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Continuing Education Units (CEUs) 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.

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Contact Carol Dwyer at cdwyer@NTSA.org or 703-247-9471 for additional information.

CONTINUOUS LEARNING POINTS (CLPs)

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



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MONDAY, 1 DECEMBER
TUTORIAL GRID

ROOM	0830 – 1000	1030 – 1200	1245 – 1415
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TUT 1: KNOW YOUR AI – NO! YOU'RE AI!			
310AB	Navigating the AI Acceleration: Generative AI and Beyond 25T28	An Introduction to Cognitive Systems for Modeling & Simulation 25T30	Practical Use of (Emerging) Learning Technologies 25T17
TUT 2 HUMANS VS. AI			
310CD	Machine Learning: An Introduction for Humans 25T29	Building the Bridge: Evolving V&V Methods to Address AI Driven Simulation 25T49	Architecting Compound AI for Training and Augmenting Human-AI Teams 25T58
TUT 3: FUNDAMENTALS OF MODELING AND SIMULATION			
330AB	Introduction to Defense Modeling and Simulation 25T31	Live, Virtual and Constructive (LVC) Interoperability 101 25T52	A Process for Distributed LVC Integration and Execution 25T48
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320A	A Practical Guide to Using Open Tools for Well-Defined Competencies – Learning Engineering of Multi-Platform, Multi-Domain, Mission-Ready Skills Definitions 25T33	Game Engines for Military Use 101 25T42	Scenario-Centered Learning: Methods for Situational Training in a Volatile World 25T47
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320B	Signal Modeling: From Spectrum Analyzers to Mixed Reality 25T65	Effective XR Space Domain Training for Guardian Proficiency 25T54	From Simulation to Reality: Combatting Social Engineering with Serious Games 25T43
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320C	DIS Tutorial 25T20	Introduction to HLA 4 for the Cloud 25T72	Achieving Secure and Scalable Interoperability: OMG DDS for MOSA-Compliant LVC Training 25T39
TUT 8: ENHANCING COMFORT IN IMMERSIVE TRAINING			
320D	Sensory Factors Underlying Cybersickness: Mechanisms and Implications 25T32	MedSim Academy 25T50	Minimizing Cybersickness in the Design, Implementation and Management of Learning Systems with Virtual Environments 25T59
TUT 9: SIMULATION DEVELOPMENT AND DEPLOYMENT			
320E	Simulation Conceptual Modeling Theory and Use Cases 25T10	Accreditation of Simulation-Based Experiments: Beyond the M&S 25T11	Simulation and the Cyber-Secure Hybrid Cloud (CSHC) 25T40
TUT 10: MEASURING YOUR SUCCESS			
320F	Simulated Systems – Real ROI with Application to Future Systems 25T69	Harnessing Physiology for Peak Human Performance in Training and Simulation 25T51	But How Do You Know They Learned That? 25T35
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320G	Exercises and Experiments: How They Can Play in Campaigns of Learning 25T18	End to End XR Training: Innovative Strategies for Seamless Content Generation and Trainee Engagement 25T56	Building 3D Environments for Simulation: Standards and Best Practice 25T63



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0830 – 1000

BEST TUTORIALS
0830 – 1000 • 330EF

GENERAL GENERATIVE AI – APPLYING OFF-THE-SHELF GenAI TOOLS TO WARGAMING

25T24

Wargame planners and participants can benefit from integrating GenAI's potential for adaptability, efficiency, support to decision-making, and scalability to improve velocity, realism, and immersion of wargames. The purpose of this tutorial is to explore how Low-Cost, Commonly Available Generative AI capabilities (such as Copilot, Gemini, and ChatGPT) as well as limited access systems (such as AFRL NIPRGPT or US Army AI2C) can be used to lower the barrier of entry to wargaming, increase immersion, and improve scenario adaptability. There is a large environment of extremely capable, purposely designed (and proprietary) wargaming and simulation capabilities, AI enabled or not. However the generic tactical leader does not have the resources to contract, the hardware to deploy, or the time to find discrete capabilities. There remains a need to easily access and rapidly iterate on tactical and operational problems. Commonly available systems provide access and flexibility. Additionally, the exposure to commonly accessible tools educates the force on the effective future employment of purposely designed wargaming tools.

PRESENTERS

Robert Prescott, U.S. Army FCC
Aaron Blair Wilcox, U.S. Army War College
Sean Fraser, U.S. Army AI2C

TUT 1: KNOW YOUR AI – NO! YOU'RE AI!
0830 – 1000 • 310AB

NAVIGATING THE AI ACCELERATION: GENERATIVE AI AND BEYOND

25T28

This tutorial is based upon the Best Tutorial at I/ITSEC 2024, which focused on the why, how, and what of Generative AI. In 2025, we expand to include an examination of other emerging AI innovations, including Agentic AI, advanced robotics, quantum-empowered AI, and AI in combination with other fields, such as Generative AI-empowered synthetic biology.

Our tutorial is quite human-centric. It's not a deep dive on software development or deep mathematics, nor is it another lazy walkthrough of "prompt engineering" recipes. Instead, we've approached AI from a different lens, exploring the questions it raises about our structures and systems, ways of working, and the future of our communities.

Our tutorial includes several parts:

- We begin by reviewing the foundations of AI, so that even those who've somehow avoided discussions of Generative AI can have a sense of what these algorithms can do and roughly how they work. This includes a no-nonsense overview of the relationships between Good Old-Fashioned AI, Machine Learning, Deep Learning, and Generative AI. It will also include a brief description of how Generative AI works, including considerations of data quality and bias.
- New in 2025, we consider emerging innovations in AI, such as Agentic AI and the combination of Generative AI with other emerging and disruptive technologies, such as synthetic biology.

- Then we pause to underscore the tightly entwined relationship between Modeling, Simulation, and Training (MS&T) and AI. Both fields inherently rely upon each other, and they overlap in many ways.
- We then explore notions of change across art, culture, organizations, society, and security. How will these structures evolve as AI grows more pervasive? Examples include structural changes to work, the ways we value and navigate information, and new models of learning and assessment.
- Finally, we end with a practical discussion designed to encourage attendees to engage in strategic foresight: thinking about how Generative AI is likely to create change within their own organizations and communities and what they should be doing to influence and navigate these changes.

This is an exciting (if volatile) new world, and perhaps, the ideas explored within this tutorial will help attendees find their ways a little bit better.

PRESENTERS

Sae Schatz, Ph.D., Partnership for Peace Consortium
Julian Stodd, Sea Salt Learning, Ltd.
Geoff Stead, MyTutury

TUT 2 HUMANS VS. AI
0830 – 1000 • 310CD

MACHINE LEARNING: AN INTRODUCTION FOR HUMANS

25T29

The field of Machine Learning (ML) began in the 1950s, and it became a major, widespread research area in the 1980s. Over the past 10-20 years, innovations in computer hardware, computer languages, computer memory, and new algorithms have kicked off a rapid escalation in the capabilities of ML systems. As a result, the common refrain from stakeholders is "I want my system to learn!" But what does it really mean for a system to be able to learn? When is it a good idea and when is it not? What kinds of things are computers good at learning, and where are there still weaknesses? How does this all work, really?

This tutorial abstracts away from the mathematical and computational details to offer a high-level understanding of "how ML works" as well as its capabilities, strengths, and weaknesses. The tutorial presents the broad categories of learning that current ML approaches address, together with examples that provide an intuitive feel for how each approach is able to work, without delving into the specifics of the complicated math that provides much of the "magic." The tutorial also investigates the "art" behind the science, introducing the work an ML practitioner needs to add to apply these powerful algorithms successfully to new problems.

The tutorial finishes by summarizing some of the types of human learning that are still on the ML frontier, waiting to be understood and conquered, as well as an overview of methods to decide which parts of your problem might be best suited to non-learning algorithms.

PRESENTERS

Randolph Jones, Ph.D., Soar Technology, LLC



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TUT 3: FUNDAMENTALS OF MODELING AND SIMULATION 0830 – 1000 • 330AB

INTRODUCTION TO DEFENSE MODELING AND SIMULATION

25T31

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

PRESENTERS

James Coolahan, Ph.D., Coolahan Associates, LLC
John Daly, JJD Associates

TUT 5: SIMULATION BUILDING BLOCKS 0830 – 1000 • 320A

A PRACTICAL GUIDE TO USING OPEN TOOLS FOR WELL-DEFINED COMPETENCIES — LEARNING ENGINEERING OF MULTI-PLATFORM, MULTI-DOMAIN, MISSION-READY SKILLS DEFINITIONS

25T33

Crafting well-defined competency definitions is a complex and labor-intensive process that can be made easier with AI enabled and standards-based automation tools. Best practices typically require cognitive and physical task analysis, which can be tedious and time-consuming and require specialized expertise. Despite these efforts, the resulting definitions are often imprecise, failing to capture the full scope of the competencies as applied in different contexts or lacking the granularity needed for effective assessment. Another challenge is ensuring that these definitions are structured in formats that are interoperable across different platforms and learning modalities, which is essential for scalability and consistency in digital learning environments and for multi-domain training scenarios.

We will explain what it means for a competency to be well-defined for the purposes intended, drawing from the IEEE standard recommended practice for well-defined competencies (IEEE 1484.20.2) and other sources. We will explain the role of the standard for Sharable Competency Definitions (IEEE 1484.20.3), an anchor standard in the Total Learning Architecture.

After this, we will introduce some free and open tools for developing well-defined competencies frameworks in formats that can be used

across-platforms and across multi-domain training contexts. These tools can automate a learning engineering approach to development and iterative refinement of well-defined competency definitions using human-in-the-loop generative AI, international standards, and learning analytics for data-verified specificity.

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

PRESENTER

Jim Goodell, IEEE Learning Technology Standards Committee

TUT 6: SIGNALS FROM HUMAN AND SPACE 0830 – 1000 • 320B

SIGNAL MODELING: FROM SPECTRUM ANALYZERS TO MIXED REALITY

25T65

We are surrounded by invisible radio frequency signals used for communications, navigation, and even health. Traditionally, we see these signals through spectrum analyzers. However, the capabilities of existing analysis tools are being outpaced by the rapid modernization of wireless networks and topologies like 5G, IoT, Bluetooth, LoRa, Starlink, etc. RF is inherently multidimensional, but conventional analyzers display signals in 2D slices, limiting real-world applicability to highly technical users. Emerging technology that combines Mixed Reality displays and AI/ML algorithms is now capable of spatializing radio emissions at their natural 3D location for easier understanding and communication.

This tutorial will convey the evolution of RF visualization tools from flat interfaces to immersive ones that can be used to discover and map RF signals and networks. The audience will gain a broad understanding of the emergence of holographic interfaces and how they are being evaluated for operational data displays. Building upon proven user experience principles, we will walk participants through challenges with the design and development process, theory behind decisions, and usability issues in actual deployments. The audience will learn about current experimentation and future innovations in this emerging field.

PRESENTER

Jad Meouchy, BadVR
Suzanne Borders, BadVR

TUT 7: WIRING THE LVC WORLD 0830 – 1000 • 320C

DIS TUTORIAL

25T20

The DIS Tutorial will provide a history of the Distributed Interactive Simulation (DIS) from the 1990's to the current DIS V7 and future DIS V8. Emphasis will be on the DIS V7 and V8 standards. Participants will learn how the DIS standard is managed and learn how the Institute of Electrical and Electronics (IEEE) and Simulation Interoperability Standards Organization (SISO) work together to create the DIS standard. Participants will learn about the capabilities of DIS, what problems it solves and how it supports Live Virtual Constructive (LVC) integration. Participants will be able to explain the key DIS definitions, concepts and technical details of the DIS protocol. Emphasis will be given to the existing Dead Reckoning algorithms and the new Combined Circular Parabolic (CPC) algorithm.



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The Tutorial will provide an overview of all of the existing and future DIS Protocol Data Units (PDUs) including their purpose and usage. This review should provide participants with an understanding of what DIS can be used to model and how users can add new capabilities in DIS V8.

The differences between DIS, HLA and TENA will be briefly discussed. DIS V8 changes, challenges and opportunities for integration with or into existing DIS V7 systems will be reviewed. The current status of the DIS V8 standard will be provided.

PRESENTER

Lance Call, AFRL/CAE

TUT 8: ENHANCING COMFORT IN IMMERSIVE TRAINING 0830 – 1000 • 320D

SENSORY FACTORS UNDERLYING CYBERSICKNESS: MECHANISMS AND IMPLICATIONS

25T32

Extended Reality based training devices have introduced a modality into the military and aviation training ecosystem that is known to induce motion-sickness like symptoms at a higher rate than traditional simulators or motion itself. XR specific symptoms are commonly known as Cybersickness.

The dominant hypothesis as to the cause of such sickness symptoms is Multi-Sensory Cue Expectation Conflict Theory, wherein the experience of unexpected disparities within and among senses sometimes induces negative experiences which manifest both subjectively and objectively.

Conventional cybersickness analyses largely take an outside-in approach, i.e. they analyze use cases and symptoms or reductively analyze hypothesized causal elements. By contrast, this work takes an inside-out perspective, wherein the natural operation of senses which interface to XR devices is examined and is then compared to the demands placed upon them by these devices.

XR devices are shown to impose a set of novel sensory demands upon their users. The analysis is based on and sourced from extensive published research. It identifies 5 interacting clusters of sensory mismatch and/or limitation inherent to today's devices. Combined, these 5 clusters constitute a novel holistic synthesis of mechanisms underlying cybersickness. Because the understanding developed by this analysis and synthesis identifies mechanisms, it provides the basis for a substantial, well informed research agenda that goes well beyond the phenomena of sickness.

An overview of the research and application agenda enabled by this work is provided. It includes: 1) direct implications of sickness, 2) assessment of the significance of sensory mismatches when applied to training task use cases, 3) fundamental research questions, and 4) standards that are needed ensure safe and effective use of the technology.

Lastly, a framework for situating the use of XR based devices is presented to help them become a true enhancement to the total training system.

PRESENTER

Douglas Gill, FlightSafety International

TUT 9: SIMULATION DEVELOPMENT AND DEPLOYMENT 0830 – 1000 • 320E

SIMULATION CONCEPTUAL MODELING THEORY AND USE CASES

25T10

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. It can bound the systems engineering problem and provide valuable artifacts for simulation validation, verification, and accreditation. The emergence of Model Based System Engineering (MBSE) has accentuated the need for well-formed simulation conceptual models.

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 aims to advance the best practices in simulation conceptual modeling and foster industry-wide adoption of standardized methodologies.

PRESENTER

Jack Borah, Borah Enterprises, LLC

TUT 10: MEASURING YOUR SUCCESS 0830 – 1000 • 320F

SIMULATED SYSTEMS – REAL ROI WITH APPLICATION TO FUTURE SYSTEMS

25T69

When requirements increase faster than available resources, decisions on how to allocate the resources among various programs and projects are required. Project and program managers must show why their systems are worthy of continuing or launching over another. While many factors influence these important decisions, return on investment (ROI) should play a key role. ROI has been an essential factor for many years, however, lately we have seen many instances where the term is used incorrectly. For example, "The use of System X saved 23% of classroom hours," is not ROI. Furthermore, traditional ROI requires a return or revenue stream to calculate the benefit of the investment. However, in military applications there is most likely not a revenue stream. How does one then calculate the return?

This tutorial builds on a study performed for the Modeling and Simulation Coordination Office in 2009 and published in the Acquisition Review Journal in 2011, completed by a team led by Bill Waite. In the tutorial, attendees will briefly be presented the definition of ROI, some examples of ROI and some examples of the incorrect use of ROI. Then some of the unique challenges to the DoD, and particularly the M&S environment, will be presented with the proposed solutions from the study discussed. In that discussion, how to construct solid usable metrics for use in the ROI calculation for M&S will be presented with real-world examples given. Additionally, an examination



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of how ROI can appear slightly different depending upon your point of view (management level) and what things are considered in the calculation. We will then consider a special use case for estimating ROI for new technology and introduce Expected Value ROI. Finally, examples that put all the ideas together and show ROI in some different scenarios will be presented and discussed. The end-goal is that each attendee will come away with an understanding of ROI and how it can be misapplied; how to calculate it and the unique challenges that arise when there is no revenue stream; how to overcome those challenges and develop measurable metrics for use in the ROI calculation; and finally, how all of the principles come together in some examples and how the appearance of ROI may differ depending upon your management level. Using these methods, attendees should walk away with being better able to defend their programs and projects against the ever-present funding axe.

PRESENTER

Tim Cooley, Ph.D., DynamX Consulting
Ivar Oswald, Ph.D., CMSP, The MIL Corporation

TUT 11: DESIGN FOR LEARNING AND ENVIRONMENTS
0830 – 1000 • 320G

EXERCISES AND EXPERIMENTS: HOW THEY CAN PLAY IN CAMPAIGNS OF LEARNING

25T18

Individuals and organizations across the Department of Defense use the terms exercise, experiment, and experimentation in instructions and planning as the services seek to modernize and build capability for the future while neglecting to be precise about their meaning. The purpose of this tutorial is to clarify the fact that exercises and experiments are different because they support different goals; however, one can use both exercises and experiments effectively as part of the toolkit of campaigns of learning or experimentation campaigns in our quest for deterrence and operational dominance. While both exercises and experiments are tools, they both use a variety of tools to accomplish their diverse ends. This tutorial explores the tools they use: simulations – live, virtual and constructive, wargames – both computer-based gaming and traditional command post games, path games and other types of strategy games, together with their capabilities and deficits. We explore the different types of experiments and how they are currently in use in DoD. Finally, we bring these together in support of the current directives and instructions for designing our path to building tomorrow's force and the people who will employ the new capabilities in deterrence of an adversary and defense of our nation. We note that we combat, not only a physical adversary, but the tyranny of time and how the effects of that tyranny drive us away from the most effective use of our campaign of learning. In the light of that tyranny, we look at the current gaps in our processes (as well as in our tools) and provide suggestion for developing a more agile and cost-effective way of employing our experimentation toolkit.

PRESENTER

S.K. "Sue" Numrich, Ph.D., CMSP, IDA

1030 – 1200

BEST TUTORIALS
1030 – 1200 • 330EF

QUANTIFYING TRAINING VALUE IN THE AGE OF IMMERSIVE SIMULATION

25T41

Immersive simulation and training devices have flooded the market touting superior training value. However, the science for precisely quantifying training gains and overall value for these next generation training devices is largely inadequate, thereby leaving claims of training value unchecked. The result is an increasing difficulty for training stakeholders to engage in science-driven training media selection and integration into a curriculum. Compounding this issue are training assessment methods, processes, and analyses that have remained stagnant and are in dire need of an update to assess the total impact of immersive devices on the training landscape.

The purpose of this tutorial is to provide training stakeholders, whether they be scientists, practitioners, or decision-makers, with a review of the current state-of-the-art for determining the media composition of simulation-based training, its limitations, and the introduction of a data-driven approach to precisely quantify training value. As a result, stakeholders will obtain a broader capacity to effectively assess immersive devices within a training solution.

The tutorial begins by providing contextual and historical background on determining training needs. We begin by outlining pros and cons of different instructional methods and modes of instruction, including a description of the basic components of a traditional ground-based training system designed to expedite skill acquisition across the novice-to-expert continuum. We then proceed to describe how immersive simulation is changing the training landscape, disrupting traditional simulation-based training, and to what extent it is warranted.

Following this historical grounding and contextualization of immersive devices, we provide evidence for augmenting training needs analyses in order to competently and objectively pair immersive devices to learning objectives. Specifically, we address this gap by describing a combinatorial approach between Instructional System Design (ISD) and Human Factors (HF) methods to gauge the impact of immersive training media. Next, we introduce the topic of media cost versus capability tradeoff, including novel training media factors to consider within an overall training ecosystem. Practical visualizations are provided to illustrate the importance of this tradeoff.

Finally, the tutorial presents a data-driven approach at quantifying training value. Specifically, we review and visualize through an applied use case the main factors impacting the computation of a normalized training value index, including media sensory gains and proportion of training coverage across a notional media solution set. Our conclusion summarizes the tutorial's main points under the lens of driving training value while providing useful resources to stakeholders in support of that endeavor.

PRESENTERS

Sandro Scielzo, Ph.D., CAE USA
Eric Ultes, CAE



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TUT 1: KNOW YOUR AI – NO! YOU’RE AI!
1030 – 1200 • 310AB

AN INTRODUCTION TO COGNITIVE SYSTEMS FOR MODELING & SIMULATION

25T30

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

PRESENTERS

Randolph Jones, Ph.D., Soar Technology, LLC
Dylan Schmorow, Soar Technology, LLC

TUT 2: HUMANS VS. AI
1030 – 1200 • 310CD

BUILDING THE BRIDGE: EVOLVING V&V METHODS TO ADDRESS AI DRIVEN SIMULATION

25T49

The processes of Verification and Validation, are foundational elements that underlie assessments of M&S credibility. Verification and Validation (V&V) activities serve to build an evidentiary chain of information upon which M&S Users and Accreditation Agents can assess the viability of an M&S for a particular application. Information derived from the V&V processes is used to shape the understanding of the conditions under which an M&S could and should be used.

While advancements in verification and validation methods for both stand alone and distributed simulations have been realized; new challenges exist as the focus shifts to AI driven simulation. This tutorial will explore these challenges and discuss both V&V solutions and gaps. Particular focus will be given to V&V issues associated with AI driven training simulations.

Topics to be covered by this tutorial will include:

- Defining basic verification and validation concepts
- Identifying verification test strategies (e.g., leveraging information, supplemental test activities) and adapting them to various development paradigms
- Building and applying validation referent data (what the simulation results will be compared to)
- Defining the simulation measures and metrics to be compared
- Selecting validation methods to apply when performing the results/referent comparison

- Defining V&V challenges associated with AI driven simulation
- Identifying applicable V&V methods and gaps for AI driven simulation
- Defining the unique V&V challenges associated with AI driven training simulations

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

PRESENTERS

Simone Youngblood, Johns Hopkins University APL
Katherine Ruben, Johns Hopkins University APL

TUT 3: FUNDAMENTALS OF MODELING AND SIMULATION
1030 – 1200 • 330AB

LIVE, VIRTUAL AND CONSTRUCTIVE (LVC) INTEROPERABILITY 101

25T52

The purpose of this tutorial is to provide managers the necessary insight needed to support intelligent decision making when employing LVC to solve their needs. The tutorial will discuss the various solutions and domains of the technology and how it can potentially support their LVC needs. The tutorial provides a relevant use case as the mechanism to explain the concepts and the solutions required to achieve success. The tutorial will not be an in-depth technology review of LVC interoperability yet will provide sufficient management-level insight into interoperability solutions and standards like Distributed Interactive Simulation (DIS), High Level Architecture (HLA), and the Test and Training Enabling Architecture (TENA) product line.

PRESENTERS

Kurt Lessmann, Trideum Corporation
Damon Curry, Pitch Technologies US

TUT 5: SIMULATION BUILDING BLOCKS
1030 – 1200 • 320A

GAME ENGINES FOR MILITARY USE 101

25T42

As the technology behind gaming continues to evolve, game engines are increasingly being recognized as valuable tools for modeling and simulation. Game engines are often utilized as low-cost support for immersive display technologies such as virtual reality head mounted displays, options for low to no-code development processes, and open ecosystems. These engines provide a wide range of tools that can help reduce the time required to deploy new training applications and simulations. The gaming industry has significantly influenced the development of features beneficial to military training, resulting in improvements that enhance our training and learning methods. By utilizing the integrated physics engines, networking capabilities, support of extended reality (XR, encompassing augmented, mixed, and virtual reality, AR, MR, VR), and accessible community assets, we can create simulations that facilitate training and research in dynamic and realistic scenarios.

This tutorial provides an introduction to game engines and their application in LVC training as well as game-based or gamified training. The critical considerations for using gaming engines are covered. Three example use cases are showcased: distributed training, which demonstrates the utilization of networking capabilities and integrating them with legacy systems; part-task trainers, which focuses on the creation of virtual environments designed for



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training; and general research, which emphasizes the importance of gathering metrics that may be challenging to obtain in other settings. Throughout each use case, the tutorial will discuss the benefits, drawbacks, and best practices for implementation. It will conclude with a summary of the overall benefits, limitations, and practical applications of game engines, as well as best practices that extend beyond the specific use cases presented.

This tutorial is designed for a broad audience to provide a foundational understanding of the advantages of game engines, appropriate scenarios for their use, and best practices for developing game engine-based solutions for military purposes.

PRESENTERS

Quintin Oliver, AFRL
Stephanie Fussell, Aptima, Inc
Summer Rebensky, Aptima, Inc.
Stephen McGee, AFRL

TUT 6: SIGNALS FROM HUMAN AND SPACE 1030 – 1200 • 320B

EFFECTIVE XR SPACE DOMAIN TRAINING FOR GUARDIAN PROFICIENCY

25T54

Space has captured the imagination of billions of people around the world and has become essential to our daily quality of life. As commercial companies demonstrate more and more success with spaceflight and space exploration, there has been a recent resurgence in humanity's interest in space.

Training and educating people to become successful space professionals is extraordinarily challenging. Preparing students to conduct safe and effective space operations demands that they master complex (and often counterintuitive) orbital dynamics, understand physical space vehicles they are operating and maneuvering, and learn how to integrate uncertain or incomplete data for decision-making while avoiding hazards such as space weather effects and conjunctions. High-fidelity simulators incorporating augmented reality (AR) and virtual reality (VR) to improve operator and analyst proficiency will be pervasive in the future, but a mismatch currently exists between the pace at which the global space domain is evolving and the tools, technologies, and course materials available to educators in the classroom. For example, many existing education tools are antiquated, requiring instructors to rely on analog aids such as "beach balls and hula hoops" and celestial sphere models to convey these complex 3D relationships. Instructors attempt to familiarize students with dynamic space operations using digital 2D artifacts such as slide decks, and complex and expensive computer modeling programs when their budgets allow. Trying to characterize complex 3D on-orbit hazards using such techniques is cumbersome, fails to support training concepts beyond basic orbitology, and severely limits educational opportunities. And current 2D desktop displays are particularly taxing to new learners as they begin their education, and such displays limit training effectiveness and extend the time needed to master the material.

During this tutorial, we will demonstrate new techniques that use AR/VR headsets to experience and learn about the fundamentals of space domain awareness, orbital regimes, satellite constellations, orbital mechanics, and classical orbital elements in an immersive 3D environment. The tutorial will demonstrate the realized benefits from using AR/VR over current training methods such as reducing perceptual and cognitive burden compared to 2D desktop screen displays that represent orbital physics which requires

significant mental spatial transformations to perceive the 3D context. Participants will leave with a better understanding of how to teach space domain awareness in an engaging, interactive manner that will give their students an intuitive understanding of space fundamentals.

PRESENTERS

Daniel Stouch, Charles River Analytics, Inc.
Susan Latiff, Charles River Analytics, Inc.
Rob Hyland, Charles River Analytics, Inc.
Dan Duggan, Charles River Analytics, Inc.
Patrick Hosman, Charles River Analytics, Inc.

TUT 7: WIRING THE LVC WORLD 1030 – 1200 • 320C

INTRODUCTION TO HLA 4 FOR THE CLOUD

25T72

The High-Level Architecture (HLA) is the leading international standard for simulation interoperability. Originally developed for the defence community, it is now adopted across various domains. This tutorial explores the core requirements for interoperability, flexibility, composability, and reuse—and demonstrates how HLA effectively meets these needs. The new version, HLA 4 is also introduced.

We will examine the use of HLA in Live, Virtual, and Constructive (LVC) training, Command and Control (C2) training, wargaming and analysis, and space simulation. The session will also introduce key standardized Federation Object Models (FOMs), including the RPR FOM for platform training, Link 11 and Link 16 FOMs, NATO FOM, Cyber DEM, and Space FOM.

The new version, HLA 4 introduces several new features for cloud computing, enabling scalable and on-demand simulation and training. By integrating containerization with HLA 4's advanced capabilities, organizations can develop more flexible, efficient, and scalable simulation environments while streamlining development and deployment. This tutorial will cover HLA 4's authentication mechanisms, Federate Protocol, and monitoring tools, highlighting their role in enhancing cloud-based simulations.

We will also address key technical considerations for training system developers, including gateways, toolchains, performance optimization, and cross-domain security implementation.

This tutorial is designed for all audiences, though a basic understanding of distributed computing concepts is recommended.

PRESENTERS

Bjorn Moller, Pitch Technologies
Fredrik Antelius, Pitch Technologies

TUT 8: ENHANCING COMFORT IN IMMERSIVE TRAINING 1030 – 1200 • 320D

MEDSIM ACADEMY

25T50

Medical simulation-based training has a long history of ingenuity and innovation. This tutorial will provide a brief history of medical simulation development and deployment, including foundational technologies and educational principles. The history will highlight progression within civilian and military simulation, define common terms, and identify key resources for the audience. After the historical review, the tutorial will cover the current state of medical simulation across the services, from the strictly medical training space to collective warfighter exercises. Emphasis will be placed



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on what is being used for training, what is currently in research and development and what is still needed (technology and policy). Live demonstration of medical simulation technologies and video presentations showing simulation-based training will be integrated throughout this educational and engaging event.

This Tutorial is designed for a broad audience. It will be informative for those in the MedSim space for many years, as well as those new to the area. The information will be relevant to the broader Warfighter Simulation community as training exercises strive to include medical injuries and consequences.

PRESENTERS

Matthew Hackett, Ph.D., U.S. Army DEVCOM SC STTC
M. Beth Pettitt, Ph.D., U.S. Army DEVCOM SC STTC
Jack Norfleet, Ph.D., U.S. Army DEVCOM SC STTC

TUT 9: SIMULATION DEVELOPMENT AND DEPLOYMENT 1030 – 1200 • 320E

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

25T11

The Department of the Army has no individual or organization that accredits a simulation-based experiment (SIMEXp). Army Regulations require that the modeling and simulation (M&S) be accredited – but not any of the other components required to execute a SIMEXp. Each of the Army's Centers of Excellence (maneuver, fires, air maneuver, maneuver support, sustainment and health readiness) conduct multiple SIMEXp annually- the Maneuver Battle Lab alone averages eight to ten per year, but no outside agency or regulation accredits the events. The purpose of this tutorial is to present a framework for SIMEXp accreditation and enable attendees to understand all of the areas which must be accredited for the overall accreditation of a SIMEXp. Accreditation of the M&S will be discussed, as it serves as the foundation for an overall accreditation, but there are other equally important components requiring separate accreditations. After participating in the tutorial, attendees will be able to identify the components of tactical and operational scenarios which must be validated by current warfighters – and that the person who accredits those aspects must have credible knowledge of the current state of doctrine, military organizations, and operational concepts (friendly and enemy) to be studied.

Nothing in the Army's regulatory accreditation of the M&S addresses the physical and computational environment on which the SIMEXp is conducted. For example, if the company commander would only know the happenings of a subordinate platoon's area of operations by what is reported on by voice or text on a mission command system, then the SIMEXp should be physically structured to reflect those same conditions. Not only must the M&S be accredited, but also the hardware and network on which they are running to ensure processors are robust enough to execute as required, the network transmission speeds are sufficient, and no packets are being lost during execution.

Finally, attendees will learn how to design and assess the analytical methods used during a SIMEXp to ensure accreditation of the analytical portion of the SIMEXp. The analysis plan, data collection and reduction methodology, and computational methods for analyzing the data must all be documented and accredited in a peer-reviewed final report in order for the overall SIMEXp to be accredited. This tutorial is intended for those interested in gaining a

better understanding of proper SIMEXp design and why more than just the M&S must be accredited.

PRESENTER

Thomas Yanoschik, SAIC

TUT 10: MEASURING YOUR SUCCESS 1030 – 1200 • 320F

HARNESSING PHYSIOLOGY FOR PEAK HUMAN PERFORMANCE IN TRAINING AND SIMULATION

25T51

Hyper-realistic environments and on-demand training tools have experienced significant advancements in training and simulation use cases. Incorporating physiological monitoring into simulation and training environments provides crucial information to monitor and optimize performance, ensure individual competencies, provide adaptive support, and enable bi-directional communication between human users and AI collaborators. Training and simulation communities can remain at the forefront of innovation and assured deterrence by synergizing common needs and removing barriers to integrating human performance monitoring. The key to making these capabilities available to the community is streamlining an approach that is adaptive to a variety of use cases. Such an approach will support more advanced training environments, decision-making, and digital engineering to ensure readiness.

Attendees will be equipped with tools to understand and implement physiological monitoring across a wide range of use cases. The session will provide engaging overviews of the current state-of-the-art in physiological monitoring and human performance, including use cases for training and simulation, current challenges, and example implementations. It will also discuss the potential of leveraging AI for data processing and analytics, covering advantages, current limitations, and ethical considerations. Attendees will learn best practices and a recommended approach to leverage physiological sensing in various environments. The approach will delve into understanding underlying physiological changes, selecting appropriate sensors, benchmarking to confirm accuracy, analyzing data, storing results, and translating data into action.

PRESENTERS

Audrey Zlatkin, Ph.D., Design Interactive, LLC
Charles Rowan, Ph.D., NPS MOVES Institute
Victoria Olko, Design Interactive, LLC

TUT 11: DESIGN FOR LEARNING AND ENVIRONMENTS 1030 – 1200 • 320G

END TO END XR TRAINING: INNOVATIVE STRATEGIES FOR SEAMLESS CONTENT GENERATION AND TRAINEE ENGAGEMENT

25T56

Training is frequently delivered in a classroom or remotely in a uniform format, offering limited opportunities to practice cognitive and hands-on skills in real-world contexts. To optimize training, it is crucial to practice skills contextually and receive feedback to build muscle memory, embody actions, and develop critical thinking. By integrating augmented, virtual, and mixed reality technologies, eXtended Reality (XR) can create a contextualized virtual environment with augmented overlays on real-world objects, offering a fully immersive and highly engaging training experience that ensures operational dominance. When XR training applications are coupled with automated



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technical documentation ingestion, generative AI knowledge elicitation and no-code authoring, content can be generated in a cost-effective, strategic, and seamless manner, formulating an end-to-end solution with significant proficiency gains and a high Return on Investment (ROI).

Content generated for XR consumption includes curriculum constructs, lesson format, formative and summative assessments, 3D objects and animations, virtual environments, auditory and visual cues, and technical documentation. However, generating this content for XR applications is often the bottleneck to deploy impactful and feasible solutions for end users. Moreover, it is crucial when developing XR training solutions to create content that fully leverages the unique, context-aware design elements and embodied interactions afforded by XR. Unlike traditional interfaces, XR lacks a widely accepted mental model for user interactions especially when spatial movement is required. To maximize usability, it is critical to build systems with interaction capabilities that can be used seamlessly for content generation by instructors and subject matter experts.

This Emerging and Innovative Concepts tutorial will dive into the key elements for developing an end-to-end XR training application following the upload, capture, add, spatialize, preview, publish, complete, report and refresh no code user flow. This user flow consists of a web portal and a mobile application, working together to deliver the full value of XR training by empowering end users to create and consume immersive lessons and scenarios. The tutorial will discuss a user-centered approach, incorporating past research, rapid prototyping, best-in-class analysis, ROI, and end user feedback for each element in the user flow. By the end of this tutorial, attendees will be able to implement effective techniques for developing and implementing an end to end XR training application based on experience and lessons learned from military ground operations, maintenance, and medical domains. .

PRESENTERS

JoAnn Archer, Design Interactive, LLC
Rebecca Kwasinski, Design Interactive, LLC
Glenn Dennison, DAF, AETC, 338 TRS/TRR
Betsy Laxton, Design Interactive, LLC

1245 – 1415

BEST TUTORIALS
1245 – 1415 • 330EF

BEYOND THE HYPE: A STRATEGIC FRAMEWORK FOR KEEPING UP WITH AI

25T34

Progress in Artificial Intelligence is advancing at an extraordinary and accelerating pace, with breakthroughs emerging daily across fundamental research, implemented models, and real-world applications. This tutorial offers decision-makers a structured approach to monitor AI trends without deep technical expertise, providing practical strategies to extract meaningful insights from the flood of information and hype.

The session begins with a framework for critically assessing information sources using subjective metrics, such as timeliness of posts after new releases, comprehensiveness of coverage, and source credibility, enabling attendees to filter noise and focus on content that matters.

We then examine fundamental research, outlining methods to locate high-quality papers, survey articles, expert multimedia education content, and authoritative blogs. By understanding emerging models, novel features,

and benchmark results, participants can quickly identify significant breakthroughs driving the field forward.

The tutorial shifts to following the latest AI applications reshaping industries. Attendees will learn techniques for monitoring tech conferences, evaluating product reviews, and leveraging comprehensive reports to distinguish genuine innovation from hype, gaining clarity on the practical implications of AI advancements.

Next, we offer actionable guidance on utilizing cutting-edge AI capabilities, including free source code, tutorials for integrating large language models and image generation systems, and strategies for applying these technologies within specific fields, bridging the gap between innovation and implementation.

Finally, the tutorial covers related AI technologies in robotics, medicine, and other domains significantly impacted by AI, highlighting its broader influence across diverse sectors.

By the end of this tutorial, participants will have a clear roadmap to efficiently monitor AI developments, rigorously evaluate sources, and leverage new capabilities in their professional roles.

PRESENTERS

Charles Cohen, Cybernet Systems Corporation
Steve Rowe, Cybernet Systems Corporation

TUT 1: KNOW YOUR AI – NO! YOU'RE AI!
1245 – 1415 • 310AB

PRACTICAL USE OF (EMERGING) LEARNING TECHNOLOGIES

25T17

The landscape of training and education is undergoing a revolutionary shift fueled by the transformative power of Artificial Intelligence (AI). This tutorial provides a comprehensive journey into AI fundamentals and their expansive applications, ranging from natural language processing to computer vision, with a spotlight on the dynamic realm of Generative AI.

At the heart of our immersive exploration is Generative AI, a specialized discipline poised to revolutionize education and training by crafting innovative content across text, images, audio, and video. Delving into the possibilities, we will navigate through renowned generative AI platforms and tools, featuring chatbots such as: OpenAI, Bard, Mistral, Grok, Copilot and more. The tutorial transcends theoretical discussions, offering participants tangible insights into prompt engineering—an indispensable technique for tailoring prompts to effectively elicit desired outputs from generative AI models.

Through hands-on activities and interactive sessions guided by expert facilitators Mr. Gigi Roman from NATO School Oberammergau, Mr. Ryan Williams from NATO Allied Command Transformation, and Dr. Biljana Presnall from Jefferson Institute, participants will actively engage with generative AI technologies, gaining practical experience in leveraging these tools for training and educational enhancement. The tutorial focus extends beyond theoretical frameworks, fostering a deep understanding of the real-world applications of Generative AI in educational contexts.

A highlight of the tutorial is the role of AI agents — autonomous systems capable of executing complex tasks and continuously learning from interactions, which are increasingly being deployed in educational settings as virtual tutors, intelligent assistants and adaptive learning companions. These agents personalize learning experiences by dynamically responding to student needs, automating administrative tasks, and facilitating interac-



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tive and immersive educational environments. Through hands-on exercises, participants will explore how AI agents can be integrated into learning environments to enhance engagement, efficiency, and knowledge retention.

By the tutorial's conclusion, participants will emerge with a heightened comprehension of AI's potential and the nuanced challenges it introduces to the educational landscape. Empowered with this knowledge, attendees will be equipped to integrate Generative AI tools and techniques seamlessly into their teaching and learning environments. The tutorial aims to inspire innovation, cultivating a dynamic and forward-thinking educational experience that harnesses the transformative capabilities of Generative AI.

PRESENTERS

Gigi Roman, NATO School Oberammergau
Biljana Presnall, Jefferson Institute
Ryan Williams, NATO

TUT 2 HUMANS VS. AI
1245 – 1415 • 310CD

ARCHITECTING COMPOUND AI FOR TRAINING AND AUGMENTING HUMAN-AI TEAMS

25T58

Generative AI is advancing rapidly, transforming human-AI (HAI) teams across training and operational environments. Yet, generative AI performance alone does not guarantee mission success, team performance, or effective HAI collaboration. These outcomes depend on effective team design using knowledge from team cognition theories, deliberate system architecture leveraging the strengths of agentic and compound AI systems, and interaction methods that support both human and AI team participants' understanding of the shared context. By combining principles from team science and innovative compound AI architecture design, we can enhance the impact of AI technologies on HAI teams, making them more adaptive, resilient, and mission-effective. This tutorial, led by an organizational scientist specializing in shared cognition and HAI teaming applications and a Chief AI architect focused on operationalizing generative AI for mission-critical systems, will lean on evidence from recent research and practical experience to offer all audience members, from AI developers to training professionals and leaders, an accessible and comprehensive framework for designing, implementing, and evaluating HAI teams for military training and beyond.

The first half will explore foundational principles of team science and their application to HAI collaboration and multi-agent AI systems. Participants will be introduced to key team cognition frameworks, including Transactive Memory Systems, Shared Mental Models, and Interactive Team Cognition, and how these concepts translate to agentic AI teams. The session will also cover state-of-the-art assessment and benchmarking methods for evaluating agentic AI and HAI team performance, highlighting challenges in trust calibration, adaptability, and decision-making in high-stakes contexts.

The second half will focus on compound AI architectures and system design that facilitate effective HAI and agentic AI teaming. We will review modern techniques such as Retrieval Augmented Generation, tool calling, and agentic architectures with advanced memory representations, summarizing how they support HAI collaboration by enabling AI systems to learn team context and priorities through naturalistic interactions. Participants will gain insights into data requirements, processing, multi-agent formulation, HAI role definition, and system structures needed to support successful HAI interactions in mission critical scenarios.

Throughout the tutorial, participants will gain a deeper understanding of how team science can inform HAI system design and how compound AI architectures that consist of large language models (LLMs), multimodal foundation models (MFMs), agents, and tools, can be orchestrated to support effective teaming. This interactive session will include case studies, discussion prompts, and Q&A opportunities, ensuring participants leave with actionable, cutting-edge insights for real-world operational settings.

PRESENTERS

Zachary Klinefelter, Aptima, Inc.
Gabriel Ganberg, Aptima, Inc.
Summer Rebensky, Aptima, Inc.
Adam Fouse, Aptima, Inc.
Svitlana Volkova, Aptima, Inc.

TUT 3: FUNDAMENTALS OF MODELING AND SIMULATION
1245 – 1415 • 330AB

A PROCESS FOR DISTRIBUTED LVC INTEGRATION AND EXECUTION

25T48

Integration and execution of large distributed Live, Virtual, Constructive (LVC) events consume substantial time and resources. While the underlying distributed LVC technologies are mature, the processes for integrating events are not. The Distributed Simulation Engineering and Execution Process (DSEEP) standard (IEEE Std 1730-2010) describes a process model for developing an event. DSEEP defines a set of seven steps divided into activities and provides representative inputs and outputs for each activity. However, the user must still instantiate the process and develop artifact templates, which is a substantial effort.

An instantiation of DSEEP was developed based on the authors' experience integrating and executing many distributed LVC events. This implementation has nine steps, divided into 27 activities. The process adds two additional steps to DSEEP. One introduces tabletop wargaming to refine event requirements. The second develops a digital twin of the target system to improve integration accuracy. The process provides detailed guidance, templates, and procedures to integrate simulations and tactical systems, ensuring the LVC environment meets event objectives.

A key focus of the process is Step 7: Integrate & Validate the Event Environment, which ensures a fully operational and trusted LVC environment before execution. The tutorial emphasizes validation techniques, iterative testing, and risk mitigation strategies to address challenges in system interoperability, data integrity, and cyber resilience. The process also accounts for multi-architecture integration, live system interactions, and cybersecurity considerations, which are increasingly critical in modern distributed events.

The goal of a structured Distributed LVC Integration and Execution Process is to produce a verified and validated environment that reduces execution and analysis risks. Without a structured process, integration failures may delay execution, and unverified environments can generate inaccurate results that compromise decision-making.

This tutorial provides an overview of the complete process, with a detailed walkthrough of selected steps, particularly Step 7. Attendees will gain insights into inputs, tasks, outputs, and real-world examples applicable to distributed LVC environments using multiple architectures, live entities, and cyber operations.



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Originally developed to support distributed Test & Evaluation, this process is also applicable to training, research & development, and experimentation. The tutorial is valuable for anyone involved in planning and executing large distributed events, particularly engineers, technical leads, and event managers. No prior knowledge of the DSEEP standard is required.

PRESENTERS

Roy Zinser, Trideum Corporation
Kenneth LeSueur, Trideum Corporation
Michael O'Connor, Trideum Corporation
Ed Lerz, Huntington Ingalls Industries
John Furr, U.S. Army Future Concepts Center
Brett Boren, U.S. Army Redstone Test Center
Tilghman Turner, U.S. Army Redstone Test Center

TUT 5: SIMULATION BUILDING BLOCKS 1245 – 1415 • 320A

SCENARIO-CENTERED LEARNING: METHODS FOR SITUATIONAL TRAINING IN A VOLATILE WORLD

25T47

XR, AI, and Simulation can recreate nearly limitless hyper-realistic scenarios, but how should these scenarios be designed for optimal training effectiveness? And how do we know it worked?

Hint: It's not about the tech.

Military training faces evolving challenges, as rapid tech adoption, complex missions, and an ever-changing global security picture influence readiness demands. The need remains however to ensure training optimally addresses intended outcomes. Research findings widely acknowledge the efficacy of experiential learning within an authentic practice environment, where just-in-time training contextualizes the when, why, and how of skill practice. But understanding what "authentic" really means and how to build experiential learning that meets that standard requires sound, science-backed methodologies and processes.

In this tutorial we present a general approach that transforms instruction by immersing learners in authentic, mission-critical contexts, where instruction is provided at the point of need, and discuss its applicability to modern military training. We start with the hook: a 60-second scene from Ender's Game that raises fundamental questions about the stakes of authenticity, emotional engagement, and aligning performance objectives with instruction.

We then introduce one example of this approach, Scenario-Centered Learning, that we have applied across numerous Fortune 500 companies. We illustrate this methodology in practice by walking through the steps in the design process via concrete examples from recent training projects. We also explore a range of tools to support some of the steps in this process, and show as examples two tools we have created and use in-house, one for building the training and another for creating and managing the AI components.

Participants will explore how knowledge and skills application in authentic, relevant contexts, exemplified for illustration purposes by Scenario-Centered Learning paired with AI, creates impactful training for warfighters. This is especially relevant for DoD readiness challenges like the contextual complexities of real-time decision-making and cyber security. Participants will learn how to apply scenario-centered learning frameworks that prioritize performance objectives, authentic tasks, and real-time feedback, and will be presented with practical steps for implementation of this approach.

This tutorial is intended for defense training professionals with an interest in innovative, scenario-based approaches to develop impactful learning solutions. Basic knowledge of instructional design is helpful but not required, and no advanced technical expertise is needed. Attendees will leave with general exposure, supplemented by case studies, to tools and methods for applying scenario-centered learning to a broad range of applications to enhance DoD training.

PRESENTERS

Benjamin Bell, Ph.D., Potawatomi Business Development Corporation -
Federal Group
Tammy Berman, Socratic Arts

TUT 6: SIGNALS FROM HUMAN AND SPACE 1245 – 1415 • 320B

FROM SIMULATION TO REALITY: COMBATTING SOCIAL ENGINEERING WITH SERIOUS GAMES

25T43

Social engineering attacks remain one of the most effective methods for adversaries to infiltrate secure environments by exploiting human psychology. The author and his team successfully conducted a simulated sociotechnical attack on a three-star general of the Swiss Armed Forces, exposing critical vulnerabilities within high-level military command structures. The insights gained from this operation underscored the urgent need to disseminate these findings more broadly to enhance organizational security across various sectors.

Traditional security awareness training often fails to create lasting behavioral change. This tutorial addresses this challenge by introducing innovative training methods, including a serious game that turns real-world attack scenarios into interactive, experience-based learning. Participants will learn how to design and implement similar approaches to improve engagement and knowledge retention. The tutorial also provides insights into integrating these methods into existing cybersecurity curricula, drawing on lessons learned from the Swiss Armed Forces cyber training program.

Effective social engineering defense requires realistic scenarios that incorporate psychological, technical, and organizational aspects. A progressive increase in complexity allows participants to develop adaptive countermeasures against sophisticated attacks. Gamification elements, such as storytelling or point-based systems, further enhance motivation and learning outcomes.

As social engineering techniques evolve, training programs must continuously adapt to emerging attack methods and technological advancements. A structured and dynamic approach strengthens security awareness and the ability to detect and counteract manipulation early. By fostering a strong security culture through ongoing updates and realistic exercises, organizations can effectively reduce risks.

This tutorial explores the development, deployment, and lessons learned from these implementations. Participants will gain insight into designing realistic attack simulations, the role of experiential learning in cybersecurity, and strategies for application within their organizations. Drawing from military exercises, academic research, and real-world cases, attendees will acquire practical tools to enhance collective security and strengthen defenses against human-centric cyber threats.

PRESENTER

Philipp Leo, Leo & Muhly Cyber Advisory, LLC



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TUT 7: WIRING THE LVC WORLD
1245 – 1415 • 320C

**ACHIEVING SECURE AND SCALABLE
INTEROPERABILITY: OMG DDS FOR MOSA-
COMPLIANT LVC TRAINING**

25T39

In modern defense training and simulation, interoperability and security remain critical challenges. The U.S. Department of Defense mandates the Modular Open Systems Approach (MOSA) to ensure flexible, scalable, and vendor-agnostic solutions across LVC training environments. However, traditional simulation architecture standards struggle to provide real-time, secure, and multi-level data exchange required for distributed training. The Object Management Group (OMG) Data Distribution Service (DDS) standard is emerging as the backbone for next-generation MOSA-compliant defense training systems, providing high-performance, scalable, and secure interoperability.

This tutorial offers a comprehensive exploration of the DDS standard, showcasing its pivotal role in addressing the twin imperatives of interoperability and security within distributed LVC simulation environments. DDS stands as a cornerstone middleware solution, adept at facilitating hard real-time data distribution across diverse systems while providing robust security mechanisms to safeguard sensitive simulation data.

This tutorial will explore how DDS enables MOSA compliance, allowing defense training and simulation systems to transition from stovepiped architectures to open, composable, and modular frameworks. Attendees will gain insight into the layers of interoperability, understanding how DDS facilitates real-time, data-centric communication across LVC, cloud-based, and hardware-in-the-loop (HIL) systems.

Throughout the tutorial, participants will learn the fundamental principles of DDS, starting with its configuration for seamless integration with LVC simulations. From designing DDS entities and data models to fine-tuning performance and scalability through a suite of quality-of-service parameters, attendees will gain insights into harnessing DDS's capabilities to meet the diverse needs of distributed simulation environments.

A key focus will be on the DDS Security Standard, which provides built-in authentication, access control, encryption, and data tagging, allowing simulations to operate across multiple classification levels in joint, multi-domain, and coalition environments. Unlike traditional architectures that rely on external security overlays, DDS natively enforces security at the data level, enabling fine-grained control over information exchange.

Additionally, this tutorial will highlight DDS's role in integrating with existing simulation frameworks and real-world DoD programs. Attendees will learn how DDS provides a high-performance real-time transport over WAN, RF, Tactical Data Links (TDL), and 5G, ensuring low-latency, secure data exchange for distributed LVC training.

By attending this session, participants will gain a comprehensive understanding of how DDS bridges the gap between operational and training systems, enabling secure and scalable distributed simulation architectures. Whether you are a simulation developer, integrator, or program manager, this tutorial will equip you with the knowledge to implement DDS for future-proof, secure, and interoperable training solutions.

PRESENTERS

Robert Proctor, Jr., Real-Time Innovations (RTI)

David Whitten, Real-Time Innovations (RTI)

TUT 8: ENHANCING COMFORT IN IMMERSIVE TRAINING
1245 – 1415 • 320D

**MINIMIZING CYBERSICKNESS IN THE DESIGN,
IMPLEMENTATION AND MANAGEMENT OF
LEARNING SYSTEMS WITH VIRTUAL ENVIRONMENTS**

25T59

Learning Outcomes: Attendees will come away with a knowledge of cybersickness (CyS), including causes and factors affecting CyS, as well as how to design virtual environments (VEs) and curricula to minimize CyS effects upon students and learner outcomes.

Purpose: This tutorial is designed to provide those involved in producing and implementing VEs for training with a basic knowledge of CyS. This is significant because CyS can reduce the training effectiveness of systems utilizing VEs and visual simulations, even to the point of making it unusable. Mitigating the effects of CyS begins in the design of the system, where minor decisions can result in substantial differences in the CyS effects of the final system. Likewise, curricula design can greatly impact the degree that CyS affects students.

Background: Militaries across the globe are planning on utilizing VEs to improve their training, whether they be traditional simulators using screens or the most up-to-date technology such as head mounted displays for virtual reality, augmented reality, mixed reality, or extended reality. There is a general belief among both the general public and the training community that the technological advancements in the latest generation of these devices have eliminated the effects of CyS. However, this is decidedly not true.

CyS is a phenomenon that occurs when individuals experience symptoms while using simulation technology, such as flight simulators or VEs. These symptoms include disorientation, dizziness, nausea, headaches, eye strain, general discomfort, and fatigue as well as others. These affect a large percentage of the user population, with some experiencing minor effects easily ignored and others being unable to utilize the system at all.

Improvements in technology have reduced or eliminated some of the causes of CyS, but there are causes that are inherent in humans which technology is unlikely to eliminate. This means that everyone involved in the design, development, and implementation of training VEs must understand the causes of CyS, how to mitigate them, and how to create systems that reduce both the likelihood and severity of CyS symptoms. Otherwise, it will be impossible to properly utilize the incredible potential of these technologies.

Topics: This tutorial will provide attendees with a basic knowledge of the underlying causes of CyS, which factors aggravate or mitigate CyS, how CyS degrades learning, as well as how to design a VE system and create a curriculum to minimize CyS's effects.

PRESENTERS

Perry McDowell, NPS MOVES Institute

Bruce Haycock, University Health Network – KITE

LCDR Nicholas Adriaanse, USN, NSWCCD DNA



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TUT 9: SIMULATION DEVELOPMENT AND DEPLOYMENT 1245 – 1415 • 320E

SIMULATION AND THE CYBER-SECURE HYBRID CLOUD (CSHC)

25T40

As the simulation industry has grown over the decades to several hundred sites, many different contractors have chosen different paths for design, development, and deployment. This has resulted in unique security requirements, tools, personnel, policies, and contract vehicles that make the entire enterprise, across all training platforms, difficult and expensive to manage and keep secure, particularly considering the ongoing evolution of security threats. Most of the system designs are platform specific, tightly coupled architectures and solutions that are difficult to reuse, and often have limited interoperability with other simulations, resulting in "Fair Fight" challenges due to different Synthetic Environments and databases. Multiple classification levels also contribute to interoperability challenges.

As the simulation industry largely continues to use discrete computers and devices to implement training systems, computational resources are often over-specified as a risk reduction measure resulting in unused resources. Cloud technology provides the advantage of being dynamically configurable and scalable depending on the load and enhances commonality, sustainability, and resilience while minimizing hardware obsolescence issues.

Our Industry have recognized that digital transformation, enabled by cloud technology and supported by modular open systems approach (MOSA) and model-based systems engineering, provides the right path forward for the future.

This tutorial presents a potential path forward, via a Cyber-Secure Hybrid Cloud (CSHC). We intend to show how CSHC enables solutions to these challenges and provides more benefits to the simulation domain and show successful implementation and methodology use cases under the Air Force Simulator Common Architecture Requirements and Standards (SCARS) initiative at the end of the presentation.

The presentation is structured in five parts to achieve its core learning objectives:

- First, we will provide an overview of the problems facing the industry.
- Next, we continue with understanding Cloud Technology to provide a basic understanding of what Cloud Technology is and the features and benefits it provides. This will include a range of topics, from hypervisors and Virtual Machines to Kubernetes, and then more advanced capabilities, including Enterprise Services.
- Third, we will show how Cloud Technology can help resolve most of the challenges presented in the problem statement. This includes applicability of the technology, features, and benefits of CSHC solutions addressing the challenges.
- Then, we will discuss successful Transition to CSHC Solutions from where we are today.
- Finally, Understanding the Vision of Digital Transformation using CHCS will show that application of these new technologies will require a transition with Enterprise Standard Architecture and standards.

PRESENTERS

Tansel Kendir, CAE USA
Glenn Diehl, CAE USA
Katie VanErven, CAE USA

TUT 10: MEASURING YOUR SUCCESS 1245 – 1415 • 320F

BUT HOW DO YOU KNOW THEY LEARNED THAT?

25T35

The evolution of augmented reality (AR) and virtual reality (VR) simulations offers unprecedented opportunities for competency-based training and assessment. However, most existing AR/VR training solutions remain procedural and knowledge-based, primarily supporting vocational or mechanical training rather than constructivist, learning-by-doing approaches that foster real-world competencies. This tutorial session focuses on moving learners from novice to expert efficiently and effectively by leveraging AR/VR simulations as adaptive instructional systems (AISs) designed to assess and develop competencies rather than just knowledge retention.

A core principle of this approach is understanding how people learn best. The ICAP framework (Chi & Wylie, 2014) asserts that increased engagement levels—passive, active, constructive, and interactive—enhance learning outcomes. Similarly, Dewey's (1938) experiential learning theory reinforces that knowledge is socially constructed and must be situated in real-life contexts. Therefore, AR/VR-based learning environments should enable interactive, socially constructed experiences, offering superior learning outcomes compared to traditional, passive methods.

To maximize effectiveness, AR/VR simulations should integrate best practices from intelligent tutoring systems (ITSs) and adaptive instructional design. This includes modular system architecture with content, learner, and adaptation modules to tailor instruction dynamically based on learner and/or team performance. Unlike static, two-dimensional, computer-based training, a well-designed AIS within AR/VR can accelerate skill acquisition, ensure competency mastery, and provide real-time performance assessment.

This session will explore key design considerations in developing AR/VR competency-based simulations, including:

- Competency-Based Learning and Assessment: Designing for analytical thinking, problem-solving, technical proficiency, digital literacy, communication, project management, and adaptability.
- Scenario Design for High-Quality Evidence Collection: Ensuring tasks reflect real-world complexity and allow valid assessments of competency mastery.
- AI/ML Integration for Adaptive Learning: Leveraging AI-driven performance analysis to support personalized instruction and competency validation.
- Communication to Learning Management Systems (LMSs): Ensuring collected data translates into actionable insights for training improvement.

The future of AR/VR training must go beyond basic procedural tasks and embrace learning engineering principles to create evidence-driven competency development tools. By designing adaptive, immersive, and interactive simulations, we can revolutionize training effectiveness across military, corporate, and technical fields.

We must demand more from AR/VR training. Do not go gentle into the black night of the current state of AR/VR training simulations. Rage, rage against the dying of the light! Challenge every AR/VR training solution to



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MONDAY, 1 DECEMBER
TUTORIALS

provide evidence of an informed learning design, because the data to prove learning effectiveness can—and must—be collected.

PRESENTERS

Blair Lehman, Brighter Research
Jeanine DeFalco, Mixta Re, Inc.

TUT 11: DESIGN FOR LEARNING AND ENVIRONMENTS
1245 – 1415 • 320G

BUILDING 3D ENVIRONMENTS FOR SIMULATION: STANDARDS AND BEST PRACTICE

25T63

In the real world we take the world around us for granted but in a simulation, all aspects of the world, the terrain, trees, lakes, vehicles, aircraft and the atmosphere they fly in have to be modelled with enough characteristics and fidelity to satisfy the purpose of the simulation. In a simulation, the world around the object we are simulating, is modelled in 3D and referred to as the synthetic physical environment.

Accurate and realistic modelling of the world surrounding a simulated system or a system operator is a complex, resource-intensive, and technically demanding task. The level of detail and fidelity required for representing the world varies significantly depending on the specific objectives of a given simulation task. Some applications demand highly detailed and precise data, while others may prioritize computational efficiency over absolute accuracy.

Moreover, constraints imposed by image generation technologies and other supporting systems often necessitate optimizations that, if not carefully managed, can introduce unwanted artifacts. These artifacts may compromise realism, reduce system interoperability, and ultimately impact the effectiveness of training, analysis, or operational decision-making. Additionally, factors such as data reuse, integration of live elements, and cross-plat-

form interoperability further complicate the modeling process, making it essential to adopt standardized approaches and best practices.

This tutorial is designed to provide attendees with an overview of the challenges associated with acquiring or developing a 3D model of the world that meets the specific requirements of a simulation task while enabling future updates and allowing for reuse in and interoperability with other simulation systems.

Key topics covered in this tutorial include:

- Fundamentals of real-time 3D Simulation Databases: An introduction to what constitutes a simulation 3D database and its role in defense and operational simulation.
- Data Acquisition and Processing: How 3D models are derived from source data such as elevation datasets, satellite imagery, and geospatial information.
- Standards for Interoperability and Data Exchange: An overview of key international standards developed to facilitate data sharing and interoperability across simulation platforms.
- Standardization Organizations and Their Contributions: A discussion on relevant standardization bodies, including their roles and ongoing efforts to enhance interoperability in simulation environments.
- NATO Science and Technology Organization (STO) Guidelines: An examination of NATO's recommendations and best practices for 3D modeling in defense applications.
- Emerging Technologies and Future Trends: Insights into new and upcoming advancements in 3D modeling

PRESENTERS

Stefan Sandberg, Labatus AB
Andy Fawkes, Think Company Ltd

To view author bios, please view the Digital Program at [IITSEC.org/Agenda/Agenda-Details](https://iitsec.org/Agenda/Agenda-Details).
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TUESDAY, 2 DECEMBER

PAPERS

ROOM	SESSION	1400	1430	1500
320A	ECIT 1: Large Language Models in Action: Trust, Testing, and Tactical Edge	25307 Space Hazard AI into Warfighter Kill Chains Toward Operational Dominance	25321 Leveraging Large Language Models for Generating Integration Test Code	25368 Can We Trust LLM-Generated Code? A Quantitative Verification Study
320B	SIM 1: Be Dazzled in XR/VR	25185 Simulating Aircrew Laser Dazzle in a Virtual Reality Environment	25109 XR-powered Remote Maintenance Support and Training for Naval Shipyards	25324 Overcoming Challenges of Integrating Heterogeneous Commercial and Open-Source Tools in Extended Reality Applications
320C	ECIT 2: Digital Readiness Reimagined: Twins, Sims, and the Synthetic Edge	25135 Enabling Multi-Domain Operations Through Wargames, Simulation, and Live Exercises	25357 Digital Twins: Adding New Dimensions to Simulation and Operational Effectiveness	25335 Synthetic Data: Fueling the Digital Revolution
320D	PSMA 1: Digital Twins and Culture: Can You Tell Them Apart?	25241 Building a Digital Engineering Culture	25312 Validating a Digital Twin Taxonomy for Defense: Enhancing Interoperability in Simulation and Digital Engineering	
320E	ED 1: From Data Crunch to Combat Punch: Talent, Culture, and Terrain Unleashed	25330 Enabling a Data Culture to Drive Data-Centric Practices Across the Military – From Training to Operations	25197 Feasibility of 3D Extended Reality for Terrain Understanding	25392 Predicting the Human Factor: Data-Driven Talent Identification and Training Optimization
320F	TRN 1: Training Beyond the Range	25351 Beyond the Range: Merging Simulation and Reality	25334 Advancing Squad Performance Analytics and Team Training with Multimodal Data in STEEL-R	25382 Building Readiness: A Competency-Based Framework for Military Medical Training in U.S. Marine Corps Exercises
330EF	Best Paper 1	25384 HPAAE: Video-Based Performance Evaluation for ECR Drills in Synthetic Training Environments	25402 TRAINING: Trainee Action Recognition through Interaction Analysis in CCATT Mixed-Reality Training	25389 EDUCATION: The Use of Silicon Clients as a Training Tool for Emerging Mental Health Specialists

ROOM	SESSION	1600	1630	1700
320B	SIM 2: Reality & Abstraction in Modern Simulation	25155 Advancing Multi-Agent Autonomy: Challenges and Solutions in LVC Simulation Testbeds	25168 Bridging Pre-Training and Simulation: Enhancing AI Performance with Unity ML-Agents	25139 Use of Simulation to Train AI for Swarm Based Underwater Behavior – Lessons Learned from Talisman Sabre 2025
320D	PSMA 2: Training Me Softly, With Your Prompt...	25111 Systems Engineering Automation Through Artificial Intelligence (AI) and Natural Language Processing (NLP)-Based Software	25333 Policy Considerations for Training Developed Using Generative AI	25403 Integrating Biometrics, Policy, and Data-Driven Training: Enhancing Military Readiness and Reducing Risk
320E	ED 2: Boots, Bots, and Beyond	25365 Advancing Military Education, Assessment, and Communication through AI-Enhanced Extended Reality Simulations	25400 TopoGen: Training Generative AI to Produce Maps for Experiential Scenarios	25326 Next-Gen Instructional Design: AI's Revolution in Transforming Virtual Training Development
320F	TRN 2: Examining Human Performance in Training	25328 Optimizing Soldier Performance Through Coaching: A Framework for Stress Intervention Research	25181 A Perspective on Training and Education for Space Domain Awareness in Military Space Operations	25254 Cognitive Load-Based Curriculum Adaption in Human-Machine Team Training Scenarios
330EF	Best Paper 2	25422 SIMULATION: Multi-Agent Board Game Strategy Through Simulation	25210 ECIT: Trustchain: Doubt is the Origin of Wisdom	25279 PSMA: Utilizing Lessons from Foreign UAS Threats to Inform Domestic Counter-UAS



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WEDNESDAY, 3 DECEMBER

PAPERS

ROOM	SESSION	0830	0900	0930
320A	ECIT 3: Saving Time: LLMs for Training Content Creation	25108 Secure Interactive Courseware Creation for Distributed Training using on-premise Generative Artificial Intelligence	25397 Transforming Technical Documentation into On-Demand Adaptive Training Content	25401 Training Developer Feedback on AI for Revision of Content (ARC)
320B	SIM 3: Cyber Integration for M&S	25145 Providing Asymmetric Information Advantage and Cyber Multidomain Operations Training Capabilities	25275 Integrating existing Cyber Ranges and Cyber Tools into LVC Simulations	25354 Challenges and Solutions in Using Virtual Testbeds to Study Hackers
320C	HPAE 1: Big Data? Bigger Challenges!	25255 Modeling Human Decision Attributes to Enhance AI Trustworthiness	25264 Evaluating an LLM-based Course-of-Action-Analysis Assistant for Simulated Tactical Decision-Making	25381 xAPI in Action: Field Validation of Bridging Interoperability Gaps in Medical Training with Generalized Intelligent Framework for Tutoring (GIFT) and Competency-Based Learning
320D	PSMA 3: Train. Trace. Sustain.	25319 Data Traceability for Complex, Distributed Live, Virtual, Constructive Simulation Events	25363 Resilience of M&S Capabilities	25235 Changing the Training System Sustainment Paradigm with Product Support Analysis
320E	ED 3: Innovating Talent Strategies: Competency, Collaboration, and Engagement in the Modern Force	25173 Using Multisensory Interactive Storytelling to Broaden Recruitment Efforts	25355 Competency Modeling in the USSF	25362 DAFMAN for a New Era: Uniting Expertise to Implement Competency-Based Learning
320F	TRN 3: Training Strategies	25193 Integrating Skill Attainment and Enterprise Modeling into Optimal Training Event Scheduling	25258 'Airmanship' on the Radar: Military Aircrew Instructors' Perceptions of Non-Technical Skill Assessment Methods, Training Strategies and Standards	25192 A Data-Centric Approach for Extracting Flight Maneuvers from Pilot Training Time Series Data
320G	ECIT 4: Strategic Automation and AI for Mission-Critical Training	25364 Automated Deployment of Distributed Simulation Environments Effectively Using Artificial Intelligence	25411 Using Mixed Reality and Artificial Intelligence for Complex Task Guidance in a UH-60 Environment	

ROOM	SESSION	1030	1100	1130
320A	ECIT 5: Simulation Driven Reinforcement Learning: Validation, Integration, and Uncertainty Challenges	25118 A Hierarchical Hybrid AI Approach: Integrating Deep Reinforcement Learning and Scripted Agents in Strategic Combat Simulations	25164 Autonomous Vehicle Design Conformity Validation in Simulation Using Reinforcement Learning	25259 Uncertainty Uses in Reinforcement Learning Both During and After Training
320B	SIM 4: Digitizing a Printable Planet	25226 Transforming Terrain Databases into Battlefield Environments Using Compile-Time Dynamics	25257 Virtual Environment for Aerospace Simulation and AI Data: Focused on Automatic Building Generation	
320C	HPAE 2: Two to Tango: Teaming with AI	25407 AI Trust and Alignment in High-Stakes Decision-Making Environments	25228 Effects of Human-Machine Interface Recommendation Accuracy on Trust when Controlling Collaborative Combat Aircrafts in Complex Missions	
320D	PSMA 4: Ctrl+Alt+Delete: Rebooting Defense M&S Standards for the 21st Century	25122 Aligning Flight Simulation Software with MOSA Standards	25200 Stockholm Syndrome: Are We Being Held Captive by Our Ancient Interoperability Standards?	25399 The Defense Standards Landscape for Digital Engineering, Modeling & Simulation
320E	ED 4: Great Performances: Next-Gen Strategies for Assessment	25117 Rebooting Air Force Talent: Navigating the Skills Revolution in a Technological Era	25289 Beyond Happy Hour: Lessons in BARS (Behaviorally Anchored Rating Scales)	25293 Adaptive Approach to Continuous Norming During Course Changes
320F	TRN 4: Of Paper and Pixels: Advancing Training at All Fidelities	25131 Comparing Input Modalities in Extended Reality for a Virtual Learning/ Training Task	25201 Advancing Police Training Through Virtual Simulation: Lessons from Dubai Police	25217 Can Low Fidelity Tabletop Games be used to Improve Teamwork?
320G	ECIT 6: Cognitive Crossroads	25277 Closed-Loop Neuromorphic Artificial Intelligence for Decision Support	25372 Exploiting Cognitive Vulnerabilities: Quantifying Loss Aversion in Cybersecurity with LLMs	25373 Human-AI Collaboration for Synthetic Media Detection in Training and Operations



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WEDNESDAY, 3 DECEMBER
& THURSDAY, 4 DECEMBER

PAPERS

WEDNESDAY, 3 DECEMBER

ROOM	SESSION	1330	1400	1430
320A	ECIT 7: The AI Playbook: Designing Missions and Forces at Machine Speed	25157 Applying AI-Driven Generative Models for Computer-Generated Force Scenario Generation	25367 Towards AI-Assisted Generation of Military Training Scenarios	25418 On-Demand Intelligent Agent Generation
320B	SIM 5: It's All About RF	25160 A Million Points of RF – Enabling High Fidelity Interactions in the Synthetic Space	25266 RF Digital Twins Demand for Digital Threats, Challenges and Solutions	25345 Multi-physics SAR Simulation for Correlated Radar Imaging in Synthetic Environments
320C	HPAE 3: Gimme a Break! Assistance in Workload Reduction	25237 Workload Distribution Across Varying Assistance Levels in Simulated Mission Drives	25215 Impact of Decision-Support Tools on Novice Workload in VR	25434 Operationalizing Persistent Augmented and Virtual Environments in Naval Aviation Maintenance
320D	PSMA 5: Fast Track: Accelerating Defense Learning and Acquisition	25116 Measuring Learning Technology Maturity in DoD Acquisition	25432 From Red Tape to Red Bows: Urgent Defense Acquisition Transformation	25456 The DoD Learning Enclave (DLE) as an Enabler of Force-Level Decision-Making
320E	ED 5: Adaptive Excellence: Performance Driven Training for Critical Operations	25391 Evaluation of Difficulty-Based Adaptive Training Strategies for Simulated Flight Training	25102 Enhancing Decision-Making Under Pressure: Adaptive Training Frameworks for High-Stakes Environments	25316 Mission Ready: Leveraging Performance-Based Training to Enhance Security Operations Proficiency
320F	TRN 5: Novel Strategies: Elevate Performance and Create Training Process Efficiencies	25318 Advancing Usability Training: A Methodology for Rapid Development of Usability Competencies Using an AI-driven Knowledge Repository	25147 Are Training Models and Simulations Credible? A Straightforward Method for Answering that Question	25309 Find Waste, Improve Quality and Deliver Better Training

ROOM	SESSION	1530	1600	1630
320A	ECIT 8: AI-Powered Autonomy: From Design to Deployment	25191 Assessing Communications Equipment Performance for Reliable USV Teleoperation and Autonomy	25224 Automating Training Design through Retrieval Augmented Generation and Hierarchical Reasoning	25246 Creating a Scalable Virtual Flight Instructor Using Large Language Models
320B	SIM 6: Simulation Platforms & Interoperability Architectures	25144 Integrating DIS V8, Challenges and Opportunities	25271 Achieving Distributed Training Through MSaaS: Results and Insights	25218 Simulator of Theseus: Substituting Parts for a Memory Safe Simulator
320C	HPAE 4: Sassy Assessments with Multi-Modal Measurement	25213 Assessing Virtual Reality Head-Mounted Display-Induced Cybersickness in Simulated Maritime Dynamic Environments	25282 Assessing Cognitive State Adaptations using Predictive Models	25394 Human Factors and Neuroscience in Next-Generation Simulation Environments
320D	SIM 7: Sim Tech Fusion	25376 Simulator Environment Configuration for Integrated Threat Response and Evasive Maneuvers of Aircraft	25225 Mission Possible: Dead Reckoning with Artificial Intelligence	25350 Point-of-Need Joint Integrated Air and Missile Defense LVC Training Solutions

THURSDAY, 4 DECEMBER

ROOM	SESSION	0830	0900	0930
320A	ECIT 9: AI-Driven 3D Environment Reconstruction	25126 Automating 3D Terrain Generation for Simulation: An AI based Pipeline for Drone Imagery Processing	25325 3D Buildings from Floorplan	25443 Scaling for Monocular Depth Estimation in the Reconstruction of 3D Environments
320B	SIM 8: Building Smarter Systems	25393 Incorporation of Automated Cyber Adversaries to Improve Cyber-Kinetic Training	25220 Optimizing Defense AI with Simulation-Driven CI/CD	25287 A Scalable Open-Source Simulation Framework for Neuroevolution and Multi-Agent Behavior Research
320C	HPAE 5: Words, Waves, and Wanderings: Unconventional Measures of Effective Teamwork	25448 Can Dialogue Features Help Predict Team Performance?	25236 Improving Mission Performance and Readiness for Rapidly Composed Military Teams	25431 Enhancing Nurse Rounding Performance and Patient Satisfaction Using Real Time Location System

ROOM	SESSION	1030	1100	1130
320A	ECIT 10: Methods to Training AI to Ensure Integrity of Outcomes	25120 How Artificial General Intelligence Will Train Itself	25132 Knowledge Without Learning: A Zero Shot Approach to SAR ATR	25242 Advancing Expertise Development Through Adaptive Human-AI Training
320B	SIM 9: From Simulation to Deployment: AI & Network Innovations in Defense	25265 Context-Aware Human Performance Measurement for Simulation-based Tactical Training	25349 Training and Evaluating Machine Learning Models using XR Simulated Data for Autonomous Vehicle Control in Real-Time Simulated Traffic	25458 Evaluation of Time Sensitive Networks (TSN) for use in Army Aviation platforms
320C	HPAE 6: Cognition Under Fire: Training for Chaos, Designing for Clarity	25387 The Effects of Dichotic Listening in Unmanned Aircraft Systems (UAS) Pilot Efficiency	25427 Capital Gains: Leveraging Human-Centered COPs for More Effective Incident Management in DC and Beyond	25453 Attention Control Predicts Operational Errors in Expeditionary Robotics Warfare Operators



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PAPERS

BEST PAPER

BP1 TUESDAY, 2 DECEMBER • 1400 – 1530 • ROOM 330EF

BEST PAPER NOMINEE SESSION 1

Session Chair:

Session Deputy:

25384 HPAE: Video-Based Performance Evaluation for ECR Drills in Synthetic Training Environments
Surya Rayala, Marcos Quinones-Grueiro, Ph.D., Naveeduddin Mohammed, Ashwin TS, Ph.D., Gautam Biswas, Ph.D., Institute for Software Integrated Systems – Vanderbilt University; Benjamin Goldberg, Ph.D., Paige Lawton, Ph.D., U.S. Army DEVCOM SC STTC

25402 Training: Trainee Action Recognition through Interaction Analysis in CCATT Mixed-Reality Training
Divya Mereddy, Marcos Quinones-Grueiro, Ph.D., Ashwin TS, Ph.D., Institute for Software Integrated System – Vanderbilt University; Eduardo Davalos, Vanderbilt University; Gautam Biswas, Ph.D., Institute for Software Integrated Systems – Vanderbilt University; Kent Etherton, Ph.D., 711th Human Performance Wing; Tyler Davis, AFRL; Katelyn Kay, 711th Human Performance Wing; Jill Lear, USAF En Route Care Research Center; Benjamin Goldberg, Ph.D., U.S. Army DEVCOM SC STTC

25389 Education: The Use of Silicon Clients as a Training Tool for Emerging Mental Health Specialists
Leticia Villarreal, Texas A&M University-Corpus Christi; Bailey Miller, Autonomy Research Institute; Michael Devotta, Collin Scarince, Ph.D., Texas A&M University-Corpus Christi

BP2 TUESDAY, 2 DECEMBER • 1600 – 1730 • ROOM 330EF

BEST PAPER NOMINEE SESSION 2

Session Chair:

Session Deputy:

25422 Simulation: Multi-Agent Board Game Strategy Through Simulation
Cody Flynn, Andres Espinosa, Jorg Peters, Ph.D., Maximillian Banach, Jason Li, Han Mach, Cathy Quan, University of Florida; Brian Stensrud, Ph.D., CAE

25210 ECIT: Trustchain: Doubt is the Origin of Wisdom
Chanler Cantor, Connor Baugh, Andrew Bellocchio, Ph.D., Kyle Russell, Quen Parson, William Marx, Ph.D., Intuitive Research and Technology Corporation

25279 PSMA: Utilizing Lessons from Foreign UAS Threats to Inform Domestic Counter-UAS
Brice Ott, U.S. Army TSMO

EDUCATION

ED1 TUESDAY, 2 DECEMBER • 1400 – 1530 • ROOM 320E

FROM DATA CRUNCH TO COMBAT PUNCH: TALENT, CULTURE, AND TERRAIN UNLEASHED

Session Chair:

Session Deputy:

25330 Enabling a Data Culture to Drive Data-Centric Practices Across the Military—from Training to Operations
Ray Compton, LMI

25197 Utility of 3D eXtended Reality for Terrain Understanding
Colleen Chen, Ph.D., Tom Hueting, Thomas Schoonman, TNO

25392 Predicting the Human Factor: Data-Driven Talent Identification and Training Optimization

LCDR Nicholas Armendariz, Ph.D., USN, Naval School of Aviation Safety; JJ Walcutt, Ph.D., DAF/A1

ED2 TUESDAY, 1 DECEMBER • 1600 – 1730 • ROOM 320E

BOOTS, BOTS, AND BEYOND

Session Chair:

Session Deputy:

25365 Advancing Military Education, Assessment, and Communication through AI-Enhanced Extended Reality Simulations
Maggie Mosher, Ph.D., Amber Rowland, Ph.D., University of Kansas Achievement and Assessment Institute; Lisa Dieker, Ph.D., University of Kansas Department of Special Education

25400 TopoGen: Training Generative AI to Produce Maps for Experiential Scenarios
Joel Walsh, Ph.D., Sophia Khan, Benjamin Nye, Ph.D., USC Institute for Creative Technologies

25326 Next-Gen Instructional Design: AI's Revolution in Transforming Virtual Training Development
Jared Benedict, Mark Zais, Ph.D., Integration Innovation, Inc. (i3)

ED3 WEDNESDAY, 3 DECEMBER • 0830 – 1000 • ROOM 320E

INNOVATING TALENT STRATEGIES: COMPETENCY, COLLABORATION, AND ENGAGEMENT IN THE MODERN FORCE

Session Chair:

Session Deputy:

25173 Using Multisensory Interactive Storytelling to Broaden Recruitment Efforts
Bruce Chojnacki, Army Cyber Institute; Amela Sadagic, Ph.D., Naval Postgraduate School

25355 Competency Modeling in the USSF
Shane Sizemore, DCS Corporation; Julia Brown, Aptima, Inc.; Emily Anderson, Psy.D., Jennifer Tucker, Ph.D., Space Force; Alex Bareika, Ph.D., Aptima, Inc.

25362 DAFMAN for a New Era: Uniting Expertise to Implement Competency-Based Learning
JJ Walcutt, Ph.D., DAF/A1; Wendy Walsh, Ed.D., Christine Covas-Smith, Ph.D., AETC

ED4 WEDNESDAY, 3 DECEMBER • 1030 – 1200 • ROOM 320E

GREAT PERFORMANCES: NEXT-GEN STRATEGIES FOR ASSESSMENT

Session Chair:

Session Deputy:

25117 Rebooting Air Force Talent: Navigating the Skills Revolution in a Technological Era
Christina Parker, Ed.D., AFSOC; Erica Haglund, Ed.D., Dignitas Technologies

25289 Beyond Happy Hour: Lessons in BARS (Behaviorally Anchored Rating Scales)
Holly Baxter Ph.D., Jennifer Phillips, Allison Hancock, Ph.D., Morgan Borders, Cognitive Performance Group



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PAPERS

25293 Adaptive Normalization of Assessment Scores: A Multi-Study Validation Approach

Jeremiah T. Folsom-Kovarik, Ph.D., Angela Woods, Daniel Wilson, Joseph Cohn, Ph.D., Soar Technology, LLC; Lee Sciarini, Ph.D., Beth Atkinson, NAWCTSD

ED5 WEDNESDAY, 3 DECEMBER • 1330 – 1500 • ROOM 320E

ADAPTIVE EXCELLENCE: PERFORMANCE DRIVEN TRAINING FOR CRITICAL OPERATIONS

Session Chair:

Session Deputy:

25391 Evaluation of Difficulty-Based Adaptive Training Strategies for Simulated Flight Training

Carlie Swords, Maureen Namukasa, Florida Institute of Technology; Wendi Van Buskirk, Ph.D., Matthew Marraffino, Ph.D., Bradford Schroeder, NAWCTSD; Meredith Carroll, Ph.D., Florida Institute of Technology

25102 Enhancing Decision-Making Under Pressure: Adaptive Training Frameworks for High-Stakes Environments

Ancuta Margondai, Mustapha Mouloua, Ph.D., University of Central Florida

25316 Mission Ready: Leveraging Performance-Based Training to Enhance Security Operations Proficiency

Denise Stevens, Ed.D., Rebecca Taverner-Coleman, Ph.D., Julie Kilbert, General Dynamics Information Technology

EMERGING CONCEPTS AND INNOVATIVE TECHNOLOGIES

ECIT1 TUESDAY, 2 DECEMBER • 1400 – 1530 • ROOM 320A

LARGE LANGUAGE MODELS IN ACTION: TRUST, TESTING, AND TACTICAL EDGE

Session Chair:

Session Deputy:

25307 Space Hazard AI into Warfighter Kill Chains Toward Operational Dominance

Cordula Robinson, Ph.D., Stephen Leidner, JANUS Research Group, AER; Ben Prince, AFRL; Radhakishan Shetty, JANUS Research Group

25321 Leveraging Large Language Models for Generating Integration Test Code

Duy Hua, Adam Noack, Jenna Coffman, Anastacia MacAllister, Ph.D., Rey Nicolas, General Atomics Aeronautical Systems, Inc.

25368 Can We Trust LLM-Generated Code? A Quantitative Verification Study

Edwin Bearss, Ph.D., Trideum Corporation

ECIT2 TUESDAY, 2 DECEMBER • 1400 – 1530 • ROOM 320C

DIGITAL READINESS REIMAGINED: TWINS, SIMS, AND THE SYNTHETIC EDGE

Session Chair:

Session Deputy:

25135 Enabling Multi-Domain Operations Through Wargames, Simulation, and Live Exercises

Per-Idar Evensen, Helene Holhjem, Daniel Tveit, Ph.D., Karolina Eikås, Ph.D., Norwegian Defence Research Establishment (FFI)

25357 Digital Twins: Adding New Dimensions to Simulation and Operational Effectiveness

Graham Long, Thales; Jan Hodicky, Ph.D., NATO HQ SACT

25335 Synthetic Data: Fueling the Digital Revolution

Ray Compton, LMI; Erica Dretzka, OSD Chief Digital and AI Office

ECIT3 WEDNESDAY, 3 DECEMBER • 0830 – 1000 • ROOM 320A

SAVING TIME: LLMS FOR TRAINING CONTENT CREATION

Session Chair:

Session Deputy:

25108 Secure Interactive Courseware Creation for Distributed Training Using On-premise Generative Artificial Intelligence

Deepak Haste, Sudipto Ghoshal, Ph.D., Jordan Thurston, Qualtech Systems, Inc.; Jason Wong, Ph.D., NIWC Pacific; Sean Rugge, Jacob Dubois, Marine Corps University

25397 Transforming Technical Documentation into On-Demand Adaptive Training Content

Ernest Cross II, Ph.D., Matthew Miller, Leonard Eusebi, Charles River Analytics, Inc.

25401 Training Developer Feedback on AI for Revision of Content (ARC)

Benjamin Nye, Ph.D., USC Institute for Creative Technologies; Jose-Luis Ambite, Ph.D., Joel Matthew, University of Southern California; Mark Core, Ph.D., Daniel Auerbach, Dilan Ramirez, Joel Walsh, USC Institute for Creative Technologies

ECIT4 WEDNESDAY, 3 DECEMBER • 0830 – 0930 • ROOM 320G

STRATEGIC AUTOMATION AND AI FOR MISSION-CRITICAL TRAINING

Session Chair:

Session Deputy:

25364 Automated Deployment of Distributed Simulation Environments Effectively Using Artificial Intelligence

Chris McGroarty, U.S. Army DEVCOM SC STTC; Scott Gallant, Effective Applications; Christopher Metevier, U.S. Army DEVCOM SC STTC; Jeremiah Long, U.S. Army DEVCOM SC; Anup Raval, Greg Tracy, Mark Schlottke, Zack Kiener, Dynamic Animation Systems, Inc.

25411 Using Mixed Reality and Artificial Intelligence for Complex Task Guidance in a UH-60 Environment

Brian Williamson, Pierce Powell, Jacob Belga, Ryan Ghamandi, University of Central Florida; Michael Middleton, Northrop Grumman; Nayan Chawla, Virginia Tech; Molly Kluck, Ryan Mckendrick, Northrop Grumman; Ryan McMahon, Virginia Tech; Joseph LaViola, Ph.D., University of Central Florida

ECIT5 WEDNESDAY, 3 DECEMBER • 1030 – 1200 • ROOM 320A

SIMULATION DRIVEN REINFORCEMENT LEARNING: VALIDATION, INTEGRATION, AND UNCERTAINTY CHALLENGES

Session Chair:

Session Deputy:

25118 A Hierarchical Hybrid AI Approach: Integrating Deep Reinforcement Learning and Scripted Agents in Strategic Combat Simulations

Scotty Black, Ph.D., Marine Corps Warfighting Lab; Christian Darken, Ph.D., Naval Postgraduate School

25164 Autonomous Vehicle Design Conformity Validation in Simulation Using Reinforcement Learning

Mohammed Eleffendi; Mustafa Akbas, Ph.D., Embry-Riddle Aeronautical University



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PAPERS

25259 Uncertainty Uses in Reinforcement Learning Both During and After Training

Rahul Krupani, Micah Bryant, Joseph Gleason, Ph.D., Anastacia MacAllister, Ph.D., General Atomics Aeronautical Systems, Inc.

ECIT 6 WEDNESDAY, 3 DECEMBER • 1030 – 1200 • ROOM 320G

COGNITIVE CROSSROADS

Session Chair:

Session Deputy:

25277 Closed-Loop Neuromorphic Artificial Intelligence for Decision Support

Daniel Barber, Ph.D., Lauren Reinerman-Jones, Ph.D., Southwest Research Institute

25372 Exploiting Cognitive Vulnerabilities: Quantifying Loss Aversion in Cybersecurity with LLMs

Soham Hans, USC Institute for Creative Technologies; Nikolos Gurney; Sofia Hirschmann, Stacy Marsella, Northeastern University

25373 Human-AI Collaboration for Synthetic Media Detection in Training and Operations

Laura Cassani, Michael Davinroy, Tatiana Toumbeva, Ph.D., Peter Bautista, Lauren Fortier, James Cook, Ashley Hart, Svitlana Volkova, Ph.D., Aptima, Inc.

ECIT7 WEDNESDAY, 3 DECEMBER • 1330 – 1500 • ROOM 320A

THE AI PLAYBOOK: DESIGNING MISSIONS AND FORCES AT MACHINE SPEED

Session Chair:

Session Deputy:

25157 Applying AI-Driven Generative Models for Computer-Generated Force Scenario Generation

William Dupree, Ph.D., Svitlana Volkova, Ph.D., Hsien-Te Kao, Grant Engberson, Miles Markey, Gabriel Ganberg, Alexxa Bessey, Ph.D., Summer Rebensky, Ph.D., Aptima, Inc.; Thomas Dubai, Serco, Inc.; Nikola Cardenas, Serco, Inc./CAF DTC

25367 Towards AI-Assisted Generation of Military Training Scenarios

Volkan Ustun, Ph.D., Soham Hans, Benjamin Nye, Ph.D., Mark Core, Ph.D., USC Institute for Creative Technologies; James Sterrett, U.S. Army University; Matthew Green, Command and General Staff College

25418 On-Demand Intelligent Agent Generation

Brian Stensrud, Ph.D.; Asher Gibson, Sten King, Robert Hess, CAE

ECIT8 WEDNESDAY, DECEMBER 3 • 1530 – 1700 • ROOM 320A

AI-POWERED AUTONOMY: FROM DESIGN TO DEPLOYMENT

Session Chair:

Session Deputy:

25191 Assessing Communications Equipment Performance for Reliable USV Teleoperation and Autonomy

Ahmet Saglam, Ph.D., Kevin O'Brien, Bratislav Cvijetic, Virginia Zamponi, Yiannis Papelis, Ph.D., Old Dominion University

25224 Automating Training Design through Retrieval Augmented Generation and Hierarchical Reasoning

Taja Hillier, Mission Decisions; Sally Powling, Aquila Learning

25246 Creating a Scalable Virtual Flight Instructor Using Large Language Models

Colin Sullivan, Kyle Tauzer, Mark Cavanagh, Jean Seda, Christopher Lee, Lockheed Martin Corporation

ECIT9 THURSDAY, 4 DECEMBER • 0830 – 1000 • ROOM 320A

AI-DRIVEN 3D ENVIRONMENT RECONSTRUCTION

Session Chair:

Session Deputy:

25126 Automating 3D Terrain Generation for Simulation: An AI based Pipeline for Drone Imagery Processing

Yaniv Minkov, Or Zuriel, Einav Kiperman, Rami Rokach, Yinon Atzmon, Reymark Technologies

25325 3D Buildings from Floorplan

Michael Cardenas, OWT; Jose Orozco; John Mericle, Leidos; Ronald Ventura-Moore, Maxar

25443 Scaling for Monocular Depth Estimation in the Reconstruction of 3D Environments

Eric Guenther, Anakin Martinez, Amy Neuenschwander, Ph.D., Jeff Perry, Center for Space Research

ECIT10 THURSDAY, 4 DECEMBER • 1030 – 1200 • ROOM 320A

METHODS TO TRAINING AI TO ENSURE INTEGRITY OF OUTCOMES

Session Chair:

Session Deputy:

25120 How Artificial General Intelligence Will Train Itself

David Noever, Ph.D., Joseph Regian, Ph.D., Forrest McKee, PeopleTec, Inc.

25132 Knowledge Without Learning: A Zero Shot Approach to SAR ATR

Javier Garza, George Hellstern, Lockheed Martin Corporation; Matt Reisman, Kevin LaTourette, Tobe Corazzini, Adam Francisco, Ryan McCormick, Bedrock Research

25242 Advancing Expertise Development Through Adaptive Human-AI Training

Jessica Johnson, Ph.D., Old Dominion University

HUMAN PERFORMANCE ANALYSIS AND ENGINEERING

HPAE1 WEDNESDAY, 3 DECEMBER • 0830 – 1000 • ROOM 320C

BIG DATA? BIGGER CHALLENGES!

Session Chair:

Session Deputy:

25255 Modeling Human Decision Attributes to Enhance AI Trustworthiness

Joseph Cohn, Ph.D., Robert Bixler, Angela Woods, Jordan Lampi, Soar Technology, LLC; Neil Shortland, Ph.D., UMass Lowell

25264 Evaluating an LLM-based Course-of-Action-Analysis Assistant for Simulated Tactical Decision-Making

Josh Price, Eng.D., CAE (UK) Plc; Aaron Coutino, Ph.D., CAE; Deniz Yilmaz, Ph.D., CAE GmbH; Peter Meyer zu Drewen, CAE; Giles Moore, Defence Science and Technology Laboratory (Dstl)

25381 xAPI in Action: Field Validation of Bridging Interoperability Gaps in Medical Training with Generalized Intelligent Framework for Tutoring (GIFT) and Competency-Based Learning

Biljana Presnall, Aaron Presnall, Ph.D., Jefferson Institute; Benjamin Goldberg, Ph.D., U.S. Army DEVCOM SC STTC; Gary McDougall, 2d Marine Logistics Group



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PAPERS

HPAE2 WEDNESDAY, 3 DECEMBER • 1030 – 1130 • ROOM 320C

TWO TO TANGO: TEAMING WITH AI

Session Chair:

Session Deputy:

25407 AI Trust and Alignment in High-Stakes Decision-Making Environments

Katelyn Smith, AnaCristina Bedoya, Neil Shortland, Ph.D., UMass Lowell; Joseph Cohn, Ph.D., Robert Bixler, Jordan Lampi, Angela Woods, Soar Technology, LLC

25228 Effects of Human-Machine Interface Recommendation Accuracy on Trust when Controlling Collaborative Combat Aircrafts in Complex Missions

Sandro Scielzo, Ph.D., Hely Lin, Nicholas Crothers, CAE USA

HPAE3 WEDNESDAY, 3 DECEMBER • 1330 – 1500 • ROOM 320C

GIMME A BREAK! ASSISTANCE IN WORKLOAD REDUCTION

Session Chair:

Session Deputy:

25237 Workload Distribution Across Varying Assistance Levels in Simulated Mission Drives

Johnna Stevenson, Ben McManus, Ph.D., Amanda Hudson, Ph.D., Piyush Pawar, William Russell, Andrea Underhill, Ph.D., Josh White, The University of Alabama; Thomas Anthony, Analytical AI; Victor Paul; Terry Tierney, U.S. Army DEVCOM GVSC; Despina Stavrinou, Ph.D., The University of Alabama

25215 Impact of Decision-Support Tools on Novice Workload in VR

Jin Hong Yu, Naval Postgraduate School; Charles Rowan Ph.D., Perry McDowell, NPS MOVES Institute; Amela Sadagic, Ph.D., Naval Postgraduate School; Jon Vogl, U.S. Army Aeromedical Research Laboratory; Ryan Lee, Naval Postgraduate School

25434 Operationalizing Persistent Augmented and Virtual Environments in Naval Aviation Maintenance

Michael Ashmore, MARCORSYSCOM, Amela Sadagic, Ph.D., Naval Postgraduate School; Jake Ramirez, NIWC Pacific; Kalvin Lam

HPAE4 WEDNESDAY, 3 DECEMBER • 1530 – 1700 • ROOM 320C

SASSY ASSESSMENTS WITH MULTI-MODAL MEASUREMENT

Session Chair:

Session Deputy:

25213 Assessing Virtual Reality Head-Mounted Display-Induced Cybersickness in Simulated Maritime Dynamic Environments

Ethan Williams, Naval Postgraduate School; Charles Rowan, Ph.D., Perry McDowell, NPS MOVES Institute; Jon Vogl, U.S. Army Aeromedical Research Laboratory

25282 Assessing Cognitive State Adaptations using Predictive Models

Stephen Gordon, Ph.D., DCS Corporation; Vernon Lawhern, Ph.D., Jonathan Touryan, Ph.D., DEVCOM Army Research Laboratory

25394 Human Factors and Neuroscience in Next-Generation Simulation Environments

LCDR Nicholas Armendariz, Ph.D., USN, Naval School of Aviation Safety; JJ Walcutt, Ph.D., DAF/A1; Christina Parker, Ed.D., AFSOC; Brittany Neilson, Ph.D., NAVAIR

HPAE5 THURSDAY, 4 DECEMBER • 0830 – 1000 • ROOM 320C

WORDS, WAVES, AND WANDERINGS: UNCONVENTIONAL MEASURES OF EFFECTIVE TEAMWORK

Session Chair:

Session Deputy:

25448 Can Dialogue Features Help Predict Team Performance?

Kallirroi Georgila, Ph.D., Carla Gordon, Anton Leuski, Ph.D., Ron Artstein, Ph.D., David Traum, Ph.D., USC Institute for Creative Technologies

25236 Improving Mission Performance and Readiness for Rapidly Composed Military Teams

Jonathan Sussman Fort, Ph.D., Joseph Cohn, Ph.D., Soar Technology, LLC; Eduardo Salas, Rice University, Ph.D.; Silke Dodel, Ph.D., Deep Science; Jeremiah Folsom-Kovarik, Ph.D., Jeffrey Craighead, Ph.D., Soar Technology, LLC; Maha Khalid, Lila Berger, Rice University; Nick Petroff, Soar Technology, LLC; Chris Berka, Advanced Brain Monitoring; Angela Woods, Daniel Wilson, Tanner Hilsabeck, Stephen Kline, Soar Technology, LLC; Ella Thunen, Advanced Brain Monitoring

25431 Enhancing Nurse Rounding Performance and Patient Satisfaction Using Real Time Location System

Shuxin Li, Alyssa Tanaka, Ph.D., Lucy Ha, AdventHealth

HPAE6 THURSDAY, DECEMBER 4 • 1030 – 1200 • ROOM 320C

COGNITION UNDER FIRE: TRAINING FOR CHAOS, DESIGNING FOR CLARITY

Session Chair:

Session Deputy:

25387 The Effects of Dichotic Listening in Unmanned Aircraft Systems (UAS) Pilot Efficiency

Bailey Miller, Autonomy Research Institute; Andres Castillo, Collin Scarince, Ph.D., Miguel Moreno, Ph.D., Texas A&M University-Corpus Christi; Tye Payne, Autonomy Research Institute

25427 Capital Gains: Leveraging Human-Centered COPs for More Effective Incident Management in DC and Beyond

Katelynn Kapalo, Ph.D., Stevens Institute of Technology; Timothy Hutchison, Office of the CTO, District of Columbia; Jeffrey Lenard, Thomas Chenworth, DC Fire and EMS Department

25453 Attention Control Predicts Operational Errors in Expeditionary Robotics Warfare Operators

Brandon Schrom, Naval Health Research Center; Alexander Burgoyne, Felix Wu, HumRRO; Joshua Sparks, Max Smith, Timothy Dunn, Naval Health Research Center

POLICY, STANDARDS, MANAGEMENT, AND ACQUISITION

PSMA1 TUESDAY, 2 DECEMBER • 1400 – 1500 • ROOM 320D

DIGITAL TWINS AND CULTURE: CAN YOU TELL THEM APART?

Session Chair:

Session Deputy:

25241 Building a Digital Engineering Culture

Lauren Sencio, Nicholas Adriaanse, Daniel Howard, Jr., NSWCDD-DNA

25312 Validating a Digital Twin Taxonomy for Defense: Enhancing Interoperability in Simulation and Digital Engineering

Robert Proctor, Jr., Real-Time Innovations (RTI); Patrick Buckley, Ph.D., Northrop Grumman



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PAPERS

PSMA TUESDAY, 2 DECEMBER • 1600 – 1730 • ROOM 320D

TRAINING ME SOFTLY, WITH YOUR PROMPT...

Session Chair:

Session Deputy:

25403 Integrating Biometrics, Policy, and Data-Driven Training: Enhancing Military Readiness and Reducing Risk

LCDR Nicholas Armendariz, Ph.D., USN, Naval School of Aviation Safety; JJ Walcutt, Ph.D., DAF/A1; Jacob Westerberg, Ph.D., BUMED; Kristin Saling, HQDA G1

25111 Systems Engineering Automation Through Artificial Intelligence (AI) and Natural Language Processing (NLP)-Based Software

Xuan Chau, Brian Parrish, MITRE; Michael Cannizzaro, STE CFT

25333 Policy Considerations for Training Developed Using Generative AI

Lee Lacy, Ph.D., CMSP, Dawn Norman, Soar Technology, LLC

PSMA3 WEDNESDAY, 3 DECEMBER • 0830 – 1000 • ROOM 320D

TRAIN. TRACE. SUSTAIN.

Session Chair:

Session Deputy:

25319 Data Traceability for Complex, Distributed Live, Virtual, Constructive Simulation Events

Eric Tollefson, Ph.D., Jonathan Andrews, Michael O'Connor, Trideum Corporation; Tilghman Turner, U.S. Army Redstone Test Center

25363 Resilience of M&S Capabilities

Brian Vogt, NATO ACT; Jan Hodicky, Ph.D., NATO HQ SACT; Stephen Banks, Alberto De Paoli, Ph.D., Bugra Ayyildiz, Angel San Jose Martin, NATO ACT

25235 Changing the Training System Sustainment Paradigm with Product Support Analysis

Robert Briar, Brian Frech, Daniel Metzler, U.S. Army PEO STRI

PSMA4 WEDNESDAY, 3 DECEMBER • 1030 – 1200 • ROOM 320D

CTRL+ALT+DELETE: REBOOTING DEFENSE M&S STANDARDS FOR THE 21ST CENTURY

Session Chair:

Session Deputy:

25122 Aligning Flight Simulation Software with MOSA Standards

Hung Tran, CAE USA

25200 Stockholm Syndrome: Are We Being Held Captive by Our Ancient Interoperability Standards?

Simon Skinner, Thales Training and Simulation

25399 The Defense Standards Landscape for Digital Engineering, Modeling & Simulation

Scott Schutzmeister, Annie Patenaude, Institute for Defense Analyses

PSMA5 WEDNESDAY, 3 DECEMBER • 1330 – 1500 • ROOM 320D

FAST TRACK: ACCELERATING DEFENSE LEARNING AND ACQUISITION

Session Chair:

Session Deputy:

25116 Measuring Learning Technology Maturity in DoD Acquisition

Kevin Owens, Applied Research Laboratories: The University of Texas at Austin; Jeanine DeFalco, Ph.D., Mixta Re, Inc.; Christine Covas-Smith, Ph.D., AETC; Shawn Miller, DAU

25432 From Red Tape to Red Bows: Urgent Defense Acquisition Transformation

Dustin Ford, Kitty Hauk, GovCIO

25456 The DoD Learning Enclave (DLE) as an Enabler of Force-Level Decision-Making

Henry Phillips IV, Ph.D., Andy Johnson, ADL Initiative

SIMULATION

SIM1 TUESDAY, 2 DECEMBER • 1400 – 1530 • ROOM 320B

BE DAZZLED IN XR/VR

Session Chair:

Session Deputy:

25185 Simulating Aircrew Laser Dazzle in a Virtual Reality Environment

Sonny Ponce, Joseph Arizpe, Ph.D., Jake McKenna, Peter Smith, Ph.D., SAIC; Alan Ashworth, Ph.D., Christian Calimlim, RHDO

25109 XR-powered Remote Maintenance Support and Training for Naval Shipyards

Deepak Haste, Michael Renda, Sudipto Ghoshal, Ph.D., Qualtech Systems, Inc.; Corey Countryman, NAVSEA Undersea Warfare Center; Deniz Ferrin, Technology Insertion and Innovation Lab

25324 Overcoming Challenges of Integrating Heterogeneous Commercial and Open-Source Tools in Extended Reality Applications

Kexin Wang, Eliot Winer, Ph.D., Iowa State University

SIM2 TUESDAY, 2 DECEMBER • 1600 – 1730 • ROOM 320B

REALITY & ABSTRACTION IN MODERN SIMULATION

Session Chair:

Session Deputy:

25155 Advancing Multi-Agent Autonomy: Challenges and Solutions in LVC Simulation Testbeds

Akhil Nagariya, Ph.D., Alvika Gautam, Srikanth Saripalli, Ph.D., Texas A&M University; Henry Reimert, Kristin Schaefer, Ph.D., DEVCOM Army Research Laboratory; Joshua Wickwire, Parsons Corporation

25168 Bridging Pre-Training and Simulation: Enhancing AI Performance with Unity ML-Agents

Sarah Kitchen, Ph.D., Anthony Chavez, Reid Sawtell, Michigan Tech Research Institute; Tim Aris, U.S. Army DEVCOM SC STTC

25139 Use of Simulation to train AI for Swarm Based Underwater Behavior – Lessons Learned from Talisman Sabre 2025

Peter Drewes, Ph.D., SAIC

SIM3 WEDNESDAY, 3 DECEMBER • 0830 – 1000 • ROOM 320B

CYBER INTEGRATION FOR M&S

Session Chair:

Session Deputy:

25145 Providing Asymmetric Information Advantage and Cyber Multidomain Operations Training Capabilities

Bruce Gorski, Brian Parrish, Jared Arslanian, MITRE; James Geddes, Bryan Long, Jr., Patrick Hart, U.S. Army DEVCOM SC STTC

25275 Integrating Existing Cyber Ranges and Cyber Tools into LVC Simulations

Jean Paul Dingemanse, Frank Drop, Marieke Klaver, Veronique Marquis, TNO; Bert Boltjes, Defence Cyber Command



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25354 Challenges and Solutions in Using Virtual Testbeds to Study Hackers

Sean Guarino, David Kelle, Curtis Wu, Charles River Analytics; Max Slocum, Michael Sieffert, Assured Information Security; Michelle Neisser, SimSpace

SIM4 WEDNESDAY, 3 DECEMBER • 1030 – 1200 • ROOM 320B

DIGITIZING A PRINTABLE PLANET

Session Chair:

Session Deputy:

25226 Transforming Terrain Databases into Battlefield Environments Using Compile-Time Dynamics

Remco van der Meer, Ewan Demeur, Ruben Smelik, Ph.D., TNO

25257 Virtual Environment for Aerospace Simulation and AI Data: Focused on Automatic Building Generation

Mungi Kim, Youngjun Sim, Dahyoung Jeon, SIM2REAL

SIM5 WEDNESDAY, 3 DECEMBER • 1330 – 1500 • ROOM 320B

IT'S ALL ABOUT RF

Session Chair:

Session Deputy:

25160 A Million Points of RF - Enabling High Fidelity Interactions in the Synthetic Space

Scott Burdick, Jacob Miracle, AFSC/SWX; Douglas Hodson, Ph.D., Air Force Institute of Technology

25266 RF Digital Twins Demand for Digital Threats, Challenges and Solutions

Romolo Gordini, Luca Di Ianni, Riccardo Dal Borgo, Miriam Chisari, Alessandro Moro, Leonardo Spa

25345 Multi-physics SAR Simulation for Correlated Radar Imaging in Synthetic Environments

Kyle Morris, Radu Visina, Ph.D., Information Systems Laboratories; Brett Chladny, Ross Uhler, MAK Technologies

SIM6 WEDNESDAY, 3 DECEMBER • 1530 – 1700 • ROOM 320B

SIMULATION PLATFORMS & INTEROPERABILITY ARCHITECTURES

Session Chair:

Session Deputy:

25144 Integrating DIS V8, Challenges and Opportunities

Lance Call, AFRL/CAE; Dean Lewandowski, CAE USA

25271 Achieving Distributed Training Through MSaaS: Results and Insights

Andreas Krupp, Benjamin Labas, Mate Koch, CAE GmbH; Jay Freeman, David Bisaccia, CAE USA

25218 Simulator of Theseus: Substituting parts for a Memory Safe Simulator

Jonathan Mitchell, Kerryn Spanhel, Thales

SIM7 WEDNESDAY, 3 DECEMBER • 1530 – 1700 • ROOM 320D

SIM TECH FUSION

Session Chair:

Session Deputy:

25376 Simulator Environment Configuration for Integrated Threat Response and Evasive Maneuvers of Aircraft

Younhyuck Chang, Kiyoung Lee, JaeSik Oh, MOA Software; Younggun Lee, Ph.D., Seunghoon Yoo, Joonha Jang, Republic of Korea Air Force Academy

25225 Mission Possible: Dead Reckoning with Artificial Intelligence

Thomas McRobie, Thales Training & Simulation

25350 Point-of-Need Joint Integrated Air and Missile Defense LVC Training Solutions

Joseph McAlexander IV, Matt Martin, CAE USA

SIM8 THURSDAY, 4 DECEMBER • 0830 – 1000 • ROOM 320B

BUILDING SMARTER SYSTEMS

Session Chair:

Session Deputy:

25393 Incorporation of Automated Cyber Adversaries to Improve Cyber-Kinetic Training

Omar Hasan, Ph.D., Derek Crane, Jeremy Richarde, Dignitas Technologies; James Geddes, U.S. Army DEVCOM SC STTC; Jason Strauss, U.S. DEVCOM SC

25220 Optimizing Defense AI with Simulation-Driven CI/CD

Victoria Dorn, Andres Ulloa, Anastacia MacAllister, Ph.D., General Atomics Aeronautical Systems, Inc.

25287 A Scalable Open-Source Simulation Framework for Neuroevolution and Multi-Agent Behavior Research

Jackson Salyards, Jackson Baker, Colton Underwood, Adrian Quintero, Kai Sniadach, Mustafa Akbas, Ph.D., Embry-Riddle Aeronautical University

SIM9 THURSDAY, 4 DECEMBER • 1030 – 1200 • ROOM 320B

FROM SIMULATION TO DEPLOYMENT: AI & NETWORK INNOVATIONS IN DEFENSE

Session Chair:

Session Deputy:

25265 Context-Aware Human Performance Measurement for Simulation-based Tactical Training

Joost van Oijen, Ph.D., Thomas Bellucci, Maxim van Oldenbeek, Royal Netherlands Aerospace Centre

25349 Training and Evaluating Machine Learning Models using XR Simulated Data for Autonomous Vehicle Control in Real-Time Simulated Traffic

Adam Kohl, Eliot Winer, Ph.D., Iowa State University

25458 Evaluation of Time Sensitive Networks (TSN) for use in Army Aviation platforms

Brijesh Patel, Jimmy Moore, PeopleTec; Jonathan Hardy, IronMountain Solutions; Brett Boren, U.S. Army Redstone Test Center



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TRAINING

TRN1 TUESDAY, 2 DECEMBER • 1400 – 1530 • ROOM 320F

TRAINING BEYOND THE RANGE

Session Chair:

Session Deputy:

- 25351 Beyond the Range: Merging Simulation and Reality**
Emilie Reitz, Joint Staff, J6; Sammie Jansen, RNLA; Michael Taylor, JS J6; Justin Wright, Huntington Ingalls Industries
- 25334 Advancing Squad Performance Analytics and Team Training with Multimodal Data in STEEL-R**
Randall Spain, Ph.D., U.S. Army DEVCOM SC; Benjamin Goldberg, Ph.D., U.S. Army DEVCOM SC STTC; Lisa Townsend, U.S. Army DEVCOM SC; Grace Teo, Ph.D., Quantum Improvements Consulting; Meghan O'Donovan, Clifford Hancock, U.S. Army DEVCOM
- 25382 Building Readiness: A Competency-Based Framework for Military Medical Training in U.S. Marine Corps Exercises**
Aaron Presnall, Ph.D., Biljana Presnall, Jefferson Institute; Benjamin Goldberg, Ph.D., U.S. Army DEVCOM SC STTC; Gary McDougall, 2d Marine Logistics Group

TRN2 TUESDAY, 2 DECEMBER • 1600 – 1730 • ROOM 320F

EXAMINING HUMAN PERFORMANCE IN TRAINING

Session Chair:

Session Deputy:

- 25328 Optimizing Soldier Performance Through Coaching: A Framework for Stress Intervention Research**
Paige Lawton, Ph.D., U.S. Army DEVCOM SC STTC; Randall Spain, Ph.D., U.S. Army DEVCOM SC; Benjamin Goldberg, Ph.D., U.S. Army DEVCOM SC STTC
- 25181 A Perspective on Training and Education for Space Domain Awareness in Military Space Operations**
Simone Caso, Ph.D., Netherlands Aerospace Centre
- 25254 Cognitive Load-Based Curriculum Adaption in Human-Machine Team Training Scenarios**
Gary Eves, Ph.D., CAE; Alex McConville, Ph.D., Nadine Marcus, Ph.D., UNSW; Hussein Abbass, Ph.D., UNSW Canberra; Brian Stensrud, Ph.D., CAE

TRN3 WEDNESDAY, 3 DECEMBER • 0830 – 1000 • ROOM 320F

TRAINING STRATEGIES

Session Chair:

Session Deputy:

- 25193 Integrating Skill Attainment and Enterprise Modeling into Optimal Training Event Scheduling**
Eric Haney, Ph.D., Ryne Spears, Robert Harrill, Lone Star Analysis
- 25258 'Airmanship' on the Radar: Military Aircrew Instructors' Perceptions of Non-Technical Skill Assessment Methods, Training Strategies and Standards**
Jonathan Allsop, Ph.D., RAF Central Flying School; Robert Hurcomb, Royal Air Force
- 25192 A Data-Centric Approach for Extracting Flight Maneuvers from Pilot Training Time Series Data**
Eric Haney, Ph.D., Ethan Cramer, Lone Star Analysis; Samantha Emerson, Ph.D., Mark Schroeder-Strong, Aptima, Inc.

TRN4 WEDNESDAY, 3 DECEMBER • 1030 – 1200 • ROOM 320F

OF PAPER AND PIXELS: ADVANCING TRAINING AT ALL FIDELITIES

Session Chair:

Session Deputy:

- 25131 Comparing Input Modalities in Extended Reality for a Virtual Learning/Training Task**
Stephanie Fussell, Ph.D., Aptima, Inc.; Quintin Oliver, AFRL; Tyler Frost, AFRL GRILL; Summer Rebensky, Ph.D., Samantha Perry, Aptima, Inc.; Benjamin Kwasa, Ph.D., Kent State University; Stephen McGee, AFRL
- 25201 Advancing Police Training Through Virtual Simulation: Lessons from Dubai Police**
Mansoor Alrazooqi, Ph.D., Dubai Police
- 25217 Can Low Fidelity Tabletop Games be used to Improve Teamwork?**
Joan Johnston, Ph.D., Alaka'ina Foundation; Grant Johnston, Student; Lisa Townsend, U.S. Army DEVCOM SC; Jerry Mize, U.S. Army DEVCOM SC STTC; Tami Griffith, Ph.D., Defense Equal Opportunity Management Institute; Chuck Wainman, SAIC; Alexandra Lutz, Dignitas Technologies

TRN5 WEDNESDAY, 3 DECEMBER • 1330 – 1500 • ROOM 320F

NOVEL STRATEGIES: ELEVATE PERFORMANCE AND CREATE TRAINING PROCESS EFFICIENCIES

Session Chair:

Session Deputy:

- 25318 Advancing Usability Training: A Methodology for Rapid Development of Usability Competencies Using an AI-driven Knowledge Repository**
Nicole Dorey, Ph.D., William Rivera, Design Interactive, LLC
- 25147 Are Training Models and Simulations Credible? A Straightforward Method for Answering that Question**
Vincent Welsh, Jr., Dave Turner, SURVICE Engineering Company
- 25309 Find Waste, Improve Quality and Deliver Better Training**
Mike Thorpe, Loretta Koennicke, Serco, Inc.



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PROFESSIONAL DEVELOPMENT WORKSHOPS

THURSDAY, 4 DECEMBER 2025 — PROFESSIONAL DEVELOPMENT WORKSHOPS

LOCATION:	Orange County Convention Center, South Concourse, note room assignments below.
DATE & TIME:	Thursday, 4 December • 1300 – 1600
WHO MAY ATTEND?	All registrants of I/ITSEC are welcome to attend – I/ITSEC badge is required for entry.
FEES:	There is no fee for I/ITSEC Conference Registrants/Exhibitors – I/ITSEC badge required for entry.
CEU/CLP:	Paid I/ITSEC Conference registrants are eligible to receive CEU/CLP credits. If not a paid attendee, a \$50 fee will be charged only if you wish to receive the CEU credits.
REGISTRATION:	Registration for individual workshops is not required. Workshops fill on a first-come, first-serve basis. Please arrive early for topics that interest you the most — seating is limited . If you wish to receive CEU credits, be sure to request CEUs during your conference registration. You may update your registration to include CEUs at any time at www.IITSEC.org/Attend/Registration-Fees
LUNCH:	On own

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW1 • ROOM 331A

LEVERAGING AI-ENHANCED CODING TOOLS TO RAPIDLY CREATE & DEPLOY WEB APPLICATIONS FOR NAVAL TRAINING

25W1

Presenters: Josh Hawthorne and Albert Chou

In the rapidly evolving domain of military training and readiness, leveraging artificial intelligence and modern web technologies presents an opportunity to optimize training methodologies.

This half-day workshop will provide an in-depth exploration of how AI-assisted coding tools, database integrations (Supabase and Firebase), and static page deployments with a GitHub repository and Cloudflare Pages can be harnessed to develop and deploy scalable, interactive web applications tailored for naval training.

Attendees will gain insights into our process, challenges encountered, and lessons learned in developing AI-enhanced training solutions. This hands-on session will engage participants in designing and deploying prototype web applications, fostering collaboration and discussion on how these technologies can be leveraged for training optimization.

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW2 • ROOM 331C

SERIOUS GAME DESIGN WORKSHOP

25W2

Presenters: Radhakishan Shetty, Vance Souders, and Seth Crofton

During this workshop, participants will be introduced to key concepts, steps, and processes involved in designing a game for learning. Through hands-on activities and working together in groups, participants will work through the initial phases of the design process. Participants will identify a topic, audience, training requirements and learning objectives, creating an effective narrative, determining instructional and gaming strategies, designing key game mechanics, and choosing the appropriate delivery technology. Presenters will facilitate the groups and give examples from past experiences and provide examples from the Serious Game Showcase and Challenge.

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW2 • ROOM 230H

FOUNDATIONS OF ARTIFICIAL INTELLIGENCE IN TRAINING AND SIMULATION

25W4

Presenters: Brice Colby, Ph.D., Morgan Ulinski, Ph.D., Elaine Choy, Robert Sottolare, Ph.D., and Daniel Wilson

AI is revolutionizing training and simulation – but how do you move from theory to hands-on implementation? If you've ever wondered how to effectively integrate AI into your training programs or which tools to use for different learning challenges, this workshop is your bridge from uncertainty to expertise.

In this hands-on session, you'll ditch the abstract talk and dive into real-world AI applications. Using tools like Kaggle Notebooks and NotebookLM, you'll be guided through experiments with real models, explore AI-driven training, and develop the skills to confidently say: "Given my training goal, I know which AI tools and methods to use."

The interactive exercises and guided practice will help you learn how to:

- Identify the right AI techniques for different training goals
- Leverage AI models to classify behaviors, predict outcomes, and adapt training
- Understand data science's role in AI decision-making - and how to build trust in AI-driven training

No coding background? No problem. This workshop is designed for anybody and everybody who needs practical AI knowledge, not just theory. By the end, you'll walk away as the go-to expert, ready to guide your team in applying AI for smarter, more adaptive training solutions.

Are you ready to bridge the gap between AI's potential and real-world impact? Join us and make AI work for you!

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW5 • ROOM 331D

ADDITIVE MANUFACTURING IN ACTION – A HANDS-ON WORKSHOP FOR ACQUISITION, SUSTAINMENT, AND STRATEGIC ADVANTAGE

25W5

Presenter: Daniel Egler, Ph.D.

This workshop is derived from the Additive Manufacturing for Defense Applications course offered by the Egler Institute of Technology. Attendees will gain a comprehensive understanding of how additive manufacturing enhances supply chain resilience, enables on-demand part production, and supports cost-effective maintenance strategies. By engaging in hands-on activities and case studies, they will develop a deeper appreciation of AM's



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critical role in Defense and military operations, particularly in rapid prototyping, battlefield sustainment, and mission adaptability. This holistic approach will allow participants to see firsthand how AM addresses logistical challenges and operational constraints within the defense sector.

The session will begin with a short presentation highlighting the advantages and challenges AM presents to Defense, including a high-level overview of the different AM technologies of interest to the defense sector. This will be followed by a demonstration of slicing software, illustrating key steps in preparing a model for 3D printing.

Attendees will rotate between two core stations during the workshop:

- **Additive Mindset** – Exploring how design philosophy, engineering assumptions, and broader considerations such as logistics, operational constraints, and tactical deployment must adapt when working with AM.
- **Hands-on Explore** – This station has participants getting hands-on with 3D printed parts and allows them the opportunity to visually inspect, remove support structures, and test material properties, among other practical tasks.

In addition, a 3D printing demonstration area will be available where participants can initiate prints from a selection of pre-loaded models and observe the process up close. Each print will take approximately 10–15 minutes. While not all attendees may have the opportunity to print, the ability to engage directly or observe the process still provides meaningful educational value. A key learning outcome includes recognizing the significance of support structures, which often introduce trade-offs absent in conventional manufacturing methods.

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW7 • ROOM 331B

NAVIGATING THE EVOLVING LANDSCAPE OF DISTRIBUTED SIMULATION — HARNESSING DDS FOR SECURE AND MOSA — COMPLIANT LVC TRAINING

25W7

Presenters: Robert Proctor, Jr., David Whitten, and Andre Odermatt

As defense training and simulation shift toward open, modular, and secure architectures, understanding the role of the Object Management Group (OMG) Data Distribution Service (DDS) standard is essential. DDS is the premier real-time data distribution middleware and is now recognized as a critical enabler for the DoD's Modular Open Systems Approach (MOSA). With DDS's real-time, scalable, and secure interoperability, distributed LVC simulation systems can seamlessly integrate across multi-domain training environments while meeting stringent multi-level security (MLS) requirements.

This interactive workshop will provide attendees with hands-on experience in developing, securing, and optimizing distributed simulation environments using DDS. Participants will:

- Gain an in-depth understanding of DDS fundamentals and its role in MOSA-compliant, real-time data sharing across LVC simulations.
- Explore DDS Secure's MLS capabilities, including authentication, access control, data encryption, and integrity verification, and understand how it provides fine-grained data protection across classified and unclassified domains.
- Discover how DDS enables seamless interoperability with traditional simulation architectures (HLA, DIS, TENA, CTIA) and supports real-time integration with game engines, hardware-in-the-loop (HIL), and cloud-based training solutions.
- Learn strategies to optimize DDS performance, leveraging advanced Quality of Service (QoS) policies and WAN transport capabilities for

secure, high-performance distributed training over Tactical Data Links (TDL), RF, and 5G networks.

- Participate in hands-on exercises to configure, deploy, and troubleshoot DDS-based distributed simulation environments.

By the end of the workshop, attendees will have gained the knowledge and skills necessary to design, develop, and deploy secure and scalable DDS-powered distributed simulators, positioning themselves at the forefront of next-generation defense training solutions.

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW9 • ROOM 230G

CERTIFIED M&S PROFESSIONAL 3.0 — REINVENTION!

25W9

Presenter: Ivar Oswalt, Ph.D.

The Certified Modeling and Simulation Profession (CMSP) certification program has been reinvented and reintroduced to the M&S community as CMSP 3.0. The certification's application process has been streamlined, the examination updated, and an approach to ensure readily available reference material developed, amongst many other additional improvements. This proposal is to conduct a CMSP 3.0 Professional Development Workshop. This three-hour session will describe the requirements needed to achieve this valuable certification. It will cover the updated application and examination processes including education, work experience, and reference requirements for the Intern, Apprentice, Practitioner, and Master Levels; application processes; how the exam is administered and scored; and the role of continuing education in certificate renewal. It will also provide an overview of the fundamental M&S topics covered in the exams and include several relevant simulation videos.

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW11 • ROOM 330EF

STARSHIP BRIDGE SIMULATIONS AS A SERIOUS GAME FOR TEAM DEVELOPMENT

25W11

Presenters: James Benslay, Jr. and David Hernly

The Starship Bridge Simulation (SBS) workshop offers a unique and immersive approach to team development through serious gaming. In today's complex operational environments, leaders must develop agile teams capable of solving dynamic problems through effective communication and critical analysis. This workshop provides participants with hands-on experience in a creative, engaging leadership laboratory environment that fosters these essential skills.

Participants will be organized into 6-person starship bridge crews, with each member assuming a specialized role: Captain, Navigation, Weapons, Communications, Science, or Engineering. Each role operates from a dedicated console with position-specific interfaces and responsibilities. The simulation requires crews to collaborate effectively, make rapid decisions under pressure, and adapt to changing circumstances—mirroring the challenges faced by high-performing teams in real-world scenarios.

During this interactive workshop, participants will:

- Learn the foundational concepts behind using SBS as a serious game for team development
- Understand the mechanics and educational value of the simulation platform
- Explore various software options available for implementing SBS training
- Receive hands-on experience with specialized console operations



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- Participate in two multi-ship, multi-crew simulation scenarios
- Engage in structured, facilitated After-Action Reviews to analyze team performance

The first scenario serves as an orientation exercise, while the second provides a more complex challenge requiring focused teamwork to solve. Workshop participants can volunteer as crew members, assist as evaluators, support the simulation staff, or observe the proceedings.

Whether you're an experienced simulation professional or new to serious gaming applications, this workshop offers valuable insights into innovative approaches to leadership and team development. Please visit our workshop website for console overview guides, mission scenario information, and additional resources to enhance your workshop experience.

<https://sites.google.com/view/sbs-workshop-at-iitsec/home>

TinyURL: <https://tinyurl.com/3dtcmefd>

Don't miss out on this exciting journey into the final frontier of team development!

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW12 • ROOM 210C

DISRUPT, DESIGN, DEPLOY: A HUMAN CENTERED APPROACH TO LEARNING AND DEVELOPMENT 25W12

Presenters: Sydney Heimbrock, Ph.D. and Cydney Miller

Back by popular demand! The I/ITSEC PDW on Human Centered Design has become a highlight of the conference experience, with participants calling it "the best experience of the week." This workshop is for learning professionals tasked with understanding "who" an organization is teaching, and "what" the learning must deliver, in order to design the "how" of learning experiences. Because humans are at the center of this challenge, the methods and tools of human centered design are critical for effective learning design, development and delivery. This workshop gives participants an immersive experience in Human Centered Design (HCD) for Learning and Development. In an action-learning format, participants will learn and practice HCD by applying the framework, methods and tools to a real government learning experience use case. For each phase of the HCD process, facilitators will present the principles, methods and tools, then support participant small groups to apply them in the room to design the future of learning in their organizations. In addition to solving a real world learning challenge, participants will explore how to apply HCD to digital learning ecosystems through automated qualitative data collection and analysis. Participants will leave the workshop educated, inspired and equipped to apply a human centered approach to their learning design, delivery, and evaluation strategies.

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW13 • ROOM 210B

NEUROSCIENCE TECHNIQUES TO ACCELERATE AND ENHANCE TRAINING THROUGH PERSONALIZATION: A FOCUS ON EEG, FNIRS, AND EYE TRACKING BIOMETRICS 25W13

Presenters: Jonathan Drucker, Ph.D. and Marisa Biondi, Ph.D.

Training - across domains - is more effective and more efficient when the content and pace are personalized to the individual learner. Neurophysiological measures provide objective, actionable insights into the dynamic cognitive and emotional processes underlying the acquisition of complex knowledge and skills. For example, failure on a task may reflect underdeveloped skills (i.e., the trainee needs more instruction or practice at the current level),

or it may reflect an attentional lapse due to boredom (i.e., the trainee needs a new challenge) or stress (i.e., the trainee needs to take a break). These scenarios require vastly different approaches, but are indistinguishable with performance data alone. Biometrics that track attention, stress, workload, effort, and so on, can enable instructors to respond appropriately in the moment or during after-action review. Recent advances in wearable neurotechnology and data science have moved these ideas from the laboratory into the field: it is now not only possible but practical to collect biometric data, even in challenging environments, to enhance and accelerate training.

Led by Dr. Jonathan Drucker (ANT Neuro) and Dr. Marisa Biondi (eye tracking consultant), this tutorial will focus on data collection and analysis for three neurophysiological methods: electroencephalography (EEG), functional near-infrared spectroscopy (fNIRS), and eye tracking (ET). Acquired simultaneously, these three modalities paint a robust picture of the current mental, affective, and attentional state of the trainee. Participants will learn relevant fundamentals of biology and sensor technology, followed by a hands-on session with sophisticated neurotechnology (high-density EEG, fNIRS, and wearable eye tracking glasses). Together, instructors and participants will collect real data as volunteers perform an operationally relevant training task. We will demonstrate analysis techniques using both professional and open-source tools, and discuss how the results can be leveraged in training and into the career field.

THURSDAY, 4 DECEMBER • 1300 – 1600 • PDW15 • ROOM 320H

ADVANCING COUNTER-EXPLOSIVE ORDNANCE (EO) TRAINING WITH IMMERSIVE TECHNOLOGY – A HANDS-ON WORKSHOP 25W15

Presenter: Bill Sowry

The evolving threat landscape demands effective, scalable, and safe training solutions for Counter-Explosive Ordnance (EO) and explosive hazard awareness. Traditional live training exercises come with significant logistical challenges, costs, and safety risks.

Immersive training is redefining how military and humanitarian personnel prepare for mine clearance, route clearance, and explosive hazard detection. Leveraging the latest developments in haptics, VR and AR, this workshop demonstrates the latest in immersive training technology to prepare personnel for high-value live training exercises and real-life deployment.

This interactive, hands-on workshop will be led by retired Brigadier Bill Sowry, Chair in Defence Innovation in a leading Australian university, who will take participants through a real-time, immersive counter-EO training scenario, from the initial sweeping techniques to explosive hazard identification and after action review.

Attendees will experience first-hand how real-time performance analytics, and VR-based situational awareness contribute to a safer, more effective training experience. The session will conclude with a data-informed After-Action Review (AAR), demonstrating how cloud-based learning performance and analytics can offer real-time insights into trainee performance for continuous improvement.

Participants will leave with an understanding of the benefits of immersive counter-EO training, including cost savings, increased cognitive retention, enhanced situational awareness, and flexible, year-round training opportunities, all while minimizing logistical burdens and environmental impact.