



NEWSLETTER



Modeling and Simulation Forecast: Sunny with Occasional Challenges

Message from the President of the National Training and Simulation Association



RADM Fred Lewis, USN (Ret.)
President, NTSA

In June 2011, NTSA President, Rear Adm. Fred Lewis, USN (Ret.), gave the keynote address at the annual Meeting of the Simulation Industry Association of Australia. In his remarks, he summarized his views on the current state of modeling and simulation technology, some of the challenges it faces and what the future may hold. Here is the text of his remarks.

The theme of this event, as given to me, is excellence and how it may be achieved in the military training context. I would nevertheless like to think that what we strive for in all our common endeavors is perfection—an admittedly unattainable goal in an imperfect world, much like perfect moral virtue. I stand before you as an example of the latter, having been known by the call sign “Bad Fred” in a previous existence. While perfection may be beyond our reach, Henry Royce of Rolls Royce remarked, “strive for perfection in everything. Take that which exists and make it better. If it doesn’t exist, create it.” Now, I fully recognize that the pursuit of excellence itself is a worthy and often difficult aim point. But our men and women in the field deserve not only the excellence of the training already provided them, but the constant effort to transcend that level. Mission success, lives and ultimately our national security depend in great measure on our quest for what lies just beyond excellence.

Before addressing the various ways modeling and simulation training contributes to the achievement of excellence and beyond in military operations, it might be useful to briefly review the role the National Training and Simulation Association plays in advancing the industry and community of practice.

Fundamentally, NTSA exists to inform and educate the public about the importance of modeling and simulation training in everyone’s daily life and the promise it holds for all our futures. We do this by providing national and worldwide platforms for the entrepreneurial needs of the industry while simultaneously promoting dialogue about future

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Subcommittee Reports

Emerging Concepts & Innovative Technologies



Matt Spruill

by Matt Spruill, Chair

It is with great pleasure and honor that I, along with our deputy chair, Bob Johnson, lead the high powered team of the Emerging Concepts & Innovative Technologies subcommittee this year. ECIT is comprised of a talented pool of professionals from government, industry and academia. Of the 30 members on the subcommittee, thirteen are government, sixteen are from industry, and one is from academia. This year we welcomed nine new members. Combined, the group provides some of the very best expertise and insights from each of the military services, as well as a broad cross section from industry. Each time we meet, I am awed by this group, and I would like to start by thanking them for their commitment to the industry as well as their dedication to the many hours of reading and providing a

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trends and directions. I/ITSEC is of course the annual culmination of these efforts. Our goals at I/ITSEC, broadly stated, are to:

- Establish and maintain a climate which is conducive to successful business contacts and transactions among hundreds of exhibiting entities.
- Provide multiple avenues for in-depth exploration of the present potential and future promise of the industry.
- Involve as wide a variety of persons and organizations in I/ITSEC as possible, mirroring the expansion of modeling and simulation into ever more diverse fields.
- Mesh these elements into a cohesive whole which is truly greater than the sum of its parts and which advances the interests of the entire M&S community.

As we look back over how the technology has progressed as it has manifested itself at I/ITSEC and in the many technical sessions that populate I/ITSEC and advance the state of the art, we see several dramatic developments over the past ten years or so. Some time ago, before computer processing began its steep upward curve, we were limited to simulated environments which were obviously that. Trainees realized they were not in anything very close to real-world environments, but that was acceptable, as they also trained in live environments, which compensated for the shortcomings of the simulators. Then we entered a second phase, in which simulators approached reality more closely, but weren't quite there. Under these circumstances, trainees had difficulty relating to the simulated environment, as they knew they were not in a real world situation, but we were getting close—the "suspension of disbelief" was not quite possible. At this point as well, we were training exclusively in the "man-machine" environment, teaching how to manipulate complex platforms under difficult, challenging circumstances. Now, however, we find ourselves on the verge of a new simulation realm, and in some instances we're already there. Simulation technology has now advanced to the point that the trainee has greater difficulty distinguishing the virtual environment in which he or she is placed from reality. This is a very important development, as, for the first time, we can invoke something close to the emotions and stress one would experience in a real environment through artificial means. By so doing, we can now come close to preparing our warfighters and anyone else to face stressful, even life-threatening situations and master them, producing optimum outcomes based solely on the virtual training experience.

Even more recently, and as a direct result of the emergence of irregular conflict and asymmetrical threat environments, we have seen the urgent demand for the most complex form of simulation training—what can be called the "human to human" interface. Human to human interactions, as we all recognize, are orders of magnitude more complex than interactions with mechanical devices, regardless of how sophisticated. All the nuances of body language, speech, cultural norms and many other subtle but vitally important clues to attitude and intent must be taken into account. Given the security environments in which we operate today—be it interaction with a tribal elder, a passenger at an airport security checkpoint, or even a visa applicant from a third world country—this new training realm is critically important, if unforeseen only a decade ago. While we are making comprehensive strides toward bringing these training environments up to

the level of maturity the industry has achieved in other areas, we still have a considerable distance to go. We are now at the stage where the "suspension of disbelief" is still difficult to achieve, inserting an element of distraction into the training equation.

It might be interesting to note that this is an area where private industry has taken the lead through development of PC-based "first person shooter" and more advanced games. While the military has pioneered development of much of the bedrock of simulation technology, the commercial demand for ever more complex and realistic video games has resulted in remarkable strides in fidelity and in user flexibility that the military is just now beginning to capture in small unit training scenarios. I am pleased to note in this regard that the serious games competition at I/ITSEC is beginning to play a significant role in advancement of military applications for PC-based games, with a number of the games shown and awarded at I/ITSEC being selected for further commercial development and ultimately for full scale utilization as training tools.

I believe that in the not too distant future, we will train with avatars, wholly immersed in a three dimensional alternative world. Creating such environments is in fact the next great technological challenge for our industry. With it, among other precedent-setting applications, we will be able to expose our warfighters to new and unfamiliar cultures, allowing them to learn by immersion, for example, in the middle of a Middle Eastern marketplace. I do not believe this level of technology will be available as we pursue our objectives in Iraq and Afghanistan, but we will nevertheless see it in the not far future, and it will play an invaluable role in many critical areas of national importance. We are for the moment, however, in an interim period, where live training must still remain the order of the day, embracing as it still does all the attributes virtual technology is still groping toward.

As a consequence of the remarkable scientific progress we are witnessing, modeling and simulation technology has begun to infuse itself into many more aspects of human learning. Simulation, for example, is now rapidly becoming an indispensable element in medical and healthcare training. Surgical trainees, not long ago, went from books and lectures straight into the operating theater. What they lacked was the experience of operating on real patients without the risk mistakes could entail. Simulation is now filling that gap by providing experiences close to the real thing. Today, any response the human body is capable of can be mimicked to produce a very rich learning environment. One of the most rapidly growing areas of modeling and simulation, this has remarkable implications for further improvement in the already remarkable strides in battlefield casualty management in the past few years. Provision of artificial environments to aid physical and mental post-traumatic recovery is also now well under development, with promising implications for patient outcomes.

Simulation is also beginning to play an important role in predicting healthcare crises and in training patients to maintain treatment regimes. Virtual ERs train teams in highly realistic, stressful environments, preparing them for the mass casualties natural or man-caused disasters could produce. Healthcare simulation, in common with all simulation training, is a great cost saver—of obvious importance as the U.S. grapples with spiraling healthcare costs now and for the foreseeable future.

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fair assessment of each abstract and paper, and their willingness to assist our authors throughout the process.

Our committee originally received a total of 104 abstracts, covering a wide range of topics, including medical, irregular warfare, intelligent tutors, intelligent agents, augmented reality, cyber warfare and mobile. Sixty-nine abstracts were selected to go on to development of a paper. The sub-committee's bird dogs are diligently working with each of our authors to ensure that the authors have the very best chance of having their paper selected for presentation at I/ITSEC 2011. Our goal is to raise the percentage of papers that are submitted by proactively working with the authors, ensuring they meet all their writing gates.

The ECIT Subcommittee focuses on emerging and innovative technologies, methodologies, or concepts associated with training, simulation and education. Based on the quality, breadth and depth of the abstracts approved to develop into a paper this year, I am confident that once again our sessions will be invigorating, insightful, and very educational for our entire community.

Simulation Subcommittee



Bob Lutz

by Bob Lutz

Simulation is a critical enabler of many of the core functions performed by today's acquisition professionals. Having worked in this field for over 30 years, I have seen firsthand how simulation can substantially reduce risk throughout the various acquisition phases. I began participating in I/ITSEC about 14 years ago as an exhibitor, but was quickly drawn to the paper sessions due to the vast range of high quality information being provided on advanced, reusable simulation technologies. Since I believed that these sessions provided a valuable public service, I joined the Simulation Subcommittee several years ago, and I am now especially proud and grateful to be chairing the subcommittee this year.

The Simulation Subcommittee is comprised of 15 industry and 13 government members. These members represent a broad and diverse cross-section of the simulation community, each with special talents and experience in various aspects of the simulation domain. This diversity is necessary to cover the broad range of simulation topics that are addressed by this subcommittee. In addition to having such a talented team, I am also fortunate to have Dr. Bill Gerber (a past subcommittee chair) as the deputy for this subcommittee, who has been an invaluable resource that this "rookie" chair draws on frequently for advice and guidance.

The Abstract Review this year was very successful. The subcommittee began the day with a total of 81 abstracts, of which 46 were accepted. These 46 abstracts cover a wide range of simulation topics, although many focused on technologies for rapid integration of Live, Virtual, and Constructive simulation assets, particularly for training applications. The diversity of the background of subcommittee members led to some interesting discussions on the criteria for acceptance, and the quality of the abstracts made for some difficult decisions. The subcommittee worked very hard that day, and I was very pleased with the professionalism and enthusiasm shown by subcommittee members throughout.

At this point in the process, subcommittee members that volunteered to "bird dog" are actively engaging with their assigned authors to ensure a smooth transition from abstract to a complete, informative, and interesting paper. This is a strong focus within our subcommittee this year, as we are striving to get the proportion of approved abstracts to submitted (and cleared) papers to be as close to 100% as possible. This involves developing a strong working relationship between bird dogs and authors, and having frequent and open communications throughout the process of paper development. Bill and I are working closely with the bird dogs to ensure that our outreach efforts to the authors are effective, and that we have a rich set of papers to work from at the 20-21 July Paper Review in Reno.

I am confident that the Simulation Subcommittee will have a very strong program in

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2011 I/ITSEC Accepted Abstracts

EDUCATION

Understanding the Impact of Intelligent Tutoring on RealTime Training Simulations

Technology - Changing Our Youth's Brain Structure? What to Do?

Integrating Adaptive Simulation into US Army Classrooms

From eLearning to mLearning: The Effectiveness of Mobile Course Delivery

An Application Guide for the Eightfold Path Model

Operation Lost Paradise

Assessment of Culture Knowledge and Survival Language Skill Predeployment Training

An Approach to Accelerated Learning and Psychophysiological Measures of Engagement

Civil-Military Operations: A Competency Model for Successful Teaming

Training on Cultural Aspects of Planning Humanitarian Assistance Operations

After Action Review Best Practice – An International Review

Mobile Technology an Asset in Education at a Staff College

Developing Tactical Cunning

Recommendations to Assist Cognitive Mapping in Adults Training with Technology

Leveraging Communities of Practice to Enhance Professional Development

Improving Knowledge Transfer Across the Globe

Improving Soldier Threat Detection Skills in the Operational Environment

A Concept Paper for Army Cybersecurity Force Transformation and Training

The Great Migration: DAC Pioneers LMS Content Conversion

Educating the Acquisition Workforce Utilizing Social Media & Other

Computer animations are effective to learn a complex obstetric procedure

Virtual Humans vs. Pre-Recorded Humans in Standardized Patient Training

Building Effective Leader Teams Faster

Joint Personalized Assisted Learning Profiler for Joint Individual Training

Testing Flash-based 3D Instructional Games – No Additional Plugins Needed!

Weaving Training into Operational Contexts to Improve In-Theater Performance

The Mobile Combat Medic Card and Combat Lifesaver Games

Cognitive and perceptual skills involved in Combat Hunter expertise

Investigating The Impact of Training on Performance

Web-Based 3D Anatomy and Procedures for Health Care Education

Developing Remote Training Tools for Company Intelligence Teams

Unannounced Phishing Exercises and Targeted Training: Results and Lessons Learned

Instructional Effectiveness of Avatar Technology for Performance-Based Training

Virtual Humans Can Teach New Officers Interpersonal and Leadership Skills

Diagnostic Learning Progressions Framework to Improve Outcomes of Training Initiatives

A General e-Learning Theory

Safety Onboard - Using a Virtual Environment for Submariner Orientation Training

Force Preparation - New techniques for developing collective training environment specifications

EMERGING CONCEPTS AND INNOVATIVE TECHNOLOGIES

Adaptive, Computer-based Tutoring Systems

The Virtual World Ecosystem Framework

Generic Game Engine: Distributed Collaboration Using Cloud Technology

Supporting Cyber Security: Social Media Network Analysis Using NodeXL

Balancing Training Value and the Risk of Exposing Sensitive Information

A Multidisciplinary Approach to Enhancing Infantry Training Through Immersive Technologies

Generalized Ontology Discovery Enabling Semantic Search (GODESS)

Stimulated Passive Coherent Location Networks for Detecting Low Observable Targets

Leveraging Graphics Processor Capability to Uncover Hidden Terrain Database Errors

Application of Augmented Virtuality to Close Air Support JTAC Training

Evolving Product-line Architectures utilizing SOA, Virtualization, and Cloud Computing

Weapon Orientation Technologies for Soldier Training

Toward the Implementation of Augmented Reality Training

A Critical Decision Making Training Framework for Leadership Development

A Neurophysiologic Approach for Real-time Adaptive Training of Teams

Rapid 3D Simulations: Scripting Tools Which Streamline Design Cycle

Cognitive Map-based Modeling and Simulation for Tactical Decision Training

Mobile : Next Generation Training

Natural Full Body Interaction for Navigation in Dismounted Soldier Training

Cognitive Skill/Stance Hierarchy: A "New" Military Training Framework

A Framework for Adaptive Scenario Management

Explosive Fragment Engineering Visualization and Virtual Reality Demonstration Project

Shared Reality: Integrating Virtual Worlds, Constructive Simulations and Collaborative Tools

Viral Learning: Taking Advantage of All Channels to Learning

A First-Step Approach to Virtual Locomotion

Recognition of Hand Signal Gestures Utilizing Inertial Sensor Inputs

ReflectiveRedo from the Point-of-Failure in 3D Virtual Environments

Mobile Development : Lessons Learned

Applying Training Analysis and Game Design toward Cyber Warfare Training

Improving Clinical Decision-Making Skills Using Representative Medical Records

CloudSAF – Virtualizing Simulation in the Cloud

Measuring trainee intent using low-cost, high-impact cognitive models

Modeling Trainee Affective and Cognitive State Using Low Cost Sensors

Using Virtual Companions to Provide Psychological Health to the Warfighter

Design and Evaluation of an Omnidirectional Floor for Synthetic Environments

Learning Analytics: Navigating the Data Deluge

Animatronics and Other Practical Mechanical Effects in Simulation Training

ADAPT-AAR Training Effectiveness Evaluation

Studying Listener Comprehension of Sonifications through Visual Replication

Experiences in Leveraging M&S Expertise by Hiding Software Complexity

Human Modeling and Simulation with High Biofidelity

The Bridge Project: Open Source Transformations from S1000D to SCORM

The Learning Registry: Sharing Federal Learning Resources

SimCoach: An Intelligent Virtual Human System for Providing Healthcare Support

Enhancing Command and Control Training

Model-based Reasoning Pedagogy in Immersive 3D Simulations

Batteries or Bust: Android Mobile Platform for Personnel Tracking

Rapid Intelligent Avatar Training System Development

Real Time Image Generation for Underwater Simulation

Unifying High-Level Models for Intelligent Tutoring Systems

Plug and Play C2 Connectivity for Training

A Scenario Development Tool for Advanced Instructional Strategies

Social Training in the Military

Applying Lessons from Multi-role Experiential Learning to Adaptive Thinking

Rapid Prototyping of Training Scenarios for Immersive Systems

Systems and Content Integration in the Next Generation Learning Environment

Cost-effective, Simulated, Representative (Human) High-fidelity Organosilicate Models

Urban Area Design Analysis for Optimization

Automated Support for Learning in Simulation: Intelligent Tutoring of Shiphandling

Modeling IW - A Framework to Connect the Dots

Rapid Development of Intelligent Agent Teams via Behavior-based Control

Media Usage and E-Learning Effectiveness

Exploring Student Model e-Portfolios for Game-based Training

Markerless Full Body Tracking: Depth Sensing Technology Within Virtual Environments

Developing and Deploying Virtual Worlds for Diverse Communities

EADL 3D Repository: A Blueprint for Discovery and Access

Non-local Formulation of Physical Modeling of Human Tissues

Non-local Formulation of Physical Modeling of Human Tissues

Broadening Quantitative Analysis of Distributed Interactive Simulation with Data Mining

3D Engines for Mobile Platforms

HUMAN PERFORMANCE

Disaster Response, Factors Influencing Emergency Operations Center Team Performance

Enhancing Performance through Pedagogy and Feedback: Domain Considerations for ITSS

Using Human Centered Design to Improve Flight Condition Situational Awareness

Simulating a Vigilance Task: Technology for Valid Homeland Security Research

Assessing Learning from a Mixed-media, Mobile Counter-IED Trainer

Training Collaboration for an Army Digital System

Mitigating Visual Anomalies for Binocular HMDs integrated with Faceted Simulators

Crowdsourcing Expert Performance to Improve Training at Cyber Speed

Applying Competency Modeling to the Development of C-IED Assessment

Virtual Locomotion Concepts and Metrics Study: Phase II

Evaluating the Impact of Dynamic Fidelity on Performance

The Impact of IMPRINT Maintenance Modeling for the Stryker ICV

Design, Implementation, & Evaluation of a Pointing Device For Wearable Computers

Development of Scenario-Based Pre-deployment Counter-IED Training

An Implementation of a Mathematical Stress Model

Developing a Synthetic Evaluation Environment for UAV Technology

Effects of Motion Cueing on Components of Helicopter Pilot Workload

Military Relevant Adaptive Virtual Environments for Assessment and Training

Stress Resilience, Virtual Environments and Allostatic Load

Science-based Tools for Soldiers to Develop and Communicate TTP

Simulations as Performance Assessment Instruments: A Case Study	M&S Standards Management and Evolution	Biofidelic Virtual Terrorist—A Tool for Human Threat Recognition Training	The Selection of Realistic Training Environments for Tactical Aircrew Training
Game-based Training: Coming of Age	M&S Communities of Interest (COI) Data Management	Customizable Speech Centers for Automated Entities within Simulation	Enhancing Simulations with Instructionally Effective, Relevant Conceptual Models
Integrating Metrics and Objective Performance Feedback into Combat Medic Training	SIMULATION	Current Applications and Challenges of Dynamic Terrain in Simulation Environment	Overcoming Challenges of Measuring Skill Decay in Applied Settings
Building an Educational Game with Unusual Design Constraints	Automating MSDL Scenario Generation and Entity Integration For Simulation Events	Real-Time Physics Based Dynamic Terrain Effects for Combat Engineering	Executing Next Generation Training: Employing Adaptive Stance in Combat Identification
Assessment Architectures for Development and Validation of the TAO Sandbox	Holistic Design Approach to Analyze Cybersickness in Motion Simulation Environments	Improving Trainee Engagement Levels Through Adaptive Entity Behaviors	VR Environment Creation: Cutting Production Costs Through Innovation
Tools and Techniques for Managing Expert Input into Virtual Simulations	SOA Pilot Structure for M&S LVC Architecture Interoperability	Modeling and Simulation for Joint Fires Support	The Role of Human Instruction in Advanced Learning
Rotary Wing Designated UAS Operator Training Simulator	Advances in Gateway Products and Processes for LVC Simulation Environments	Tool for Virtual Environment Training Simulators Development using Dataflow Architecture	Development and Evaluation of the HapMed Training Suite
POLICY, STANDARDS, MANAGEMENT, AND ACQUISITION	Infrared signature development process supporting ROCV training and NVIG simulation	Using a Commercial Game Engine for Rapid Simulation Development	Integration of Coalition Training into a Mission Network
A Framework for Applying KM Principles to the ISD Process	Improving Scalability of Large Federation that use UDP Multicast	Framework for Managing Dynamic Damage to Buildings across Federated Simulations	Persistent Learning Capability: It's Your MOVE
PDistributed Mission Operations Cross Domain Solution Remote Management in Practice	Raising The Bar On Military Medical Part Task-Trainers	Physics-based Damage Assessment on a Mobile Platform	Finding the Truth: Interview and Interrogation Training Simulations
Towards a Modeling and Simulation Interoperability Standard for Cybersecurity	Ensuring Forward Compatibility On Networked Simulations	Enhanced Projection for Intelligent Entities in Simulation	The F-35 Visual System: A Milestone Standard in Training
C-130J Meeting The Challenges of International Training	Rendering Large Scale Synthetic Urban Terrain	Integrated Modeling, Mapping, and Simulation (IMMS) Framework User Interface Generation	Next Generation Transformational Cognitive Training Solutions
Employing the Second Generation Software Product-line for Live Training	Alternative Method for Smoothing Distributed Entities in RealTime Virtual Simulation	Prototyping the Low Overhead Driver for Training Simulations	Augmented Reality Cueing to Enhance Perceptually Based Training Tools
FASIT Standards: Approach to Performance Based Product-Line Standardization	Best of Both Worlds: DIS Identifiers in an HLA Federation	Creating Microexpressions and Nuanced Nonverbal Communication in Synthetic Cultural Characters	Development of a Scenario Design Tool for Counterinsurgency Training
Proven Strategies for Securely Simulating Simulators and Training Systems	Optimizing Network Performance in Simulation Games Using P2P	TRAINING	Design Framework for Mapping Pedagogical Requirements within Advanced Training Systems
Optimizing Training Schedules – A New Approach	Interoperability-Ready, Training-Focused Architecture	The Final Count Down	Burr Hole Creation Simulation-based Training System
Improving Virtual / Constructive Training and Experimentation with Human Adjudication	SmartGroups for Modeling Life in Urban Environments	TMilitary Machinima – Visually Recreating the Operational Environment Using Gaming Technology	Usability Analysis of Part Task Trainers Developed for Tourniquet Training
Revisions to the SCORM Best Practices Guide: Cognitive Needs Analysis	A Framework For Autonomous Agent Simulation With The CryEngine	Training Effectiveness Metrics in a CDS Environment	Herding CATS: The Making of Combined Arms Training Strategies
Plausible Approach to Open Source Development in a DoD Environment	Streaming Terrain for Virtual and Constructive Simulation	Streamlining Security Testing and Increasing Cyber Security Assurances Using Automation	Training Efficiencies through Architecture Fusion
Modeling and Simulation, STEM, and K-20 Education	Proposal for a New Technical Direction in Helicopter Flight Simulation	Using Civilian Simulation Centers for Reserve Component Medical Unit Training	Applying Gagne's Model for Effective 3D Virtual World Training
Data Analysis in Support of Enlisted Human Capital Policies	Capability vs Useability — A Balance Within Semi-Automated Forces	Taking the Virtual Leap of Faith	Improving After Action Reviews through Capture of Subject Matter Expertise
Embedded Training: Imperatives for Success with the System Platform Developer	Tailoring Data Collection for Evolving Analytical Federations	Item Response Theory Facilitates Adaptive Training for Disparately Skilled Trainees	A Simulation Study to Reduce Helicopter Pilot Training Backlog
Predicting Business Process Performance with 'Real World' Queuing	Just-in-Time Modeling: A New Paradigm for Tactical Agents	Leveraging Mobile Technologies to Revolutionize Navy Non-Resident Training Courses	58th TRS Training Transformation: Increased Training Effectiveness and Student Throughput
Towards a Decision Support System for Simulation Training Display Requirements	Real-Time Tracking in Multiple Game Engines for LVC Training	Synthesis of C2 Integration/Interoperability Testing for Training and Simulation	Yes You Need Virtual Maintenance Training: An Exposition of Why
Battle Master: Centralized Federation Management	Are Current Modeling Architectures Viable for Rapid Human Behavior Modeling?	Mobile Learning in Military and Civilian Trauma Training	Using the Apple iPod on the I-MILES TVS Program
Avoiding Legal Peril: Tips for Simulation Companies Dealing with Governments	OmniScribe - Enhancing AAR in an LVC Environment	Live Training Instrumentation for Unmanned Systems: Challenges and Lessons Learned	Keeping Up with Game-Based Training: Multimedia Training Support Packages
Can Acquiring Structured Data Improve a Learning Content Development Environment?	A Game AI Approach to Autonomous Control of Constructive Characters	Evaluating Training Effectiveness: Instructional Support Software vs. "Winging It"	An Evaluation of Pistol Skills Acquisition: Simulation to Live-fire
Development Challenges for Adoption of ARINC Functionality in UAV Trainer	Pluggable Brains: Separating the Intelligent Behaviour from the Simulated Player	CAF DMO Distributed Training Center - Supporting Warfighter Requirements	The FITE JCTD: What We Learned About Infantry Immersive Training
Next Generation Modeling and Simulation Architecture	3D Spatial Audio Extraction and Presentation from Game-Based Simulations	Critical Components of Effective 3D Virtual Learning Environments for Medicine	From Design Modeling and Simulation to Combat Readiness Assessment
Certification of Threat Environments in Aircrew Training Devices	Rapid Data Generation for Modeling and Simulation	MH60S/R Helicopter Multi-Platform & Web-Based Trainer with Acoustics	Empowering Healthcare Teams to Learn, Practice, and Perform Patient Care
Designing Relevant and Current Training Systems that are Economically Viable	THREADS—Tying It All Together	Anytime, Anywhere Military Urban Operations Training	
M&S Asset Discovery - Data, Tools, Services and their Metadata	A First Person Shooter/Real Time Strategy Hybrid: Lessons Learned	Leveraging Service-Oriented Architectures (SOA) within Live Training: An Assessment	
Optimal Billet Matching for Fit Research	An Instructor-Centered Declarative Approach to Modeling Synthetic Environments		
Australian Army Matching Campaign Plan	Understanding Impact: Enriching Cultural Training with a Persistent Virtual World		
	Lessons from M&S Contributions to the Global Financial Collapse		

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In like manner, simulation technology has lately permeated other areas involving a variety of predictive applications, from complex models of social systems to weather analysis and prediction to a wide variety of stress analysis determinations in construction and other similar applications. Maintenance training is an area which has emerged almost from nowhere in the past few years to being an invaluable tool in cost-effective equipment maintenance, both civilian and military. These applications can only expand, both in accuracy and in range of application, as processing power continues its steep upward curve.

We clearly face constant or declining defense outlays for the next several years at least. The role of modeling and simulation technology in alleviating some of the adverse consequences of this situation becomes even more important and obvious than in happier days. The man-machine interface, as I have mentioned, is now a very mature technology with simulation replicating very closely the sights, sounds and feel of the real thing. This fidelity allows us to supplant, to a great extent, live platform training. Every hour spent in a simulator is an hour's fuel saved, as well as lubricants, and even use of land, in the case of surface vehicles. It also means savings in expensive replacement parts and major overhauls, reducing as it does wear and tear on our already overtaxed equipment. "Down time" is thus reduced, making equipment more mission-available. Less time spent on maintenance translates directly into personnel savings and availability of personnel for other duties. Simulation thus contributes directly to a reduction in DoD's Operations and Maintenance and Personnel accounts—savings that can be redirected into other critical categories such as R.T.D.&E. and Procurement.

If we take a look at modeling and simulation applications in force structure determination, we see a dramatic increase in the role played by the technology. A good example of this is the JTLS—the Joint Theater-Level Simulation, which has become an important tool for training across services, distance, and time. While the JTLS focuses primarily on the operational level, it incorporates significant tactical level capabilities, making it uniquely suited to modeling multi-sided coalition warfare. JTLS, by modeling air, ground and naval elements with special operations and logistical support, incorporates all elements of simulation—live, virtual and constructive—into a seamless, distributed learning environment. The JTLS also incorporates links to most in-use C4I environments and other models through customized interfaces, allowing maximum flexibility, including high-level architecture applications. A further recent refinement of JTLS has been the development of JCATS—the Joint Conflict and Tactical Simulation, which provides the lower, or entity-level representation with JTLS integrating the JCATS into the higher-level aggregate representation. By constantly updating the interactions of all elements and inserting them into a matrix, the interplay of force structure decisions can be observed and adjustments toward the optimum force mix made. JTLS is also an enormous money-saver, as by creating artificial conflict environments across continents, it can supplant highly expensive, time and resource-consuming live exercises. An additional learning outcome is that it inculcates in the participants the habit of thinking in a joint operational context.

I have been asked to say a few words about efforts we at NTSA are making in concert with our elected representatives

on behalf of the industry and community we represent. While it would be inappropriate and presumptuous of me to suggest ways you at SIAA could interface with the government of your country, perhaps I can provide some information that might be applicable in your context. For a number of years, NTSA has enjoyed a close and very productive working relationship with the Congressional Modeling and Simulation Caucus, ably headed by Representatives Randy Forbes and Solomon Ortiz. We worked in concert with them to develop House Resolution 487, which designated modeling and simulation as a national critical technology. Recently and again with the active participation of the Caucus, we convened a meeting of key industry stakeholders and others deeply involved in the simulation community to establish the goal of having modeling and simulation recognized as a discipline, a profession, and an industry and market with its own identity and one that is critical to meeting the socioeconomic and technological challenges facing our nation. Modeling and simulation's very success in permeating much of human technology may have created a problem here, as it may well have become so embedded in all technology and human learning that its signal, individual contribution has been obscured.

NTSA and the Modeling and Simulation Caucus also collaborate in presenting an annual exhibition of M&S technology on Capitol Hill each year, with the aim of raising awareness among our elected representatives and their professional staffers of the vitality of the industry and the significance of its contribution to the national welfare.

I would be remiss if I did not touch on another area in which modeling and simulation can play a vital role. We must, with urgency, develop an effective national defense against cyber terrorism that protects our communications infrastructure—including military and other national security assets—as well as our civilian emergency response infrastructure and our economic and commercial networks. Much attention and effort, at the national, regional and local levels, is now being directed against this challenge, with good reason. A successful cyber attack could cause cataclysmic and long-lasting damage to each of these vital nodes. While technology has made us much more vulnerable to cyber threats, simulation can play an important role in preparing for such an onslaught, through its ability to replicate complex theoretical events and train for optimum outcomes. This is a challenge of utmost national concern, and one I call on industry to meet. Modeling and simulation has unique attributes that can very significantly reduce the consequences of a wide range of cyber aggression if we use it promptly and appropriately as an integral part of our preparations.

In closing, it might be instructive to note the advantages and limitations of training technology as it exists today in the recent dramatics surrounding the dispatch of Osama bin Laden to his virgins in the sky who have undoubtedly been waiting patiently all these years. While it has rightly been pointed out that bin Laden's demise may not have signified a turning point in our efforts against global terrorism, it nevertheless demonstrated the reach and power of we Western infidels to those who would establish the worldwide Califate.

It seems clear from what we know of the operation that both virtual and live training were utilized in its preparation. While

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the stealth helicopter crews very likely rehearsed their mission repeatedly in a virtual simulation environment, their colleagues no doubt trained in "shoot houses" specially constructed to replicate all observable features of Osama's residence, gathered from both human and signal intelligence. Each training environment, I submit, was best suited to the differing nature of the two operational environments—the delicate and stealthy air insertion of the SEALs and the rapid neutralization of the building's inhabitants and exploitation of its contents. I also might point out that the construction and use of the actual replica of Osama's house probably pointed up a few of the limitations of live training—it was relatively expensive and time consuming to construct and would have required some effort to modify had new or more complete information concerning the physical structure of the target come to light under further examination. None of these drawbacks would have been a problem with the virtual training environment of the helicopter crews. Had new information emerged concerning possible Pakistani air defenses, or, more probably, about the physical grounds of the compound itself, the simulation could have been adjusted practically in real time and at minimum cost to take these into account. This is emphatically not to discount the value of live training—it is irreplaceable and will remain so for the foreseeable future for actions like the bin Laden takedown. But, as virtual worlds become more of a possibility, some of the limitations of live training will become more apparent and will likely slowly yield to the inherent advantages of the virtual world.

All these remarkable developments in the way we prepare for dangerous, complex tasks are allowing us to approach new levels of excellence in how we train. This in turn means more assurance in mission achievement. As our challenges become

more complex and nuanced, training of course must adjust accordingly. The remarkable fluidity of modeling and simulation technology—its ability to rapidly respond to new and unexpected training requirements—has been in ample evidence over the past decade and shows no signs of diminishing. Quite the contrary—the pace of the technology's development assures that excellence in how we prepare will continue to be the bedrock of our defense capabilities. This is for the best, as our adversaries have shown a remarkable ability to minimize their weaknesses and exploit areas of relative vulnerability at every opportunity. That they have not succeeded in their main objectives and indeed have been firmly placed on the defensive—forced to react to our initiatives rather than the reverse—again, in my view, shows how far we have come in the art of operational excellence in areas that were virtually unexploited only a decade ago. Excellence is therefore the plateau on which we must always strive to stand. The pursuit of perfection lies beyond—unattainable, as I have said, but worthy of our constant effort, if only to assure that we remain fully rooted in that excellence we have won and would relinquish at our peril.

Thank you for according my remarks perhaps more attention than they deserve. I hope you will agree, at least, that what I may have lacked in brevity I more than compensated with superficiality. Actually, what I have attempted to do is to present a few of the issues and challenges facing a remarkable technology and the community that supports it. Its future, I believe, is truly one of enormous promise. Having observed modeling and simulation's remarkable growth and maturation over the past decade and more, I look ahead with some degree of awe as I contemplate a future in which reality and its virtual counterpart will coexist and blend seamlessly—to the benefit of us all.

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2011, and I hope that many I/ITSEC participants recognize all the hard work that went into this program and take advantage of the opportunity to learn about what is new in the world of simulation and gaming. I look forward to seeing you there!

Training



Karen Pogoloff

by Karen Pogoloff

To the echo of ALL ABOARD, the members of the 2011 TRAINING Subcommittee announced their arrival at the first stop to I/ITSEC 2011...the Abstract Review in Palm Springs, CA on March 30 and 31. The Subcommittee is composed of 30 leaders from the training and simulation industry who represent the full-spectrum of our industry. Members include:

- Every branch of the U.S. armed services including both military and government civilians
- Very small minority-owned businesses to large multi-national corporations
- Those with five years of industry experience to over 40 years of experience
- Those with technical expertise from psychologist to systems engineer to CEO
- First-time Subcommittee members to those with more than ten years of I/ITSEC service

As one of those with many years of service to I/ITSEC, it is my privilege to have been selected from among my industry peers to lead the Training Subcommittee for 2011. Having such an enthusiastic, dedicated, and knowledgeable Subcommittee has made this assignment so much more rewarding than ever anticipated. Scott Ariotti (the most able and supportive Training Subcommittee Deputy) and I are confident that this year will have one of the very best I/ITSEC Training tracks ever.

The abstracts submitted to the Training Subcommittee focus on "the application of technologies and integration of systems into training system solutions...practical concepts and technologies applied at the training systems level." As happens every year, the

abstract submissions trickled in slowly, but ultimately we received 71 to review. This is slightly down from 77 submitted abstracts in 2010. We accepted 47 of the abstracts (66 percent) to develop into a paper for consideration at the Paper Review in Reno, NV on July 20 and 21. The two primary areas for evaluation of abstracts were:

- **Substance.** "The controlling idea and the support for it. The total concept the author wants to present. A good idea can survive mechanical flaws, but perfect spelling and grammar can't save poor ideas."

- **Originality.** "A new concept that furthers the evolution of the Subcommittee's subject area. A repeat of past theories that add nothing to the community of knowledge are generally unacceptable, unless the prospective abstract promises to impart knowledge that may be of substantive value to a novice audience."

Abstracts covered a broad spectrum of topics including training effectiveness, cyber security, mobile technologies for training, unmanned systems, 3D virtual learning environments, conceptual instructional models, measuring skills decay, augmented reality cueing, After Action Reviews (AAR), game-based training, combat readiness assessment, and Reserve Component medical unit training. One-third of the accepted abstracts were from government authors, the remaining from industry and academia.

A "birddog" was assigned to each of the accepted abstracts. Each member of the Subcommittee is serving as a birddog, with more experienced members of the Training Subcommittee birddogging two or more abstracts. The birddog's job is to work with the author(s) to ensure that the comments of the Subcommittee gathered during the abstract review are addressed and that the developed paper fully meets the standards of I/ITSEC. One of our goals for 2011 is to have the I/ITSEC Best Paper come from the TRAINING Subcommittee. Key to achieving that goal is fostering the working relationship established between the birddog and author.

With the acceptance of the 2011 abstracts and the development of the papers underway, the TRAINING Subcommittee is fueled and on schedule for the next stop on the journey to I/ITSEC 2011.

NTSA Awards First Secondary School Scholarship



Deaunna Watson with Howard Hein of L-3 Communications, President of the NTSA Ohio Chapter.

The National Training and Simulation Association presented its first secondary school scholarship to Deaunna Watson, a Senior at the Dayton Early College Academy (DECA), during a ceremony at the May USAF Advance Planning Briefing for Industry. The \$500 award, to be dedicated to college tuition expenses, will become an annual feature of the APBI event, and will be offered to DECA

Seniors intending to pursue college level studies in science, technology, engineering or math (STEM). Ms. Watson plans a career as an educator, and was therefore judged to be particularly worthy of the award, as she will influence the choices of young people as she introduces them to the challenges and rewards of STEM. The scholarship will be administered with the college or university of Ms. Watson's choice once her enrollment is complete.

The May 24 scholarship award was part of the annual USAF Advance Planning Briefing for Industry, an annual event organized by the Ohio chapter of NTSA in cooperation with the USAF Training Systems Product Group.

This year's APBI featured presentations on upcoming Air Force training system procurement actions, as well as projections of future training system needs.

Future Events

August 2-4, 2011

ADL Implementation Fest 2011
Rosen Centre Hotel
Orlando, FL

November 28-December 01, 2011

Interservice/Industry, Training, Simulation and Education Conference (I/ITSEC) 2011
Orange County Convention Center • Orlando, FL