thinkers in the field. This includes an understanding of the financial, cultural, and scientific forces which both aid and restrain the application of simulation in medicine.

Presenters

ROGER SMITH, Ph.D., is currently the Chief Technology Officer (CTO) for the Florida Hospital Nicholson Center where he is responsible for establishing technology strategy. He previously served as the CTO for the U.S. Army PEO STRI. He holds a Ph.D. in Computer Science, a Doctorate in Management, an M.S. in Statistics, and a B.S. in Applied Mathematics. He has published 3 professional textbooks on simulation, 12 book chapters, and over 100 papers.

DANIELLE JULIAN, M.S., is a Research Scientist at Florida Hospital's Nicholson Center. Her current research focuses on robotic surgery simulation and effective surgeon training. She is a certified instructor for surgical robotics courses delivered to surgeons and OR staff members. She is currently a Ph.D. student in Modeling and Simulation at the University of Central Florida where she previously earned an M.S. in Modeling and Simulation and a B.S. in Psychology.

KAREN KELLY, MSN, RN, CHSE is Senior Simulation Learning Strategist for Florida Hospital. She plans, develops and implements Medical Simulation education and training for the hospital system which incorporates all campuses, service lines and departments and associated programs/partners including Graduate Medical Education and the Adventist University of Health Sciences. She is an intensive care nurse by training.

SUMY MICHAEL, MSN, ARNP, CCRN, CHSE is a Program Manager for Clinical Learning at Orlando Health system. She has spent the last 20 years serving various roles in healthcare, as critical care nurse, Advance Registered Nurse Practitioner, and simulation and healthcare educator. She has been part of development of continuing education courses "Principles of Simulation in Healthcare" and "Enhancing Patient Safety through Team Training".

TRACK 7: BEST TUTORIALS
1245 - 1415 • ROOM S320GH

The Science of Thrills: Applied M&S in the Entertainment Industry

(1811)

The discipline of Modeling & Simulation (M&S) has long been associated with classical application domains, from military/defense, to medicine, to transportation. In more recent times, emergent M&S technologies have been incorporated in the entertainment and theme park industry. With six South Florida amusement parks ranking in the top 15 worldwide in annual attendance, and with a direct economic impact of more than \$55 billion annually, this evolutionary and engaging application sector has strong relevance to Orlando/South Florida, and has long-standing association to the I/ITSEC community, specifically.

In this "Special Topics" M&S Fundamentals Tutorial, we will review and reinforce how modeling methods and associated mechanisms for implementing simulations have been applied, with great impact, within the theme park industry over the last quarter century. Following a targeted review of essential M&S "building blocks" within amusement ride design, a series of Case Studies are offered that showcase, by example, the highly multidisciplinary engineering methods that underlie "The Science of Thrills". This application-oriented presentation will offer a high engagement factor for learners who are new to M&S, will offer a pervasive regional theme (while conforming to the prevailing 2018 I/ITSEC Conference Themes), and will serve as a practical primer for CMSP (technical) certification.

Presenter

KEVIN F. HULME, Ph.D., received his Ph.D. from the Department of Mechanical and Aerospace Engineering at the University at Buffalo (UB). He currently directs the UB School of Engineering Motion Simulation Laboratory, with technical areas of concentration including: Game-based approaches for applied Modeling & Simulation, human factors research in autonomous and connected vehicles, M&S approaches in STEM and experiential learning, and assessment of distractions on driver performance. In November of 2015, Dr. Hulme became a Certified Modeling and Simulation Professional (CMSP).

Co-authors

EMMANUEL TORRES GIL received his B.S. in Mechanical Engineering at UB, is now pursuing a Ph.D. at Purdue University, and plans to specialize in methods for turbulent reacting flows, and his career goals include obtaining a research position at NASA, The Air Force, or Department of Defense. **CHRISTOPHER HENDRICK** received a dual B.S. in Mechanical and Aerospace Engineering at UB. He is now pursuing his M.S. at The Pennsylvania State University, specializing in dynamic systems and controls, and he aspires to join industry in a research position studying autonomous systems. **SHATHUSHAN SIVASHANGARAN** received his B.S. in Mechanical Engineering at UB, and he will now pursue his M.S. at the same institution to specialize in Robotics and Control, and develop innovative design solutions for autonomous and unmanned aerial vehicles.



TRACK 8: FUNDAMENTALS
1245 - 1415 • ROOM S310AB

Road Map for Innovators in Cloud-Based Modeling and Simulation

(1821) ✦

Cloud technologies continue to disrupt and change the business model for information technology and computing across industry and government. However, modeling and simulation is one area that has been slow to respond to the availability of cloud technologies. Some of the barriers to migration of M&S to the cloud include security and policy within military and government organizations, the low suitability of existing M&S systems for cloud deployment, access to cloud resources, execution speed, the cost of developing and integrating systems for the cloud, and the challenge of establishing a business model for on demand cloud-based M&S. Innovators and early adopters in the M&S community are pecking away at these barriers in a number of government and industry applications. This tutorial pulls from these early implementations to help other potential adopters understand the road to the cloud.

This tutorial leverages work by the Institute for Defense Analysis and NATO Modeling and Simulation Groups to build a taxonomy for Cloud-Based Modeling and Simulation (CBMS). It describes M&S capabilities that could be offered in the cloud, and it also describes different levels and types of cloud adoption. It summarizes several CBMS implementations and categorizes them against that taxonomy. M&S owners who want to deploy capabilities to the cloud will leave with lessons from early innovators and a road map to get them started.

Presenters

ROBERT KEWLEY, Ph.D., has served as the head of the West Point Department of Systems Engineering and as the Chief Systems Engineer for the Assistant Secretary of the Army for Acquisition, Logistics, and Technology. He has performed extensive Army studies using simulation. His research background is in the development of simulation methodologies and engineering processes to support the application of simulation to complex system of systems problems. He has served as the co-chair of the Simulation Interoperability Standards Organization's CBMS Study Group. He also was lead author for NATO's Modelling and Simulation as a Service Engineering Process.

ROBERT SIEGFRIED, Ph.D., is senior consultant for IT and Modeling & Simulation projects and CEO of aditerna GmbH. Within several projects from the German Federal Office of Defense Technology and Procurement, Robert has worked (and is currently working) on topics like documentation guidelines, model management, distributed simulation test beds and process models. Robert led the activities of NATO Modeling and Simulation Group-136 (MSG-136), Modeling and Simulation as a Service (MSaaS) and its follow-on effort MSG-164. This group's efforts received the NATO Scientific Achievement Award. He is also a member of the Executive Committee of the Simulation Interoperability Standards Organization (SISO).

TRACK 9: INNOVATIONS
1245 - 1415 • ROOM S310C

The Truth About Blockchains and How They Apply to Training

(1833)

The buzz about blockchains across industries is at an all-time high. The volatility of the financial market, potential for securely managing data, and potential to modernize many fields has made public perception of the underlying technology clouded. The first step to applying the technology is gaining an understanding of its capabilities and limitations.

Blockchain builds on many known technologies such as distributed databases, encryption, and wide area networking to enable new methods of capturing transactional data in an immutable fashion. Across industries this technology is making an impact, but it is not always clear if it is necessary or worthwhile. Those attending this tutorial will learn about blockchain technology, the underlying theories that support its functionality, and use cases related to the DoD.

Presenters

ROBBY ROBSON, Ph.D., is co-founder and CEO of Eduworks Corporation, a consultant for the Institute for Defense Analyses, a member of the IEEE Standards Association Standards Board, and principal investigator on the Competency and Skills System (CaSS) project. During his career in academia and industry he has made contributions to pure and applied mathematics, educational theory and practice, interoperability standards, and learning technology. He has supported multiple DoD research efforts that have applied technologies such as machine learning and natural language processing with the goal of improving training effectiveness. His interest in blockchains stems from his role in the CaSS project and his work on the IEEE future directions committee. Robby's doctorate is in mathematics from Stanford.

MIKE HERNANDEZ is a U.S. Army veteran and systems engineer who has contributed to many innovative efforts to improve the training technologies available to the defense and security communities. He holds a bachelor's degree in Electrical Engineering from Florida Atlantic University. He is currently supporting the Advanced Distributed Learning (ADL) Initiative as a Systems Engineering and Technical Assistance contractor providing technical oversight of multiple programs within the ADL portfolio, including the Competency and Skills System (CASS) project and its associated blockchain effort. Through his previous work with the eSailor project, Sailor 2025, and intelligent tutors, he has gained valuable experience and a practical perspective on examining a new technology, such as blockchains, and assessing what is required for them to be integrated into a DoD environment. He views this tutorial is a way to bring a better understanding of blockchain technologies to the I/ITSEC community and to further the conversation on how the community perceives blockchains as an emerging capability for training.



TUTORIALS

TRACK 1: BE SAFE
1430 - 1600 • ROOM S320A

Addressing the Challenges of Rigorous Simulation Validation

(1851)

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 addresses several of those challenges:

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

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

Presenters

SIMONE M. YOUNGBLOOD is a member of the Johns Hopkins Applied Physic Laboratory's Principal Professional Staff. Leveraging an extensive background in simulation development and credibility assessment, Simone Youngblood has served as the DoD VV&A focal point for the past 22 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: DTRA, DNDO, NAVAIR and PEO IWS 1. Ms. Youngblood has a B.A. in mathematics as well as B.S. and M.S. degrees in computer science.

MIKEL D. PETTY, Ph.D., is a senior scientist for modeling and simulation at the University of Alabama in Huntsville's Information Technology and Systems Center and an associate professor of computer science. Prior to joining UAH, he was chief scientist at Old Dominion University's Virginia Modeling, Analysis, and Simulation Center and assistant director at the University of Central Florida's Institute for Simulation and Training. He received a Ph.D. in Computer Science from the University of Central Florida in 1997. Dr. Petty has published over 200 research papers and been awarded over \$16 million in research funding. He has served on both 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 journal *SIMULATION: Transactions of the Society for Modeling and Simulation International*.

TRACK 2: DO IT RIGHT
1430 - 1600 • ROOM S320B

A Functional Approach to Distributed Network Architectures for LVC

(1829)

Recent innovations within the networking industry are converging to greatly enhance the distributed simulation environment setting a foundation for the LVC objective state. Future network architectures leverage hardware innovations that include converged compute, storage, and transport management functions and device virtualization that allows a single device to perform multiple roles.

These network architectures and their operating practices create operational effects at a lower capital and operating cost. Resource utilization can be dynamically adjusted to meet demand. During a simulation sequence, surges can be distributed to ensure the quality of service required to achieve the realism demanded as hundreds, thousands, or tens of thousands of entities interact.

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

Presenters

CHUCK LOUISELL, Ph.D., is a strategic programs manager at Cisco Systems, Inc. He implements strategies to support the defense sector. Chuck served as a USAF Weapons School instructor and command positions. At Cisco, Chuck works across all data center and cloud product lines.

GRIMT HABTEMARIAM is a business technology manager at Cisco Systems, Inc. She implements strategies to support the defense sector. Previously, Grimt has worked in product management and engineering. She currently works across data center and cloud solutions.





TRACK 3: LVC
1430 - 1600 • ROOM S320C

Planning and Execution for Large LVC Multi-Architecture Distributed Events

(1822)

Distributed simulation technologies have changed the way the Department of Defense does Research, Development & Engineering (RD&E), training, analysis, and testing. These technologies and associated standards have been in use for 20 years and have been documented in many forums. However a critical element that has not been widely documented is the processes and tools required to execute a large multi-architecture distributed event. There are organizations that do these types of events very well, but the only way for the new practitioner to learn these skills is to be a member of one of these teams.

This tutorial provides a guide to the planning and execution of a large multi-architecture distributed event. This guide will include the steps to planning and executing an event including design of the simulation architecture, planning integration spirals, scenario development and rehearsal, conduct of the event, data collection and analysis. While the steps described in this tutorial are applicable to all large distributed events, special emphasis will be placed on multi-architecture based events. An example will be provided showing how to select architectures and object models. This tutorial is applicable to anyone involved in the development of a large test event. The material will be applicable to simulation architects, analysts, scenario developers, simulation users, and managers.

Presenter

MICHAEL J. O'CONNOR is Chief Technologist at Trideum Corporation. Mr. O'Connor has more than 25 years' experience in Modeling and Simulation (M&S). He has been a key participant in the development of distributed modeling and simulation standards, including IEEE 1278 and IEEE 1516. He has held many positions in the community, including Chairman of the SISO Standards Activities Committee and Chairman of the SISO Executive Committee. 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.

TRACK 5: ARCHITECTURES
1430 - 1600 • ROOM S320E

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

(1818)

The Test and Training Enabling Architecture (TENA) and the Joint Mission Environment Test Capability (JMETC) program provide an advanced set of interoperability software, interfaces, and connectivity for use in joint distributed testing and training. This tutorial will provide information about how TENA works and why it is important to the test and training communities, with some comparison to other interoperability architectures. TENA provides testers and trainers software such as the TENA Middleware—a high-performance, real-time, low-latency communication infrastructure that is used by training range instrumentation software and tools during execution of a range training event. The standard TENA Object Models provide data definitions for common range entities and thus enables semantic interoperability among training range applications. The TENA tools, utilities, adapters and gateways assist in creating and managing an integration of range resources. The current version of the TENA Middleware, Release 6.0.5, is being used by the range community for testing, training, evaluation, and feedback and is being used in major exercises in the present.

JMETC is a persistent test and evaluation capability throughout the US DoD, connecting many test ranges together, including a bridge to the JTEN training network; a set of TENA-compliant software middleware, interfaces, tools, and databases; and a process for creating large distributed test events. The combination of TENA and JMETC gives testers and trainers unprecedented power to craft a joint distributed mission environment that forges the future for innovative testing and training.

Presenter

EDWARD D. POWELL, Ph.D., is a lead architect for the Test and Training Enabling Architecture. After receiving his Ph.D. in Astrophysics from Princeton University, he participated as lead architect in some of the most complex distributed simulation programs in DoD. He has been the lead architect for TENA for fifteen years, and is currently working on expanding the applicability of TENA, and integrating TENA with broader DoD-wide Data Management and Big Data analysis systems. Currently, he owns his own consulting company specializing in Simulation and Systems Architecture and Engineering.

TRACK 6: IN PRACTICE
1430 - 1600 • ROOM S320F

Team Training Environment Specification and Selection

(1843) ✦

Delivering effective military capability to counter increasingly diverse threats has never been more challenging, with fiscal constraints driving the need for ever greater efficiency in training provision. The aim of this tutorial is to show how the training environment model can be used to provide a structured framework for developing training environment specifications which facilitate the development and evaluation of effective training environments. The training environment model guides the identification of the key attributes of the physical and information environments within which our war-fighters operate, the means with which they interact with these environments, and the other significant actors in the environment. It also facilitates the identification of the key training environment features required to support training delivery (such as setting up and controlling the environment, monitoring performance and after action review). By identifying the key attributes of each of these elements that have to be specified, it becomes possible to explore how Live, Synthetic and Constructive substitutions can best be made to deliver training environments which challenge war-fighters in credible, demanding and engaging scenarios, whilst providing assurance of the capability that is being developed.

Presenter

JOHN HUDDLESTONE, Ph.D., is a Senior Research Fellow in the Human Systems Integration Group within the Mobility and Transport Faculty Research Centre of the Engineering, Environment and Computing Faculty at Coventry University in England. A former Royal Air Force Officer, he has extensive experience of training analysis, design and delivery in both aviation and engineering domains. During his subsequent academic career he has led research in to a broad spectrum of military training issues, spanning individual, team, collective and joint levels. A co-author of the Team and Collective Training Needs Analysis Methodology, his research interests include team training, human factors methods and aviation human factors. He holds a PhD in applied psychology from Cranfield University, an MSc in Computing Science from Imperial College, London and a BEd in Physics from Nottingham Trent University. He is a Chartered IT Professional and Member of the British Computer Society.

TRACK 7: BEST TUTORIALS
1430 - 1600 • ROOM S320GH

Harnessing Transmedia Learning: How to Optimize Your Productivity with Learning Science, Media, and Technology

(1845)

A long-time goal of educators, developers, researchers, and policy-makers alike is that ecosystems of learning applications will someday provide adaptive, personalized learning that is facilitated by data shared among technologies. However, until the technical promise is fully realized, learners are still largely on their own to make sense of increasing amounts of information from disparate, unconnected sources. Learners generally lack the strategic support to learn across devices and engage in connected learning anytime, anywhere, with anyone. We can disrupt this cycle when we use learning science strategies, tailored media choices, and our favorite technologies to incentivize rich, connected transmedia learning experiences.

Applying learning science strategies for self-paced, transmedia learning “in the wild” can augment professional courses. Using several use cases as examples, this tutorial will demonstrate how learners can develop their own personalized transmedia learning frameworks (TLF) for self-directed learning when engaging with massively open online courses (MOOC), podcasts, social media, videos, and more. A walk-through of example transmedia learning frameworks for application in M&S skill development will be provided. Participants of this tutorial will take away practical strategies, resources, and tools that can be applied toward learning more productively in general, and with examples from Python, Git, and cybersecurity. Participants will learn how to make their own TLFs available to others for reuse. The tutorial begins with the motivation for developing personal strategies for learning “in the wild” and through descriptions and definitions, shows how TLFs can be used to augment self-paced learning for M&S professional development.

Presenter

ELAINE M. RAYBOURN, Ph.D., is a Principal Member of the Technical Staff in Applied Cognitive Science at Sandia National Laboratories. Her research in transmedia learning, games, and immersive simulations has been featured at GDC, SXSW-EDU, and in her TEDx talk on transmedia storytelling for next generation learning ecosystems. As a European Research Consortium for Informatics and Mathematics (ERCIM) Fellow, she has worked with teams at Fraunhofer FIT in Germany, the French National Institute for Computer Science (INRIA), and BT Global Research and Development in the UK. She holds a Ph.D. in Intercultural Communication and Human Computer Interaction from the University of New Mexico, and a Graduate Certificate in M&S of Behavioral Cybersecurity from the University of Central Florida. Dr. Raybourn is the Sandia National Laboratories Institutional PI for Interoperable Design of Extreme-scale Application Software (IDEAS-ECP) and the Conference Chair of ITEC 2019.



TRACK 8: FUNDAMENTALS
1430 - 1600 • ROOM S310AB

Fundamentals of Modeling and Simulation (1819)

This tutorial has been designed by a team of subject matter experts to prepare attendees to understand the scope of I/IT-SEC presentations and demonstrations. It provides definitions of widely-used technical terms, while explaining the range and types of models and simulations that are commonly applied in the M&S domain. The tutorial reviews major simulation architectures (HLA, TENA, DIS), the basics of instructional design, a description of the major standards and best practices available for use across the M&S problem space, and a brief presentation of resources that can provide further information. The tutorial introduces topics that are examined more extensively in other tutorials.

The tutorial is designed to be technically focused and is not intended to overview management or governance of M&S within the US DoD.

Presenters

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.

S. K. NUMRICH, Ph.D., CMSP, holds an AB, M.A. and Ph.D. in physics and worked as a research physicist at the Naval Research Laboratory plying her trade in a variety of fields including underwater sound in the Arctic (yes, aboard ship), fluid-structure interactions, parallel processing, modeling and simulation and virtual reality. Upon leaving government service, Dr. Numrich has joined IDA.

ROBERT RICHTHOFF, Ph.D., is a member of the Research Staff at the Institute for Defense Analyses. He is a retired Army officer who holds a B.S. in Mathematics, and M.S. and Ph.D. in Computer Science. In his last active duty assignment, he was an Academy Professor and Director of the Artificial Intelligence Center at the United States Military Academy, West Point. He is a past chair of the I/ITSEC Tutorial Board and the I/ITSEC Simulation Subcommittee.

TRACK 9: INNOVATIONS
1430 - 1600 • ROOM S310C

Machines Crave Big Data (1850)

Machine learning, a branch of data science, is transforming the way we analyze and automate training and simulation. The secret is that machine learning is only as effective as the data used to train these algorithms. As a result, organizations, leaders, and the workforce, must be ready to embrace the technical and organizational changes needed to effectively operationalize their data and utilize machine learning. In this tutorial, you'll learn more about this exciting field, discover how to prepare your organization for it, hear about from a DoD organization that is embracing Big Data and Artificial Intelligence (AI), and experience live demos of these approaches in action.

Presenters

JOE ROHNER is a Chief Technologist in Booz Allen Hamilton's Digital & Analytics Strategic Innovation Group focused on delivering data science, AI, and analytics solutions for the Department of Navy and helping define how Navy can use data science to become a more mission-ready organization. In this role, he manages data scientists delivering machine/deep learning, computer vision, and natural language processing solutions. He also develops and implements hackathons that enable organizations to identify new analytical and machine learning techniques while recruiting future data science leaders. Joe has supported the Department of Navy for 13 years, to include their own hackathon series, HACKtheMACHINE. In 2017, Joe worked with U.S. Army TRADOC to launch the inaugural Data Science Futures Hackathon at I/ITSEC.

KAYE DARONE is the Data Science Director in the TRADOC G-2 Operational Environment Center (OEC), which is developing and deploying a Big Data/AI/Machine Learning platform for the delivery of the Operational Environment to customers across the Army, sister Services, multinational partners, government, and academia. Kaye has 34 years of experience in the government and private sectors, in support of Joint, Service, and National Agency intelligence, command and control systems, Modeling and Simulation and related programs. She became a civilian in 2004, and joined TRADOC G-2 in 2014.

SETH CLARK is a Senior Associate within Booz Allen Hamilton's Strategic Innovation Group. He works at the intersection of Data Science, Artificial Intelligence, GPU Computing, and Product Management. He has served clients across the Federal government for over 10 years, from the DoD, to the Intelligence Community, to a range of Civilian Agencies. His experience delivering web & mobile applications, leading data science teams, and providing strategic guidance in the adoption of new technologies has given him real-world experience in how agencies can get the most value from machine learning & AI.



TUTORIALS

ROOM	SESSION/CHAIR	1400	1430	1500
S320A	P-1 Agility and the Team: The Road to Margaritaville John Dzenutis	Stretching to Achieve NFL-Caliber Agility for Software Development Programs (18122)	An Agile ISD Process to Develop a Medical Simulation (18116)	Team Orlando: Community of Progress (18222)
S320B	S-1 Synthetic Environment Content Ronald Moore	Exploring Cloud-Based Terrain Generation Services (18253)	Maintaining Deep Content Libraries While Meeting Rising Quality Standards (18024)	Knowledge is Power – Representing Complexity in the Information Age (18300) ✦
S320C	EC-1 Automation: Trust Me, ITS the Future Tara Kilcullen	Using Novices to Scale Up Intelligent Tutoring Systems (18028)	Automating the Training Feedback Paradigm with Intelligent After Action Review (18275)	The Application of Automation Systems for Training – Implications of Trust (18019)
S320D	ED-1 Best Papers from around the Globe Amanda Davies, Ph.D.	ITEC: Training and Simulations in the Middle East (What the Training and Simulations Senior Advisor is Telling the Organization's Leadership, and Why)	MODSIM: Leveraging Commercial Game Engines for Multi-Domain Image Generation	
S320E	T-1 Sexy Simulation in Air, Land, and Sea Michele Harrison	A Simulation Based Application for Naval Navigation Training (18109)	A Multi-Role Reconfigurable Trainer for Naval Combat Information Operators (18223) ✦	Socio-technical Simulation for Denied Environments Training: A Contested Airspace Example (18226)
S320F	H-1 Assess, Decide, Disrupt J. Robert Bois, Ph.D.	The Effect of Work Experience on Risk Assessment Skills (18126)	Smart Simulation for Decision Support at Headquarters (18246) ✦	Human-Agent Teaming: State of Assessments and Selected Issues (18283)
ROOM	SESSION/CHAIR	1600	1630	1700
S320A	P-2 Architecture to Operations: It's 5 O'Clock Somewhere Susan Harkrider	Modelling & Simulation as a Service – Empowering Operational Users (18225) ✦	The Strategic Role of UCATT Standards to NATO's Enhanced Forward Presence Mission (18067) ✦	Lessons Learned from Distributed Virtual Air Refueling (VAR) Integration (18005)
S320B	S-2 Augmented and Virtual Reality Thomas Kehr	An Architectural Overview of the Augmented Reality Sandtable (ARES) (18245)	Creating a 360-Degree RGB-D Sensor System for Augmented Reality Research (18211)	Using Modeling and Simulation to Design the Future Squad (18241)
S320C	EC-2 Deep Learning: Dive Right In Harry Sotomayor	Deep Learning Applications for Modeling, Simulation, and Training (18315)	Exterior Attribute Extraction and Interior Layout Speculation of 3D Structures (18243)	Temporal IR Energy Maps for Synthetic Virtual Training (18255)
S320D	ED-2 Maximizing Learning Using Simulation Around the World William Gerber, Ph.D.	Advancing Capability: Designing Authentic Simulation-based Teaching, Learning and Assessment (18123) ✦	Simulation as an Emerging Literacy (18118) ✦	Development of an Educational Platform for Simulation Developers (18084) ✦
S320E	T-2 "Make Up Your Mind": Learning to Decide Gary Bauleke	Building Automated Assessments of Interpersonal Leadership Skills (18010)	Virtual Supplementation of Tactical Decision Making Training (18113)	When Expertise Fails: Designing for High Uncertainty Decision Making in Virtual Worlds (18180)
S320F	H-2 Neurologically Speaking Perry McDowell	Objective Stress Monitoring for Live Training Exercises (18105)	Assessing Intuitive Decision Making with Cognitive Neuroscience-based Methods (18110)	Boosting Cognitive Capabilities through Enhanced States during Gaming (18149) ✦



ROOM	SESSION/CHAIR	0830	0900	0930
S320A	P-3 Upsetting the Standards Cart Julie Kent	A Capability Maturity Model for Flight Training (18298)	The New Wave of Training Technology Standards (18045)	Achieving Full Potential through Evaluation Policy that Disrupts Status Quo (18292)
S320B	S-3 Creating Complex Urban Environments John Huddleston, Ph.D.	Agile Terrain Development for Simulation-Based Training (18295)	In Search of Plausibility: Simulating a Future Contested Urban Environment (18132) ✕	Crisis Decision-making with M&S Support in Complex Urban Environments (18086) ✕
S320C	EC-3 Information Potpourri Sowmya Ramachandran, Ph.D.	Machine Supported Entity Resolution in the Cyber Domain (18168)	Tanks Don't Tweet: Implementing Information Warfare Simulation (18154) ✕	Data Science Challenges: Cut Your Time in Hack! (18158)
S320D	ED-3 Great Minds Think Unlike in AR/VR/MR Toni Hawkins-Scribner	Aligning Current AR/VR/MR Training with the Science of Learning (18036)	Developing an Intelligent Tutoring System for Robotic-assisted Surgery Instruction (18041)	Novel Approach to Mass Casualty Triage Training and Competency Assessment (18230)
S320E	T-3 If I Had a Simulator Nick Giannias	A Systematic Approach for Human Patient Simulation Assessment (18090)	Using Simulation to Assess Performance in Emergency Lifeboat Launches (18179)	Towards Zero Fratricide – Simulation Enabled Live Field Firing (18265) ✕
S320F	H-3 Future Learning Architectures Robby Robson, Ph.D.	Total Learning Architecture: Moving into the Future (18224)	Managing Learning and Tracking Performance across Multiple Mission Sets (18304)	

ROOM	SESSION/CHAIR	1030	1100	1130
S320A	BP-1 Best Papers (Session 1 of 2) Chelsea Stiles	Training—Pilot Training Next: Breaking Institutional Paradigms Using Student-Centered Multimodal Learning	PSMA—Leveraging Science and Technology to Launch Innovation in Learning	Simulation—Understanding Cloud-Based Visual System Architectures
S320B	S-4 Air LVC and Cybersecurity Challenges James “Spanky” Dennis	Assessing Cyber Resilience of Military Systems Using LVC Models (18323)	Advancing the State-of-the-Art in Airborne LVC Training (18249)	Challenges and Opportunities for the Real-time Simulation of Ship/Helicopter Operations (18058)
S320C	EC-4 Mermaids & Sirens: Challenges and Opportunities with Machine Learning Brian Stensrud, Ph.D.	Deep Learning: Measure Twice, Cut Once (18048)	Adapting Bayesian Networks to Predict Complex Systems Using Small Datasets (18269)	Data-driven Training Development: Deriving Performance Constraints from Operational Examples (18324)
S320D	ED-4 Simulation in a Blended Environment Edward Degnan, Ph.D.	Learning Analytics with a xAPI in a Multinational Military Exercise (18196)	Training Command and Control in Search & Rescue – Adaptive Behaviors in Uncertain Condition (18200)	Migrating Nondigital Learning Events for xAPI Data Collection (18037)
S320E	T-4 Improving Training, Assessments, and Evaluations Thomas Yanoschik	Bridging the Joint Close Air Support Training Gap (18012)	Assessing the Validity of Driver Response: Simulator vs. Real Vehicle (18052)	Define “Expert”; Characterizing Proficiency for Physiological Measures of Cognitive Workload (18059) ✕
S320F	H-4 Augmented Reality, Beyond Perceptions Scott Hooper	Reliability Requirements for Augmented Reality in Visual Search Tasks (18247)	Evaluating Augmented Reality Assembly Instructions Delivered via Microsoft HoloLens (18272)	A Maintenance Domain Experiment of Efficiency and Precision Comparing Augmented Reality and Traditionally Cued Procedures (18285)



PAPERS

ROOM	SESSION/CHAIR	1400	1430	1500
S320A	BP-2 Best Papers (Session 2 of 2) Carla Cropper	HPAE—Validation Affordances: Keeping the Eye on 3D Virtual-Simulation Baseballs	Education—Microlearning as a Corporate Learning Business Case	ECIT—Beyond Ender's Game – Fusions of Simulations into Operational Interfaces
S320B	S-5 OBW: The Rest of the Story LTC Brian Vogt, USA	Operation Blended Warrior 2017: Behind the Curtain! (18129)	Operation Blended Warrior 2017: Terrain Database Interoperability Lessons Learned (18254)	The OBW Emerald City Inset Experience (18139)
S320C	EC-5 Autonomy: Sea and Air Paul Watson	Taming the Terminator (18065)	Multidisciplinary Standard-based Architecture for Underwater Autonomous Systems (18160) ✕	Simulation of In-theater VLF Communications to Unmanned Underwater Vehicles (18199)
S320D	ED-5 Initial Pathways to Military Education and Training Kevin Oakes	Teaching Modeling to Engineers in an Undergraduate Simulation Course (18101)	Assessing Character in Army Initial Entry Training (18050)	Rating Domain Analysis: Determining Ready, Relevant Learning Point of Need (18098)
S320E	T-5 LVC Training Environments: From Air Dominance to Cyber Jeff Frost	Validating Distributed Mission Simulation in a Tactical Integrated Training Environment (18202)	Achieving Air and Surface Dominance through a Joint Secure Interoperable LVC Solution (18214)	Cyber Training Experimentation through Operation Blended Warrior (18309)
S320F	S-6 Cyber and Electronic Warfare in a Contested Environment Lisa Tripp, Ph.D.	Jamming Techniques and their Usage in Distributed Electronic Warfare Simulation (18252)	A Modelling and Simulation Approach to Cyber Domain (18188) ✕	Simulation Architecture for Network Centric Sensors and Electronic Warfare Engagements (18156) ✕
ROOM	SESSION/CHAIR	1600	1630	1700
S320A	EC-6 Blockheads – Linked by Crypto Beth Pettitt, Ph.D.	Blockchain Applications in Distributed Simulation (18039)	Securing Distributed Simulation and Training Using Blockchain Technologies (18195)	Impact of Popular Media on the Potential of Educational Games (18322)
S320B	S-7 Modeling and Simulation Processes and Practices Cindy Harrison	A Methodology for Componentized Simulation Generation Using MBSE Definitions (18238)	Best Practices in Modeling and Simulation: Multi-Community Benchmarking (18125)	
S320C	EC-7 VR: Moving Beyond the Hype Diane Justice	Collaborative Risk Assessment in Virtual Reality Environments (18280)	Three-Dimensional Immersive Diagnostic Tool for Spatial Egocentric Ability (18148)	Human-Like Auditory Detection Capability for Intelligent Virtual Agents (18009)
S320D	ED-6 Future Leaders Presentations Ann Friel	Students from around the country present papers on the projects demonstrated in the Future Leaders Pavilion (FLP). Visit them in Booth #2681 and stand by to be overwhelmed by the depth of their research papers during this session.		
S320E	T-6 Adapt, Deploy, and Train Janet Weisenford	Effective Deployment of LVC-TE on Wide Area Networks (18092)	Initial Evaluations of Adaptive Training Technology for Language and Culture (18145)	Team Training for Enemy Identification Using an Intelligent Tutoring System (18291)
S320F	H-5 Virtually Human Alexandra Steiner, Ph.D.	Uncanny Avatars in Virtual Aircraft Environments: How Best to Represent (18030)	Development & Validation of a Human Patient Simulator Gender Retrofit Kit (18266)	



ROOM	SESSION/CHAIR	0830	0900	0930
S320A	P-4 Interoperability: You Can't Always Get What You Want Eric Weisel	Defining Virtual Training System Requirements for Foreign Military Sales (18038)	Making Joint and Multinational Simulation Interoperability a Reality (18268) ✕	Can We Talk? Semantic Interoperability and the Synthetic Training Environment (18093)
S320B	S-8 Synthetic Characters Alyssa Tanaka Ph.D.	A Simulation Independent Framework for Composing Character Populations (18187)	Controlling Synthetic Characters in Simulations: A Case for Cognitive Architectures and Sigma (18205)	Toward Megacity Simulation: A Proposed Pattern-of-Life Definition Standard (18262)
S320C	EC-8 Virtual Content is King John Burwell	Interspecies Animation System for Human and Quadruped Characters (18198)	Modeling Battle Drills for Computer-Generated Forces Using Behavior Trees (18081) ✕	
S320D	ED-7 Spinning the Web of Online Learning Randy Jensen	Hey, This is What Your Teacher Needs to Start with Online Lectures (18056) ✕	Electronix Tutor: An Adaptive Learning Platform with Multiple Resources (18064)	Technology-Supported Learning Environment and Self-Efficacy of Teachers (18031)
S320E	T-7 Bridging the Reality Gap Michael Truelove	Training with Virtual Reality: Lessons Learned (18040)	Maximizing Return on Training Investment in Mixed Reality Systems (18075)	Comparison of Augmented and Virtual Reality Training for Spatial Anatomy (18144)
S320F	S-9 Flight-Related Simulation Tony Krogh	Rendering Effects of Wind on Vegetation for Flight Simulators (18102)	Validation of a Wind Profiler Using Modeling and Simulation (18103)	Machine Learning-based Avionics Simulator for Cybersecurity Intrusion Detection (18094)
ROOM	SESSION/CHAIR	1030	1100	1130
S320A	P-5 Another Brick in the Wall: Filling the Gap in Simulation Martin Bink, Ph.D.	Building Bricks for Simulation: From Flexibility to Consistency (18069) ✕	Mind the Gap: A Modeling and Simulation Gap Management Framework (18062)	Toward Dimensional Analysis Conceptual Modeling for Reusable Modeling Primitive Specification (18142)
S320B	S-10 Move, Shoot and Communicate Eric Jarabak	Deploying Disruptive Technology in an Agile Intelligence Training Environment (18079)	Game-based Proving-Grounds Simulation to Assess Driving & Learning Preferences (18003)	Performance Assessment of the Communication Infrastructure for the LVC Simulation (18130) ✕
S320C	EC-9 Enhancing Training Naturally Lisa Jean Bair	Authoring Tools for Free-Play Simulation-Based Troubleshooting Training (18025)	Building a Human-Machine Teaming Training Testbed (18112)	Evaluating and Infusing Participants' Stress Levels in Dynamic Training (18060)
S320D	ED-8 SPOTLITE: Leaderboards & Baseball Christina Welch	Mobile Assessment Technology in Army Schoolhouse Training (18114)	Assessment of Flow, Immersion & Engagement on Game-based Strategies for Kinesic Cue Detection (18165)	Research to Training: Adapting a Sports Science Method to Improve Military Rapid Response Skills (18213)
S320E	T-8 Effectiveness of Multinational Exercises Koren Odermann	Integrating Advanced Distributed Learning into Multinational Exercises (18152) ✕	Lessons Learned from Leveraging Simulation as a Service in Viking18 (18329) ✕	
S320F	EC-10 Cloudy With A Chance of Technology Scott Schutzmeister	Cloud-based Modeling and Simulation Study Group (18256)	A Serious Games Micro-Service Architecture (18159) ✕	Advanced RAID Technology Minimizes Network Traffic in Service Oriented Architectures (18258)
ROOM	SESSION/CHAIR	1330	1400	1430
S320B	S-11 Enhancing Medical Training Angela Alban	Using the Advanced Modular Manikin Architecture to Extend the Scope of Medical Task Trainers (18184)	Saving Eyesight Using Simulation (18074)	
S320C	EC-11 AR U Ready? Sally Carter	Man-machine Interoperation in Training for Offensive Counter Air Missions (18305)	Visual Training Aids for Accelerating the Learning of Intuition (18197)	Augmented Reality for Force Protection Systems (18091)
S320E	T-9 Recommendations from Three Amigos Sean Carey	Simulator-based Driver Training: Moving Up a Gear (18085)	First Steps in 5th Generation Aircraft – IAF's Innovative Technical Training (18127) ✕	Toward Recommendation across Learning System (18330)

Best Papers

BP-1 WEDNESDAY • 28 NOVEMBER • 1030 • ROOM S320A

Best Papers (Session 1 of 2)

Session Chair: Chelsea Stiles, General Dynamics Information Technology

Training—Pilot Training Next: Breaking Institutional Paradigms Using Student-Centered Multimodal Learning (18239)

Jennifer Lewis, Joyner Livingston, SAIC

PSMA—Leveraging Science and Technology to Launch Innovation in Learning (18261)

Kendy Vierling, Ph.D., TECUSMC; Sae Schatz, Ph.D., ADL Initiative; Amy LaFleur, USMC; Dwight Lyons, Potomac Institute for Policy Studies

Simulation—Understanding Cloud-Based Visual System Architectures (18042)

Jeanette Ling, Rockwell Collins

BP-2 WEDNESDAY • 28 NOVEMBER • 1400 • ROOM S320A

Best Papers (Session 2 of 2)

Session Chair: Carla Cropper, Rockwell Collins

HPAE—Validation Affordances: Keeping the Eye on 3D Virtual-Simulation Baseballs (18143)

Ric Roca, Ph.D., ODU/Simulated Instruments, Inc.; Stacie L. Ringleb, Ph.D., ODU; Lance M. Optican, National Eye Institute, NIH, DHHS, Bethesda, MD

Education—Microlearning as a Corporate Learning Business Case (18229) 18229

Anne Little, Ph.D., SAIC

ECIT—Beyond Ender's Game – Fusions of Simulations into Operational Interfaces (18235)

Peter Crane, Ph.D., VR Rehab, Inc.; Alexandra Proaps, James P. Bliss, Ph.D., ODU; Patrick Benasutti, U.S. Army Natick Soldier Research, Development and Engineering Center

Education

ED-1 TUESDAY • 27 NOVEMBER • 1400 • ROOM S320D

Best Papers from around the Globe

Session Chair: Amanda Davies, Ph.D., Rabdan Academy Abu Dhabi

Session Deputy: Wendy Johnson, HQ AETC/A8PX

ITEC Best Paper: Training and Simulations in the Middle East (What the Training and Simulations Senior Advisor is Telling the Organization's Leadership, and Why)

Frank Belonus

MODSIM Best Paper: Leveraging Commercial Game Engines for Multi-Domain Image Generation

Ashley Medford

ED-2 TUESDAY • 27 NOVEMBER • 1600 • ROOM S320D

Maximizing Learning Using Simulation Around the World

Session Chair: William Gerber, Ph.D., Institute for Defense Analyses

Session Deputy: Anastacia (Stacy) MacAllister, Ph.D., Iowa State University

Advancing Capability: Designing Authentic Simulation-based Teaching, Learning and Assessment (18123) ✕

Amanda Davies, Ph.D., Rabdan Academy Abu Dhabi; Irwyn Shepherd, Ph.D., Monash University Melbourne; Elysabeth Leigh, Ph.D., University of Technology Sydney

Simulation as an Emerging Literacy (18118) ✕

Teresa Crea, Ph.D., University of New South Wales

Development of an Educational Platform for Simulation Developers (18084) ✕

Maciej Zasuwa, Ph.D., Pawel Obrepalski, Jan Kobryn, Warsaw University of Technology

ED-3 WEDNESDAY • 28 NOVEMBER • 0830 • ROOM S320D

Great Minds Think Unlike in AR/VR/MR

Session Chair: Toni Hawkins-Scribner, Air University/Squadron Officer School

Session Deputy: Matthew Hackett, ARL HRED SSTC

Aligning Current AR/VR/MR Training with the Science of Learning (18036)

Jeffrey M. Beaubien, Ph.D., Evan Oster, Janet Spruill, Aptima, Inc.

Developing an Intelligent Tutoring System for Robotic-assisted Surgery Instruction (18041)

Danielle Julian, Roger Smith, Ph.D., Florida Hospital Nicholson Center

Novel Approach to Mass Casualty Triage Training and Competency Assessment (18230)

Teresa Riech, M.D., Matthew Bramle, M.D., Jump Simulation and Education Center

ED-4 WEDNESDAY • 28 NOVEMBER • 1030 • ROOM S320D

Simulation in a Blended Environment

Session Chair: Edward Degnan, Ph.D., AFAMS

Session Deputy: Claudia Clark, Ph.D., Surface Warfare Officers School

Learning Analytics with a xAPI in a Multinational Military Exercise (18196)

Aaron Presnall, Ph.D., Vesna Radivojevic, Jefferson Institute
Training Command and Control in Search & Rescue – Adaptive Behaviors in Uncertain Condition (18200)

Fredrick Forsman, Lars Axvi, Chalmers University of Technology

Migrating Nondigital Learning Events for xAPI Data Collection (18037)

Martin Bogan, Scott Bybee, CAE USA Inc.; Thomas O'Connell, Mimetic Industries





ED-5 WEDNESDAY • 28 NOVEMBER • 1400 • ROOM S320D

Initial Pathways to Military Education and Training

Session Chair: Kevin Oakes, SAIC

Session Deputy: Kelly Hale, Ph.D., Design Interactive

Teaching Modeling to Engineers in an Undergraduate Simulation Course (18101)

Vikram Mittal, Ph.D., COL Robert Kewley, LTC Brett Lindberg, USA, United States Military Academy

Assessing Character in Army Initial Entry Training (18050)

Tatiana H. Toumbeva, Andrew Naber, Ph.D., Kristy Reynolds, Krista L. Ratwani, Ph.D., Aptima, Inc.; Frederick J. Diedrich, Ph.D., Scott M. Flanagan, Sophia Speirs; Jennifer S. Tucker, Ph.D., Army Research Institute; Giovanna Ubillus, Charles Nocker, Corrine M. Gerard, PricewaterhouseCoopers Public Sector, LLP

Rating Domain Analysis: Determining Ready, Relevant Learning Point of Need (18098)

Judith Hale, Ph.D., Christina Welch, Adrienne Read, NAWCTSD

ED-6 WEDNESDAY • 28 NOVEMBER • 1600 • ROOM S320D

Students from around the country present papers on the projects demonstrated in the Future Leaders Pavilion (FLP). Visit them in Booth #2681 and stand by to be overwhelmed by the depth of their research papers during this session.

ED-7 THURSDAY • 29 NOVEMBER • 0830 • ROOM S320D

Spinning the Web of Online Learning

Session Chair: Randy Jensen, Stottler Henke Associates, Inc.

Session Deputy: Colleen Matthews, U.S. Army PEO STRI

Hey, This is What Your Teacher Needs to Start with Online Lectures (18056) ✦

Commander Geir Isaksen, Siren Elise Froytlog Hole, Norwegian Defense University College

Electronix Tutor: An Adaptive Learning Platform with Multiple Resources (18064)

Arthur C. Graesser, Ph.D., Andrew J. Hampton, Ph.D., Brent Morgan, Ph.D., Lijia Wang, Charvi A. Majmudar, Bashir I. Morshed, Ph.D., Xinghen Hu, Zhiqiang Cai, Andrew C. Tackett, Andrew M. Olney, Ph.D., Vasile Rus, University of Memphis Institute for Intelligent Systems; Benjamin D. Nye, Ph.D., USC Institute for Creative Technologies

Technology-Supported Learning Environment and Self-Efficacy of Teachers (18031)

Chadia Affane Aji, Ph.D., M. Javed Khan, Ph.D., Tuskegee University

ED-8 THURSDAY • 29 NOVEMBER • 1030 • ROOM S320D

SPOTLITE: Leaderboards & Baseball

Session Chair: Christina Welch, NAWCTSD

Session Deputy: Chelsea Stiles, General Dynamics Information Technology

Mobile Assessment Technology in Army Schoolhouse Training (18114)

Elizabeth R. Uhl, Ph.D., U.S. Army Research Institute; Courtney Dean, Krista Ratwani, Ph.D., Aptima, Inc.

Assessment of Flow, Immersion & Engagement on Game-based Strategies for Kinesic Cue Detection (18165)

Alexander Miranda, Jonathan Hurter, Kayla Coca, Cassidy James, Crystal S. Maraj, Ph.D., University of Central Florida Institute for Simulation and Training

Research to Training: Adapting a Sports Science Method to Improve Military Rapid Response Skills (18213)

Peter J. Fadde, Ph.D., Southern Illinois University

Emerging Concepts & Innovative Technologies

EC-1 TUESDAY • 27 NOVEMBER • 1400 • ROOM S320C

Automation: Trust Me, ITS the Future

Session Chair: Tara Kilcullen, Aptima, Inc.

Session Deputy: Dave Orne, Lockheed Martin Corporation

Using Novices to Scale Up Intelligent Tutoring Systems (18028)

Andrew M. Olney, Ph.D., University of Memphis

Automating the Training Feedback Paradigm with Intelligent After Action Review (18275)

Barry Clinger, Riptide Software; Robert Burch, Dignitas Technologies; Jeremy Lanman, Ph.D., James Todd, U.S. Army PEO STRI

The Application of Automation Systems for Training – Implications of Trust (18019)

Emily C. Anania, Don Selvy Enterprises, Inc.; John Killilea, Beth Atkinson, NAWCTSD

EC-2 TUESDAY • 27 NOVEMBER • 1600 • ROOM S320C

Deep Learning: Dive Right In

Session Chair: Harry Sotomayor, U.S. Army PEO STRI

Session Deputy: Carla Cropper, Rockwell Collins

Deep Learning Applications for Modeling, Simulation, and Training (18315)

Tim Woodard, NVIDIA; Mike Enloe, U.S. Army CAC

Exterior Attribute Extraction and Interior Layout Speculation of 3D Structures (18243)

Ronald G. Moore, Matthew J. Reilly, Leidos; Tony Pelham, GameSim

Temporal IR Energy Maps for Synthetic Virtual Training (18255)

Joseph T. Kider, Jr., Ph.D., UCF Institute for Simulation and Training; Mark Faulk, Cornerstone Software Solutions, Inc.; Ron Moore, Leidos; Lt. Julian Barriga, Jarred Holt, Ph.D., AFRL

EC-3 WEDNESDAY • 28 NOVEMBER • 0830 • ROOM S320C

Information Potpourri

Session Chair: Sowmya Ramachandran, Ph.D., Stottler Henke Associates, Inc.

Session Deputy: Leslie Dubow, VHA EES

Machine Supported Entity Resolution in the Cyber Domain (18168)

David A. Noever, Ph.D., J. Wesley Regan, Ph.D., PeopleTec, Inc.

Tanks Don't Tweet: Implementing Information Warfare Simulation (18154) ✦

James Kearse, Keith Ford, Ph.D., Thales UK Limited

Data Science Challenges: Cut Your Time in Hack! (18158)

Joe Rohner, Booz Allen Hamilton; Kaye T. Darone, U.S. Army TRADOC



EC-4 WEDNESDAY • 28 NOVEMBER • 1030 • ROOM S320C

Mermaids & Sirens: Challenges and Opportunities with Machine Learning

Session Chair: Brian Stensrud, Ph.D., Soar Technology
Session Deputy: Tim Woodard, NVIDIA

Deep Learning: Measure Twice, Cut Once (18048)

Robert F. Richbourg, Ph.D., Institute for Defense Analyses

Adapting Bayesian Networks to Predict Complex Systems Using Small Datasets (18269)

Anastacia MacAllister, Eliot Winer, Ph.D., Iowa State University

Data-driven Training Development: Deriving Performance Constraints from Operational Examples (18324)

Randy Jensen, Sowmya Ramachandran, Ph.D., Stottler Henke Associates, Inc.

EC-5 WEDNESDAY • 28 NOVEMBER • 1400 • ROOM S320C

Autonomy: Sea and Air

Session Chair: Paul Watson, U.S. Army PEO STRI
Session Deputy: Jay Truitt, NECC

Taming the Terminator (18065)

Robert Lutz, William D'Amico, Ph.D., Kristine Ramachandran, Reed Young, Johns Hopkins APL; Christopher M. Eaton, 412th Test Wing; Derek Kingston, AFRL

Multidisciplinary Standard-based Architecture for Underwater Autonomous Systems (18160) ✦

Alberto Tremori, Ph.D., Arnau Carrera, Ph.D., Pilar Caamaño, Thomas Mansfield, Giovanni Luca Maglione, David Solarna, Robert Been, NATO STO Centre for Maritime Research and Experimentation

Simulation of In-theater VLF Communications to Unmanned Underwater Vehicles (18199)

Terry Whelan, Wei Liu, Ph.D., Jeff Weaver, Ph.D., Rajive Bagrodia, Ph.D., Scalable Network Technologies; Pedro A. Forero, Ph.D., Jose Chavez, Matthew Capella, Space and Naval Warfare Systems Center Pacific

EC-6 WEDNESDAY • 28 NOVEMBER • 1600 • ROOM S320A

Blockheads – Linked by Crypto

Session Chair: Beth Pettitt, Ph.D., STTC
Session Deputy: Chuck Breed, Zenetex LLC

Blockchain Applications in Distributed Simulation (18039)

Roger Smith, Ph.D., Danielle Julian, Florida Hospital Nicolson Center

Securing Distributed Simulation and Training Using Blockchain Technologies (18195)

Shawn Boucher, Mohammed Elshennawy, Spencer Frazier, Joshua Jacobs, Heather Kurtz, Benjamin Noble, Lockheed Martin Corporation

Impact of Popular Media on the Potential of Educational Games (18322)

Jennifer McNamara, BreakAway Games; Victoria Van Voorhis, Second Avenue Learning

EC-7 WEDNESDAY • 28 NOVEMBER • 1600 • ROOM S320C

VR: Moving Beyond the Hype

Session Chair: Diane Justice, AFMC
Session Deputy: Aerial Kreiner, Ph.D., AFRL

Collaborative Risk Assessment in Virtual Reality Environments (18280)

Robert J. Slezak, Nir Keren, Ph.D., Tor Finseth, Iowa State University

Three-Dimensional Immersive Diagnostic Tool for Spatial Egocentric Ability (18148)

Maria Kozhevnikov, Ph.D., National University of Singapore; Michael Kozhevnikov, Ph.D., Norfolk State University

Human-Like Auditory Detection Capability for Intelligent Virtual Agents (18009)

Hung Tran, CAE USA, Inc.

EC-8 THURSDAY • 29 NOVEMBER • 0830 • ROOM S320C

Virtual Content is King

Session Chair: John Burwell, Bohemia Interactive Simulations
Session Deputy: LtCol Byron Harder Ph.D., USMC, TECOM MCSTE

Interspecies Animation System for Human and Quadruped Characters (18198)

Tyler Ricks, Rockwell Collins

Modeling Battle Drills for Computer-Generated Forces Using Behavior Trees (18081) ✦

Per-Idar Evensen, Håvard Stien, Dan Helge Bentsen, Norwegian Defense Research Establishment

EC-9 THURSDAY • 29 NOVEMBER • 1030 • ROOM S320C

Enhancing Training Naturally

Session Chair: Lisa Jean Bair, SAIC
Session Deputy: Andrew Koch, Naval Air Warfare Center Aircraft Division

Authoring Tools for Free-Play Simulation-Based Troubleshooting Training (18025)

Eric Domeshek, Ph.D., Sowmya Ramachandran, Ph.D., Randy Jensen, Stottler Henke Associates, Inc.

Building a Human-Machine Teaming Training Testbed (18112)

Julia L. Berger, Ph.D., Kent C. Halverson, Ph.D., Eric Watz, Aptima, Inc.; David Malek, Wright State Research Institute

Evaluating and Infusing Participants' Stress Levels in Dynamic Training (18060)

Richard E. Cleveland, Ph.D., Jonathan C. Hilpert, Ph.D., Georgia Southern University; Andrew E. Cleveland, Pentagon Force Protection Agency

EC-10 THURSDAY • 29 NOVEMBER • 1030 • ROOM S320F

Cloudy With A Chance of Technology

Session Chair: Scott Schutzmeister, Institute for Defense Analyses
Session Deputy: John Hodak, NAWCTSD

Cloud-based Modeling and Simulation Study Group (18256)

COL Robert Kewley, USA, USMA; Chris McGroarty, U.S. Army Research Laboratory; Joe McDonnell, Ph.D., Keith Snively, Dynamic Animation Systems, Inc.; Scott Gallant, Effective Applications; Jonathan Diemunsch, 711th High Performance Wing

**A Serious Games Micro-Service Architecture (18159) ✕**

Prof. Alessandro De Gloria, Riccardo Berta Ph.D., Francesco Bellotti Ph.D., University of Genoa

Advanced RAID Technology Minimizes Network Traffic in Service Oriented Architectures (18258)

Mark Cuccarese, Cole Engineering Services, Inc.; Paul Cooper, Seminole County Schools

EC-11 THURSDAY • 29 NOVEMBER • 1330 • ROOM S320C**AR U Ready?**

Session Chair: Sally Carter, AETC

Session Deputy: Robert Macchiarella, Raydon Corporation

Man-machine Interoperation in Training for Offensive Counter Air Missions (18305)

Patrick L. Craven, Ph.D., Kevin Oden, Ph.D., Kevin Landers, Lockheed Martin Corporation; Ankit J. Shah, Julie A. Shah, Massachusetts Institute of Technology

Visual Training Aids for Accelerating the Learning of Intuition (18197)

Aaron Novstrop, Sarah Lee, Terrance Goan, Stottler Henke Associates, Inc.

Augmented Reality for Force Protection Systems (18091)

Sean S. Cullen, Richard Schaffer, Lockheed Martin Corporation; Susan Harkrider, Christopher May, NVESD

Human Performance, Analysis and Engineering**H-1 TUESDAY • 27 NOVEMBER • 1400 • ROOM S320F****Assess, Decide, Disrupt**

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

Session Deputy: Gordon Gattie, Ph.D., NSWC Dahlgren

The Effect of Work Experience on Risk Assessment Skills (18126)

Jennica Bellanca, Brianna Eiter, Ph.D., Jonathan Hrica, National Institute for Occupational Safety and Health (NIOSH); Terry Weston, Robert Weston, South Central College

Smart Simulation for Decision Support at Headquarters (18246) ✕

Ariane Bitoun, Yann Prudent, Antony Hubervic, MASA Group

Human-Agent Teaming: State of Assessments and Selected Issues (18283)

Grace Teo, Ph.D., Lauren Reinerman-Jones, Ph.D., Maartje Hidalgo, University of Central Florida Institute for Simulation and Training; Clayton Burford, Army Research Laboratory

H-2 TUESDAY • 27 NOVEMBER • 1600 • ROOM S320F**Neurologically Speaking**

Session Chair: Perry McDowell, MOVES Institute

Session Deputy: Kendy Vierling, Ph.D., USMC TECOM

Objective Stress Monitoring for Live Training Exercises (18105)

Zach Huber, Brent Winslow, Ph.D., Joanna Chiang, Mark Dranias, Ph.D., Design Interactive; Ajmal Aziz, Department of Homeland Security S&T First Responder Group

Assessing Intuitive Decision Making with Cognitive Neuroscience-based Methods (18110)

Lisa C. Lucia, Ph.D., Jeffrey M. Beaubien, Ph.D., E. Webb Stacy, Ph.D., Aptima, Inc.; CAPT Ronald Steed, USN (Ret.)

Boosting Cognitive Capabilities through Enhanced States during Gaming (18149) ✕

Maria Kozhevnikov, Ph.D., National University of Singapore & Harvard Medical School

H-3 WEDNESDAY • 28 NOVEMBER • 0830 • ROOM S320F**Future Learning Architectures**

Session Chair: Robby Robson, Ph.D., Eduworks

Session Deputy: Adelle Lynch, Thales UK

Total Learning Architecture: Moving into the Future (18224)

Brent Smith, ADL Initiative; P. Shane Gallagher, Ph.D., Institute for Defense Analyses; Sae Schatz, Ph.D., Jennifer Vogel-Walcutt, Ph.D., ADL Initiative

Managing Learning and Tracking Performance across Multiple Mission Sets (18304)

Eric Watz, Peter Neubauer, John Kegley, Ph.D., Aptima, Inc.

H-4 WEDNESDAY • 28 NOVEMBER • 1030 • ROOM S320F**Augmented Reality, Beyond Perceptions**

Session Chair: Scott Hooper, Bohemia Interactive Simulations

Session Deputy: Scott Johnston, Booz Allen Hamilton

Reliability Requirements for Augmented Reality in Visual Search Tasks (18247)

Samuel Monfort, Ph.D., John Graybeal, Ph.D., KINEX, Inc.; Ewart de Visser, Ph.D., Warfighter Effectiveness Research Center, U.S. Air Force Academy; Todd Du Bosq, Ph.D., U.S. Army RDECOM CERDEC Night Vision and Electronic Sensors Directorate

Evaluating Augmented Reality Assembly Instructions Delivered via Microsoft HoloLens (18272)

Melynda Hoover, Jack Miller, Stephen Gilbert, Ph.D., Eliot Winer, Ph.D., Iowa State University; Paul Davies, The Boeing Company

A Maintenance Domain Experiment of Efficiency and Precision Comparing Augmented Reality and Traditionally Cued Procedures (18285)

CDR Christopher Angelopoulos, USN, Rudolph Darken, D.Sc., Perry McDowell, Naval Postgraduate School

H-5 WEDNESDAY • 28 NOVEMBER • 1600 • ROOM S320F**Virtually Human**

Session Chair: Alexandra Steiner, Ph.D., Trideum Corporation

Session Deputy: Robert Wallace, USAF Air Combat Command

Uncanny Avatars in Virtual Aircraft Environments: How Best to Represent (18030)

Rob Lechner, The Boeing Company; Shawn Burke, University of Central Florida; Elizabeth Biddle, Ph.D., The Boeing Company; Claudia Hernandez, Mike Eakins, David Metcalf, Ph.D., University of Central Florida

Development & Validation of a Human Patient Simulator Gender Retrofit Kit (18266)

Mark V. Mazzeo, Teresita M. Sotomayor, Ph.D., U.S. Army Research Laboratory STTC; Jordan N. Coulter, Angela M. Alban, SIMETRI, Inc.

Policy, Standards, Management, and Acquisition

P-1 TUESDAY • 27 NOVEMBER • 1400 • ROOM S320A

Agility and the Team: The Road to Margaritaville

Session Chair: John Dzenutis, The Boeing Company

Session Deputy: Doug Parsons, U.S. Army AMRDEC

Stretching to Achieve NFL-Caliber Agility for Software Development Programs (18122)

Scott Tufts, NAWCTSD; Ben Boyle, Ray Lyons, Advanced Acoustic Concepts LLC

An Agile ISD Process to Develop a Medical Simulation (18116)

Susan Dass, Ph.D., ICF International; Victor Cid, National Library of Medicine

Team Orlando: Community of Progress (18222)

Jennifer J. Vogel-Walcutt, Ph.D., ADL Initiative

P-2 TUESDAY • 27 NOVEMBER • 1600 • ROOM S320A

Architecture to Operations: It's 5 O'Clock Somewhere

Session Chair: Susan Harkrider, Night Vision & Electronic Sensors Directorate

Session Deputy: Michael Sanders, Texas A&M - Corpus Christi, Research, Commercialization and Outreach

Modelling & Simulation as a Service – Empowering Operational Users (18225) ✦

Keith Ford, Ph.D., Thales UK Limited

The Strategic Role of UCATT Standards to NATO's Enhanced Forward Presence Mission (18067) ✦

Captain Sander Cruiming, Royal Netherlands Army Simulation Center

Lessons Learned from Distributed Virtual Air Refueling (VAR) Integration (18005)

Jonica Tramposch, Christian Schwindt, Northrop Grumman Corporation

P-3 WEDNESDAY • 28 NOVEMBER • 0830 • ROOM S320A

Upsetting the Standards Cart

Session Chair: Julie Kent, Raytheon Company

Session Deputy: LtCol Stephen Brzostowski, USMC, MARCORSSCOM PM TRASYS

A Capability Maturity Model for Flight Training (18298)

Jean-François Delisle, Stéphane Ouellet, Derek Linders, CAE Inc.

The New Wave of Training Technology Standards (18045)

Robby Robson, Ph.D., Eduworks Corporation; Avron Barr, Institute for Defense Analyses

Achieving Full Potential through Evaluation Policy that Disrupts Status Quo (18292)

Miriam Plaza, Intelligent Decision Systems; Pamela Bishop, Creative Veteran Productions; Marie H. Prosper, Klainie Nedoroscik, American Systems

P-4 THURSDAY • 29 NOVEMBER • 0830 • ROOM S320A

Interoperability: You Can't Always Get What You Want

Session Chair: Eric Weisel, Old Dominion University

Session Deputy: LCDR Chris Davidson, RAN, NSWCCD-DNA

Defining Virtual Training System Requirements for Foreign Military Sales (18038)

Michael Coleman, Ronald Brabant, NAWCTSD

Making Joint and Multinational Simulation Interoperability a Reality (18268) ✦

Emilie A. Reitz, JS J6, Joint Fires Division; Kevin Seavey, Alion Science and Technology

Can We Talk? Semantic Interoperability and the Synthetic Training Environment (18093)

Paula J. Durlach, Ph.D., U.S. Army Research Laboratory HRED ASTD

P-5 THURSDAY • 29 NOVEMBER • 1030 • ROOM S320A

Another Brick in the Wall: Filling the Gap in Simulation

Session Chair: Martin Bink, Ph.D., U.S. Army Research Institute

Session Deputy: Tiffany Peterson, Arorae Corporation

Building Bricks for Simulation: From Flexibility to Consistency (18069) ✦

Lieutenant-Colonel Eric du Pontavice, French Army Simulation and Digitization Expert Center

Mind the Gap: A Modeling and Simulation Gap Management Framework (18062)

Frank Mullen, Institute for Defense Analyses; Leigh G. Yu, Defense Modeling & Simulation Coordination Office

Toward Dimensional Analysis Conceptual Modeling for Reusable Modeling Primitive Specification (18142)

Ric Roca, Ph.D., Simulated Instruments, Inc.; Eric Coatanéa, Ph.D., Tampere University of Technology

Simulation

S-1 TUESDAY • 27 NOVEMBER • 1400 • ROOM S320B

Synthetic Environment Content

Session Chair: Ronald Moore, Leidos, Inc.

Session Deputy: Kenny Hebert, Quantum3D

Exploring Cloud-Based Terrain Generation Services (18253)

Lance Marrou, Glenn Carr, Leidos, Inc.; Keith Nielsen U.S. Army PEO STRI

Maintaining Deep Content Libraries While Meeting Rising Quality Standards (18024)

Brian Vacek, FlightSafety International

Knowledge is Power – Representing Complexity in the Information Age (18300) ✦

Rob McConachie, Thales UK

S-2 TUESDAY • 27 NOVEMBER • 1600 • ROOM S320B

Augmented and Virtual Reality

Session Chair: Thomas Kehr, Cole Engineering, Inc.

Session Deputy: Peter Swan, VT MÄK

An Architectural Overview of the Augmented REALity Sandtable (ARES) (18245)

Nathan L. Vey, Yasmina Raby, Charles Amburn, ARL; Christopher Markuck, Dignitas Technologies

Creating a 360-Degree RGB-D Sensor System for Augmented Reality Research (18211)

Brian M. Williamson, Joseph J. LaViola, Jr., Ph.D., University of Central Florida; Robert Sottolare, Ph.D., Pat Garrity, ARL

Using Modeling and Simulation to Design the Future Squad (18241)

Neil Pinto, Chris May, U.S. Army Night Vision and Electronic Sensors Directorate; Andy Gross, Trideum Corporation

S-3 WEDNESDAY • 28 NOVEMBER • 0830 • ROOM S320B

Creating Complex Urban Environments

Session Chair: John Huddleston, Ph.D., Coventry University

Session Deputy: Leigh Yu, Defense Modeling and Simulation Coordination Office

Agile Terrain Development for Simulation-Based Training (18295)

Rick Osborne, The MITRE Corporation; Donald Washburn, Ronald G. Moore, Leidos; Mark Faulk, Cornerstone Software Solutions, Inc.

In Search of Plausibility: Simulating a Future Contested Urban Environment (18132) ✦

Justin Fidock, Ph.D., Teresa Crea, Ph.D., University of Canberra; Trent Burnard, Scott Alexander, Shane Ploenges, Rheinmetall Defence Australia and New Zealand

Crisis Decision-making with M&S Support in Complex Urban Environments (18086) ✦

Lt Col Walter David, NATO M&S Center of Excellence; Hans ten Bergen, MASA Group; Judge Brindusa Andreaa Sarbu, 1st District of Bucharest, Romania; Col. Orlin Nikolov, CDMR Centre of Excellence; Lt. Col. Kostadin Lazarov, CDMR Centre of Excellence; Alessandro Lo Presti, Fabaris

S-4 WEDNESDAY • 28 NOVEMBER • 1030 • ROOM S320B

Air LVC and Cybersecurity Challenges

Session Chair: James "Spanky" Dennis, General Dynamics Information Technology

Session Deputy: LT Mike Natali, NAVMED

Assessing Cyber Resilience of Military Systems Using LVC Models (18323)

Ha Duong, Ph.D., Rajive Bagrodia, Scot Dietz, SCALABLE Network Technologies; Brian Salisbury, Ph.D., SPAWAR Systems Center - Pacific

Advancing the State-of-the-Art in Airborne LVC Training (18249)

Lance R. Call, L3 Technologies; Rob Lechner, The Boeing Company

Challenges and Opportunities for the Real-time Simulation of Ship/Helicopter Operations (18058)

Ian Cox, Dr. Gary Henry, SEA

S-5 WEDNESDAY • 28 NOVEMBER • 1400 • ROOM S320B

OBW: The Rest of the Story

Session Chair: LTC Brian Vogt, USA, NATO ACT

Session Deputy: Tracy Titcombe, Air Force Life Cycle Management Center

Operation Blended Warrior 2017: Behind the Curtain! (18129)

Cathy Matthews, Matthews Systems Engineering, Inc.; Kent Gritton, Dave Kotick, CDR Gilbert Gay, USN, NAWCTSD; Farid Mamaghani; Gary Fraas, M&S Strategic Partners, LLC

Operation Blended Warrior 2017: Terrain Database Interoperability Lessons Learned (18254)

Michael Woodman, Ph.D. SAIC; Thomas Kehr, Cole Engineering Inc.; Farid Mamaghani; Ron Sprinkle, Leidos, Inc.

The OBW Emerald City Inset Experience (18139)

Thomas Kehr, Cole Engineering, Inc; Ronald Moore, Sean Sedlak, Ryan Boyd, Leidos, Inc.

S-6 WEDNESDAY • 28 NOVEMBER • 1400 • ROOM S320F

Cyber and Electronic Warfare in a Contested Environment

Session Chair: Lisa Tripp, Ph.D., U.S. AFRL

Session Deputy: Ron Inmon, MARCORSSYSCOM PM TRASYS

Jamming Techniques and their Usage in Distributed Electronic Warfare Simulation (18252)

Charles Brooks, SRC, Inc.; David Haber, Rockwell Collins; Patrick Mertet, Parsons Corporation

A Modelling and Simulation Approach to Cyber Domain (18188) ✦

LTC Marco Biagini, Massimo Pizzi, LTC Jason Jones, NATO M&S Center of Excellence; Luc Dandurand, Guardtime; Andri Rebane, Kaitseminsteerium; Wolfhard Schmidt, NATO JFTC; Marco Picollo, Leonardo Company; LT Sonia Forconi, Italian Army

Simulation Architecture for Network Centric Sensors and Electronic Warfare Engagements (18156) ✦

Reeshen Reddy, Brian Burmeister, Solly Manamela, Ushik Mewalal, Umur Kathree, Council for Scientific and Industrial Research (CSIR), Pretoria, South Africa

S-7 WEDNESDAY • 28 NOVEMBER • 1600 • ROOM S320B

Modeling and Simulation Processes and Practices

Session Chair: Cindy Harrison, U.S. Army PEO STRI

Session Deputy: Andre Balta, Cubic Global Defense

A Methodology for Componentized Simulation Generation Using MBSE Definitions (18238)

Matthew Blair, Torch Technologies; Eric Sholes, Ph.D., U.S. Army AMRDEC; Gregory S. Reed, Ph.D., Torch Technologies

Best Practices in Modeling and Simulation: Multi-Community Benchmarking (18125)

Steve Roerman, John Volpi, Randal Allen, Lone Star Analysis

S-8 THURSDAY • 29 NOVEMBER • 0830 • ROOM S320B

Synthetic Characters

Session Chair: Alyssa Tanaka Ph.D; Soar Technology

Session Deputy: Andy Wasserman, U.S. Secret Service

A Simulation Independent Framework for Composing Character Populations (18187)

Colin A. Puskaritz, Jason R. Potts, Todd W. Griffith, Ph.D., Brian Muhs, Discovery Machine, Inc.; David Knos, Loyola Enterprises

Controlling Synthetic Characters in Simulations: A Case for Cognitive Architectures and Sigma (18205)

Volkan Ustun, Paul S. Rosenbloom, USC Institute for Creative Technologies; Seyed Sajjadi, Cal State University Northridge; Jeremy Nuttall, USC

Toward Megacity Simulation: A Proposed Pattern-of-Life Definition Standard (18262)

Adam Easton, D.Phil, Romesh Ranawana, D.Phil, SimCentric Technologies

S-9 THURSDAY • 29 NOVEMBER • 0830 • ROOM S320F

Flight-Related Simulation

Session Chair: Tony Krogh, The AEgis Technologies Group, Inc.

Session Deputy: Jimmy Moore, PeopleTec

Rendering Effects of Wind on Vegetation for Flight Simulators (18102)

Abhishek Verma, Tyler Ricks, Rockwell Collins



PAPERS



Validation of a Wind Profiler Using Modeling and Simulation (18103)

Amanda Cinnamon, Sarah Lampke, Dayton Analytics

Machine Learning-based Avionics Simulator for Cybersecurity Intrusion Detection (18094)

Wenlong Zheng, Geoffrey Greenwalt, Rockwell Collins STS

S-10 THURSDAY • 29 NOVEMBER • 1030 • ROOM S320B

Move, Shoot and Communicate

Session Chair: Eric Jarabak, MARCORSYSCOM PM TRASYS

Session Deputy: Paul Bogard, Air Force Life Cycle Management Center

Deploying Disruptive Technology in an Agile Intelligence Training Environment (18079)

Jason Rogers, Todd Neal, SAIC

Game-based Proving-Grounds Simulation to Assess Driving & Learning Preferences (18003)

Kevin F. Hulme, Ph.D., CMSP, Aaron Estes, Ph.D., University at Buffalo, Matthias Schmid, Ph.D., Clemson University International Center for Automotive Research; Emmanuel Gil Torres, Christopher Hendrick, Shathushan Sivashangaran, University at Buffalo

Performance Assessment of the Communication Infrastructure for the LVC Simulation (18130) ✦

Sangjin Lee, Dohyung Kim, Agency for Defense Development, Republic of Korea

S-11 THURSDAY • 29 NOVEMBER • 1330 • ROOM S320B

Enhancing Medical Training

Session Chair: Angela Alban, SIMETRI, Inc.

Session Deputy: Capt Kathleen Haggard, MARCORSYSCOM PM TRASYS

Using the Advanced Modular Manikin Architecture to Extend the Scope of Medical Task Trainers (18184)

Daniel S. Silverglate, Edward M. Sims, Ph.D., Vcom3D, Inc.; Teresita Sotomayor, Ph.D., ARL HRED STTC

Saving Eyesight Using Simulation (18074)

Teresita Sotomayor, Ph.D., ARL HRED STTC; Margaret P. Bailey, Steve Dorton, Ian T. Dykens, Sonalysts, Inc.

Training

T-1 TUESDAY • 27 NOVEMBER • 1400 • ROOM S320E

Sexy Simulation in Air, Land, and Sea

Session Chair: Michele Harrison, Naval Education and Training Command (NETC)

Session Deputy: Josh Looper, USAF

A Simulation Based Application for Naval Navigation Training (18109)

Jason Ralph, Ph.D., Lauren Ogren, Naval Undersea Warfare Center (NUWC); Sushil Lewis, Ph.D., Richard Kulesh, Surface Warfare Officer School

A Multi-Role Reconfigurable Trainer for Naval Combat Information Operators (18223) ✦

Bruno Emond, Ph.D., Irina Kondratova, Ph.D., Guillaume Durand, Ph.D., Julio Valdes, Ph.D., National Research Council Canada

Socio-technical Simulation for Denied Environments Training: A Contested Airspace Example (18226)

Benjamin Bell, Ph.D., Eduworks; Winston Bennett, Jr., Ph.D., AFRL; William Clancey, Ph.D., Florida Institute for Human and Machine Cognition

T-2 TUESDAY • 27 NOVEMBER • 1600 • ROOM S320E

“Make Up Your Mind”: Learning to Decide

Session Chair: Gary Bauleke, Defense Language and National Security Education Office

Session Deputy: Kevin Gupton, ARL

Building Automated Assessments of Interpersonal Leadership Skills (18010)

Randy Brou, Ph.D., Army Research Institute; Gary Stallings, Sean Normand, Ian Stearns, Northrop Grumman Systems Corporation; Blake Ledford, Consortium Research Fellows Program

Virtual Supplementation of Tactical Decision Making Training (18113)

Randy Brou, Jennifer Tucker, Army Research Institute; Ray Morath, Joanne Barnieu, Jonathan Bryson, John Grantz, Jessie Hyland, ICF

When Expertise Fails: Designing for High Uncertainty Decision Making in Virtual Worlds (18180)

Whit Missildine, Ph.D., Viion, Inc.

T-3 WEDNESDAY • 28 NOVEMBER • 0830 • ROOM S320E

If I Had a Simulator

Session Chair: Nick Giannias, CAE, Inc.

Session Deputy: Jennifer Fowlkes, NAWCTSD

A Systematic Approach for Human Patient Simulation Assessment (18090)

Jennifer Winner, AFRL; Col Douglas Hodge, USAF (Ret.), David Malek, National Center for Medical Readiness; Caitlan Rizzardo, Aptima, Inc.; Victoria Krumholtz, Leidos, Inc.

Using Simulation to Assess Performance in Emergency Lifeboat Launches (18179)

Randy Billard, Jennifer Smith, Virtual Marine

Towards Zero Fratricide – Simulation Enabled Live Field Firing (18265) ✦

MAJ Gareth W. Collier, USA (Ret.), SimCentric Technologies, Australia

T-4 WEDNESDAY • 28 NOVEMBER • 1030 • ROOM S320E

Improving Training, Assessments, and Evaluations

Session Chair: Thomas Yanoschik, SAIC

Session Deputy: Maureen Holbert, Booz Allen Hamilton

Bridging the Joint Close Air Support Training Gap (18012)

Emilie A. Reitz, JS J6, Joint Fires Division; Kevin Seavey, Alion Science and Technology; Marsha Mullins, Joint Staff J6

Assessing the Validity of Driver Response: Simulator vs. Real Vehicle (18052)

Rick D. Giovengo, Ph.D., George Buck, Federal Law Enforcement Training Center (FLETC)

**Define "Expert"; Characterizing Proficiency for Physiological Measures of Cognitive Workload (18059) ✦**

Amy Dideriksen, Jaclyn Hoke, Rockwell Collins, Inc.; Christopher Reuter, Thomas Patry, Thomas Schnell, University of Iowa Operator Performance Lab; Jocelyn Faubert, CogniSens Applied Research Center, University of Montreal, School of Optometry

T-5 WEDNESDAY • 28 NOVEMBER • 1400 • ROOM S320E

LVC Training Environments: From Air Dominance to Cyber

Session Chair: Jeff Frost, GaN Corporation

Session Deputy: Marcus Boyd, L3 Technologies - Link Training & Simulations

Validating Distributed Mission Simulation in a Tactical Integrated Training Environment (18202)

Martin Goodwin, Ph.D., Scott Harris, Lauren Reinerman, Ph.D., UCF IST; Alexander Arrieta, TECOM; Robb Dunne, Ph.D.

Achieving Air and Surface Dominance through a Joint Secure Interoperable LVC Solution (18214)

CDR Thomas J. Weaver, USN, NAVAIRSYSCOM; Richard A. Brisbin, Air Combat Effectiveness Consulting Group, LLC

Cyber Training Experimentation through Operation Blended Warrior (18309)

Steven R. Moore, Mathew Chaney, Alion Science and Technology; Larry Flint, Ingenia Services, Inc.

T-6 WEDNESDAY • 28 NOVEMBER • 1600 • ROOM S320E

Adapt, Deploy, and Train

Session Chair: Janet Weisenford, ICF International

Session Deputy: John Aughey, The Boeing Company

Effective Deployment of LVC-TE on Wide Area Networks (18092)

Luis E. Velazquez, MARCORSYSCOM; Lloyd Wihl, Ha Duong, Jeff Weaver, Jeff Hoyle, Scalable Network Technologies, Inc.

Initial Evaluations of Adaptive Training Technology for Language and Culture (18145)

W. Lewis Johnson, Ph.D., Brenda Lindsay, Alelo, Inc.; Andrew Naber, Ph.D., Alan Carlin, Jared Freeman, Aptima Inc.

Team Training for Enemy Identification Using an Intelligent Tutoring System (18291)

Kaitlyn M. Ouverson, Alec Ostrander, Anastacia MacAllister, Adam Kohl, Jamiahus Walton, Stephen B. Gilbert, Michael C. Dorneich, Eliot Winer, Iowa State University; Anne M. Sinatra, Army Research Laboratory

T-7 THURSDAY • 29 NOVEMBER • 0830 • ROOM S320E

Bridging the Reality Gap

Session Chair: Michael Truelove, Army Simulation Proponent & School

Session Deputy: Christine Allen, Ph.D., University of Central Florida

Training with Virtual Reality: Lessons Learned (18040)

Amanda Palla, Vertex Solutions; Linda Brent, Ed.D., The ASTA Group, LLC; Eric Sikorski, Ph.D., DoD, Combating Terrorism Technical Support Office

Maximizing Return on Training Investment in Mixed Reality Systems (18075)

Christina Padron, Ada Mishler, Ph.D., Cali Fidopiastis, Ph.D., Kay Stanney, Ph.D., Design Interactive, Inc.; Gino Fragomeni, RDECOM STTC

Comparison of Augmented and Virtual Reality Training for Spatial Anatomy (18144)

Andrew Wismer, Ph.D., Lauren Reinerman-Jones, Ph.D., Grace Teo, Ph.D., Sasha Willis, Kelsey McCracken, UCF IST; Matthew Hackett, Ph.D., RDECOM STTC

T-8 THURSDAY • 29 NOVEMBER • 1030 • ROOM S320E

Effectiveness of Multinational Exercises

Session Chair: Koren Odermann, MARCORSYSCOM PM TRASYS

Session Deputy: Aaron Judy, NAWCTSD

Integrating Advanced Distributed Learning into Multinational Exercises (18152) ✦

Maj Niclas Ljung, Maj Tohmas Ax, Swedish Armed Forces; Aaron Presnall, Ph.D., Jefferson Institute.; Sae Schatz, Ph.D., ADL Initiative

Lessons Learned from Leveraging Simulation as a Service in Viking18 (18329) ✦

Nico de Reus, Tom van den Berg, Henk Janssen, Wim Huiskamp, TNO Defence Research; Bjorn Lofstrand, Lennart Olsson, Pitch Technologies; Cpt Peter Lindskog, SWAF Joint Training Centre

T-9 THURSDAY • 29 NOVEMBER • 1330 • ROOM S320E

Recommendations from Three Amigos

Session Chair: Sean Carey, USAF AMC/A3TRD

Session Deputy: Mike Robbs, FLETC

Simulator-based Driver Training: Moving Up a Gear (18085)

Timothy Coley, Steve Dethick, XPI Simulation

First Steps in 5th Generation Aircraft – IAF's Innovative Technical Training (18127) ✦

LTC Ran Shneor, Israel Air Force

Toward Recommendation across Learning System (18330)

J.T. Folsom-Kovarik, Ruben Ramirez-Padron, Cameron Copland, Caitlin Tenison, Soar Technology, Inc.; Ian Davidson, Aubrey Gross, Hongjing Zhang, University of California; LCDR Peter Walker, USN, Office of Naval Research (ONR)

Friday — Professional Development Workshops

Location:	Orange County Convention Center, South Concourse, Rooms 330 and 331
Date:	Friday, 30 November
Times:	0700 Limited Continental Breakfast and Registration AM Sessions 0800 – 1200 • FULL DAY Session 0800 – 1700
Who may attend?	All registrants of I/ITSEC are welcome to attend.
Fees:	There is no fee for IITSEC Conference Registrants/Exhibitors – IITSEC badge required for entry.
CEU/CLP:	Paid I/ITSEC Conference registrants are eligible to receive CEU/CLP credits. If not a paid attendee, a \$45 fee will be charged only if you wish to receive the CEU credits.
Registration:	Registration for individual workshops is not required. Workshops fill on a first-come-first-serve basis. Please arrive early for topics that interest you the most — seating is limited. If you wish to receive CEU credits, be sure to request CEUs during your conference registration. You may update your registration to include CEUs at any time at http://www.iitsec.org/attend/registration-fees
Lunch:	On own



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ALL PROFESSIONAL DEVELOPMENT WORKSHOPS ARE ELIGIBLE FOR CEU/CLP CREDITS (SEE PAGE 47)

PDW2 • Room S330F • 0800 – 1200

Live-Virtual-Constructive (LVC) Interoperability Techniques

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

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

PDW3 • Room S330G • 0800 – 1200

Certified Modeling & Simulation Professional (CMSP)

Presenter **CANCELLED**
This workshop will provide an overview of the Certified Modeling & Simulation Professional (CMSP) certification program, with a particular focus on preparing prospective applicants to take the CMSP exam. The workshop will cover the application and examination process (education/ work experience requirements, application fees, how the exam is administered, etc.), in addition to an in-depth review of the new CMSP Exam Topic Outline. The CMSP exam has been completely revised and refined over the past two years, and new applicants will now have a choice of two tracks — Technical and User/Manager

— and will take an entirely new exam. The workshop will be taught by charter/pioneer CMSPs who have been involved in oversight of the CMSP program and/or creation/revision of the CMSP exam. The workshop will not by itself prepare applicants to take the exam, but will provide a thorough overview of exam content and a blueprint for further self-study.

PDW4 • Room S330H • 0800 – 1200

Harnessing the Power of Data Analytics to Optimize Training

Presenters Liz Gehr, Ph.D., Chief Learning Scientist and Laurie Dunagan, M.S., Data Scientist, The Boeing Company
Data analytics offers a principled approach to managing data and making it a valuable resource for understanding complex interactions and improving operations. The training community has unique needs and obstacles when attempting to implement a standard data analytics approach. Although technology enables the collection of data from a variety of sources and a number of aspects of training such as student records, training devices, student performance during training, and student daily activities, the collection, preparation, integration, and understanding of this wealth of data presents 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. One main focus will be the challenges associated with applying standard data analytics methods in a military training environment. Other topics covered will include how to prepare, transform, and store data for analysis, opportunities in data visualization, and privacy issues. The format of the workshop will involve lecture, and interactive question and answer sessions for each topic addressed. Participants are encouraged to bring up additional topics or examples of training data analytics applications.

Export Controls on the Defense Technology and NIST 800-171 Compliance

Presenter Ozkan Erdem, Ph.D., Vice Chair, National District Export Council, President, Intredex, Inc.

This training covers the basics of the International Traffic in Arms Regulations (ITAR) applicable to Technology and Software transfers in addition to the NIST 800-171 compliance that is necessary for processing, storing and transmitting the Covered Defense Information (CDI). Topics will include the Embargoes and Other Country Specific Controls, Technology Types, Publicly Available Technology and Fundamental Research, Hiring Foreign Persons (Deemed Export), Licensing and License Exceptions for the ECCN 6xx series items, U.S. Munitions List, ITAR Registration Requirements, Licensing and Agreements under ITAR, as well as review of the Cybersecurity and documentation requirements for the compliance with the NIST 800-171.

Using ROI-Focused Design Thinking to Deliver Impact Results

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

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

Serious Game Design Workshop

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

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

Cyberspace Training: Is This Even Legal?

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

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

Team and Collective Training Needs Analysis (TCTNA)

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

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



