MSIAC M&S Newsletter

January/February 2010 1

Welcome to the January/February 2010 edition of the Modeling and Simulation Information Analysis Center (MSIAC) M&S Newsletter. This issue presents a variety of M&S articles and events from communities enabled by M&S within the Department of Defense and beyond. We hope you enjoy the January/February edition and look forward to your comments.

Although the wordings in the excerpts may not always correspond to official DoD usage, the full articles available through the links provide valuable insight into the applications of M&S technologies throughout the community.

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ISSUE SPOTLIGHTS

Army M&S awards announced

WarCap supports decision makers

Directorate of Simulation and Training provides solutions

Examining video gaming benefits

Virtual reality therapy for PTSD

Project lays path for cyberspace operations

UAS/NAS simulation

US Marine Corps expand immersive training

2010 DTIC Conference

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The following article on the Army Modeling and Simulation award winners, was contributed by the Army Modeling and Simulation Office (AMSO).

ARMY MODELING AND SIMLUATION OFFICE ANNOUNCES 2009 M&S AWARD WINNERS

The Army Modeling and Simulation Office (AMSO) recently announced the winners for the 2009 Department of the Army Modeling and Simulation (M&S) Awards. "M&S in Support of the Army in a Period of Persistent Conflict" was the theme for this year's awards. General George W. Casey, Jr., Chief of Staff, United States Army, in his keynote address at the Center for Strategic and International Studies, 28 May 2009, described how the Army is in the process of shifting institutional focus to full spectrum dominance to deal with hybrid threats by adding greater versatility across the spectrum of conflict.

Since 2003 AMSO has conducted this program to acknowledge superior contributions in modeling and simulation efforts across the Army in the categories of Acquisition, Analysis, Experimentation, Testing and Evaluation, Training, Plans and Operations, and Cross-Cutting disciplines. Forty nine nominations were received, reviewed and rated based on criteria including how well the submission supported the theme and what benefits were, or will be, realized by the Army because of these effort. Individual and team efforts were considered in each category.

The awards were presented by Mr. E.B. Vandiver, III, Director, Center for Army Analysis, on December 2, 2009 at the Interservice/Industry Training, Simulation & Education Conference (I/ITSEC) in Orlando, FL.

Details on the winning submissions can be found at http://www.ms.army.mil/about/awards/FY09-awardWinners-list.html on the AMSO home page. For further information or details, contact

Mrs. Betty Jones of the Army Modeling and Simulation Office at betty.jones2@us.army.mil. For complete article from AMSO, click here.

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The following article on innovative support to decision makers by the Warfighter Capability Demonstration Center (WarCap) was contributed by Eric Reuter, Senior Exercise Planner at the WarCap.

WarCap BRINGS CONVENIENCE, INNOVATION TO DECISION MAKERS

In 2002 a problem stumbled across a solution. The Joint Expeditionary Forces Experiment (JEFX) conducts rigorous capability testing in a Joint live, virtual and constructive environment encompassing air, space, naval, and ground forces. That year, the Global Cyberspace Integration Center (GCIC) hosted JEFX at Nellis Air Force Base, Nev.—and the experiment, directed by the Chief of Staff of the Air Force, was clearly doing good work.

But for many senior leaders and policy makers, JEFX's late-July timing conflicted with final preparations for the Congressional recess in August. Despite the enticing nature of Las Vegas, it was difficult to get Pentagon decision makers to travel to the event.

Enter the Warfighter Capability Demonstration Center, an Air Force-owned Pentagon facility that can bring potentially any exercise or experiment outside the Pentagon into the building, virtually.

By leveraging the WarCap's staff, network infrastructure, and conference room capabilities, the GCIC was able to locally host in the Pentagon a real-time view of the experiment at Nellis. In doing so, they gained an audience with otherwise unreachable senior leaders and media representatives. Like Hellfires on Predators, it was a match made in heaven.

Time has passed since that first collaboration; Combined Air Operational Center Experimental (CAOC-X) now hosts JEFX at Langley Air Force Base, Va., and the experiment now occurs quarterly instead of biennially, but GCIC's problem of reaching key leadership remains. However, with the WarCap just down the hall for many general officers and senior leaders, it's a little harder for GCIC's target audience to say "my schedule won't allow the travel". Since the intent of JEFX is to aggressively expedite deployment of rigorously tested warfighting capabilities, or "initiatives," to the tip of the spear, leadership awareness of the initiatives being tested is key to the success of the experiment. Now more than ever, if you can't get them to come to you, bring it to them instead.

On May 7, 2009 GCIC once again used the WarCap's Pentagon location to locally host demonstrations of key JEFX initiatives and explain the continued value of the experiment. By leveraging the WarCap and its capabilities, the GCIC was able to engage an audience that might otherwise have received nothing more than an e-mail with an eye-glazing Powerpoint summary.

But in the case of JEFX 09-3, attendees were able to speak directly with GCIC leadership and initiative representatives, and see first-hand the potential of those new capabilities. This was all accomplished while generating discussion amongst their peers, and saving travel budget and time off station. With only an hour of their calendar occupied, they left the WarCap engaged, informed and prepared to make decisions necessary to keep our military's talons sharp.

For more information about JEFX or JEFX 10-3 in the WarCap this summer, call Lt Col Eric Olson at 757-225-2134. To discuss WarCap support for your exercise or program, call 703-693-0410.

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COL Stephen Seitz, the Director of Simulation and Training Support at the Joint Multinational Training Center in Grafenwoehr, Germany, has provided a short summary of simulation-related training capabilities being used in U.S. Army Europe (USAREUR). The complete article was published in the 7th United States Army Joint Multinational Training Command Training Journal Summer / Fall 2009.

DIRECTORATE OF SIMULATION AND TRAINING SUPPORT PROVIDES TRAINING SOLUTIONS

The Joint Multinational Training Command (JMTC) is located in Grafenwoehr, Germany. In April, 2009, the JMTC formed the Directorate of Simulation and Training Support (DOS-TS) to focus on training programs and initiatives related to Live, Virtual, Constructive, Gaming, and Battle Command Integration (LVCG-BCI) for U.S. Army Europe (USAREUR) units. The directorate has two divisions: the Training Support Activity Europe (TSAE) and the Joint Multinational Simulation Center (JMSC). DOS-TS personnel are currently assigned throughout the US Army Europe (USAREUR) footprint at 18 locations in seven countries.

Live - One of many capabilities TSAE provides is the Deployable Instrumentation System Europe (DISE) Team, which can facilitate instrumented After Action Reports (AARs) anywhere USAREUR Soldiers train. DISE is a combination of live instrumentation systems that provide enhanced training and AAR capabilities at home station and deployed training areas. The team has enough equipment to support 870 personnel and 300 vehicles, which is easily deployable and backward compatible with Multiple Integrated Laser Engagement Systems (MILES). It has a robust instrumented AAR capability that supplements observer / controller observations. DISE was recently deployed to support Task Force-East (TF-E), 2nd Stryker Cavalry Regiment led bilateral training with the Romanians and Bulgarians in their home nations.

Virtual - TSAE also manages a plethora of portable virtual simulators including: Engagement Skills Trainers (EST), Call for Fire Trainers, Fire Support combined Arms Tactical Trainer, GUARDFIST Observed Fire Trainers, Conduct-Of-Fire Trainer / Gunnery Trainers, Stryker / MRAP (reconfigurable) Driver's Trainer, and the Reconfigurable Vehicle Tactical Trainer (RVTT). TSAE recently completed construction at their Virtual Device Training Facility that will house mobile virtual devices located at Grafenwoehr when they are not deployed. This facility will be the home base for the trailer mounted simulators to include the newly acquired Reconfigurable Vehicle Tactical Trainer (RVTT) 360-degree virtual trainer, see Stars and Stripes article on the RVTT here.

Gaming - The JMSC provides gaming-based training for small units to practice Warrior Leader Skills and Improvised Explosive Device (IED) tactics, techniques, and procedures. JMSC uses Virtual Battlespace 2 (VBS2), a first-person simulation that allows Soldiers to virtually conduct mounted and dismounted missions on geo-specific terrain (which JMSC can create in-house) or geo-typical terrain. VBS2 has robust After Action Review (AAR) features. JMSC also recently acquired HUMINT Control Cell (HCC) suites. They are designed to train Human Intelligence collectors to effectively gather information but they can be used to train Soldiers to conduct tactical questioning. The HCC system uses state-of-the art speech recognition and translation software, artificial intelligence, speech synthesis, and a life-size projection as the training platform. Soldiers can interact with virtual avatars (an electronic image that represents and is manipulated by a computer user), to include interpreters, in a variety of scenarios.

Battle Command System Training - The JMSC trains USAREUR personnel to use battle command systems with their Digital University (DU). The instructors train well over 3,000 Soldiers per year to use 17 Army and commercial systems currently being used downrange. They conduct this training in their

classrooms at Grafenwoehr or they take the training to unit locations with their mobile training teams (MTTs). The DU also conducts over-the-shoulder training during exercises to teach operators and commanders how to effectively operate and integrate their battle command systems.

Constructive / Battle Command Integration - The JMSC conducts Command Post Exercises (CPXs) that incorporate a live Common Operating Picture from Iraq and Afghanistan. Some deployed unit position data is culled out and combined with future locations of participating units to form a hybrid environment of current real-world and simulated unit locations and events. This technique is supported by a realistic scenario and a dynamic Master Scenario Event List database. This allows actual events downrange to provide some of the context and events that are traditionally role-played. CPXs training is facilitated by the Joint Exercise Control Suite that enables low-overhead, multi-echelon, complex Live-Constructive-Gaming exercises with integration of battle command systems such as Force XXI Battle Command for Brigade and below (FBCB2), the Command Post of the Future (CPOF), Joint Conflict and Tactical Simulation (JCATS) and VBS2 (tactical gaming). This type of training has been praised by commanders. For the complete article from the JMTC Training Journal Magazine, with pictures, click here.

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The following article on the Office of Naval Research examining video gaming's benefits, originally appeared on the Department of Defense website.

RESEARCHERS EXAMINE VIDEO GAMING'S BENEFITS

WASHINGTON, Jan. 25, 2010 – Think interactive video games are a waste of time or more suited for children? Think again. Research under way by the Office of Naval Research indicates that video games can help adults process information much faster and improve their fundamental abilities to reason and solve problems in novel contexts.

"We have discovered that video game players perform 10 to 20 percent higher in terms of perceptual and cognitive ability than normal people that are non-game players," said Ray Perez, a program officer at the ONR's warfighter performance department in a Jan. 20 interview on Pentagon Web Radio's audio webcast "Armed with Science: Research and Applications for the Modern Military."
"Our concern is developing training technologies and training methods to improve performance on the battlefield," said Perez, who holds a doctorate in educational psychology.

Perez described the war against terrorists as presenting significant challenges to warfighters on the ground because they must be able to adapt their operations to innovative and deadly adversaries who constantly change their tactics.

"We have to train people to be quick on their feet - agile problem solvers, agile thinkers - to be able to counteract and develop counter tactics to terrorists on the battlefield," Perez said. "It's really about human inventiveness and creativeness and being able to match wits with the enemy."

It's also about adaptability. Perez said this means "being able to work outside your present mindset, to think beyond what you have been taught, to go beyond your experience to solve problems in new and different ways."

Perez used the term "fluid intelligence" to describe the ability to change, to meet new problems and to develop new tactics and counter-tactics. Fluid intelligence, he explained, allows us to solve problems without prior knowledge or experience.

This raises the question of whether fluid intelligence is innate or can be developed and improved.

"For the last 50 years, fluid intelligence was felt to be immutable," Perez said, "meaning it couldn't be changed, no matter what kinds of experiences you have."

This, he added, is related to the idea of brain plasticity. "The presumption was that the structure of the brain and the organization of the brain are pretty much set in concrete by the time you are out of your teens," he explained.

It once was widely believed that after the age of 20, Perez said, that most humans had achieved their brain cell capacity, and that new brain cells were acquired at the expense of existing ones. But conventional beliefs about brain plasticity and aging are changing. The video game-like training programs at the Office of Naval Research, he noted, are producing surprising results.

"We know that video games can increase perceptual abilities and short-term memory," he said. They allow the player to focus longer and expand the player's field of vision compared to people who don't play video games, he added.

While there is empirical evidence of increased brain plasticity in video gamers, Perez said, the process behind it is not well understood. His belief, he said, is that the neural networks involved in video gaming become more pronounced, have increased blood flow, and become more synchronized with other neural networks in the brain. For complete article from the Department of Defense, click here.

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The following article on virtual reality exposure therapy combating Post-Traumatic Stress Disorder (PTSD), originally appeared on the US Army website.

VIRTUAL REALITY EXPOSURE THERAPY TO COMBAT PTSD

FORT LEWIS, Wash. (Jan. 19, 2010) - This summer, thousands of Joint Base Lewis-McChord Soldiers will return home from deployments to Iraq and Afghanistan, ready to reunite with family and loved ones. But for some, the war will not be over.

The Improvised Explosive Device that killed their best friend while on a mission will play over and over again in a few Soldiers' minds. Others, who may have just finished up their third or fourth deployment in less than a decade, may recall traumatic events and describe them with little or no emotion, similar to giving results for an after-action review.

Behavioral health providers have treatment options for Soldiers dealing with these serious examples of Post Traumatic Stress Disorder, but one in particular is receiving lots of attention in the medical community – Virtual Reality Exposure Therapy (VRET).

The Department of Defense National Center for Telehealth and Technology, in partnership with the Defense Center of Excellence for Psychological Health and Traumatic Brain Injury, and the Department of Psychology at Madigan, were funded by the United States Army Medical Research and Materiel Command, to conduct a four-year study to determine the effectiveness of VRET on active-duty service members returning from Operations Iraqi Freedom and Enduring Freedom who are suffering from PTSD.

Through VRET, behavioral health providers can use 360-degree, interactive computer-generated environments uniquely tailored to expose the patients back into the environment and experience where the trauma occurred, to help reduce anxiety and post-traumatic stress.

The congressionally-funded medical research study is the first randomized clinical trial that uses active-duty military diagnosed with combat-related PTSD to compare VRET results to traditional "imaginal" prolonged exposure therapy, and to a control group that waits five weeks for any type of treatment.

The study's sample size is 120 service members to complete the three types of treatment options.

Treatment sessions for each type of therapy last about 90 minutes, said Dr. Greg Reger, the chief of T2's Innovative Technology Applications division. And the best way to participate in the study is to be recommended by a behavioral health specialist at Madigan Healthcare System or Naval Hospital Bremerton. For complete article from the United States Army, click here.

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The following article on project results laying the path for cyberspace operations, originally appeared on the Unites States Joint Forces Command (USJFCOM) website.

PROJECT RESULTS LAY PATH FOR CYBERSPACE OPERATIONS

(SUFFOLK, Va. – Jan. 28, 2010) – A team from U.S. Joint Forces Command's (USJFCOM) Joint Concept Development and Experimentation Directorate (J9) recently completed a project focused on improving joint commanders' ability to conduct cyberspace operations. The cyberspace operations (CO) project focused on experimenting with concepts and capabilities to support joint force CO, a fairly new discipline with limited doctrine, said Army Maj. Albert M. Costello, project lead.

"There's not a whole lot of doctrine out there," he said. "This was an experiment to begin figuring out what 'right' looks like."

Navy Rear Adm. Dan Davenport, J9 director, said the project gave commanders valuable tools they can use when planning and operating in cyberspace.

"The USJFCOM cyberspace operations project addressed the joint force commander's requirement for an integrated, synchronized approach to conducting offensive and defensive operations within the cyberspace domain and the information environment," he said. "We did this through creating a crisis action planning template, accurately forecasting future operational-level offensive manpower requirements and creating a better network defense through recommending changes in established cyberspace operations, policies and authorities.

"In the CO world, just like in most other types of warfare we and our allies face today, we face a constantly adapting adversary," Davenport said. "For this project, we have delivered a set of focused, classified products designed to help our forces deal with this challenge."
Costello said the work his branch finished is important, because even small attacks in cyberspace can have immediate, far-ranging effects.

The National Military Strategy for CO Implementation Plan tasked USJFCOM with incorporating CO into joint experimentation. This plan and warfighter challenges delivered by U.S. Strategic Command (USSTRATCOM) and the Air Force helped develop the project, according to Costello.

He said the team developed concepts and used different experimentation techniques to execute the CO project. Wargaming, limited objective experiments and computer modeling and simulations replicating real-world scenarios identified what can work, and why, in joint force CO.

Several classified products were developed to assist commanders and the doctrinal community as cyberspace challenges and threats evolve, including:

- A planning template and guide that provides joint force planners the framework necessary to integrate CO into joint operational planning for both crisis response and deliberate plans
- A manning model to understand manning requirements for offensive operations in support of combatant commands
- A guide that provides a framework for planners to improve understanding of the operational environment

- The Cyber Defense Limited Objective Experiment identified changes to improve computer network defense response action processes and the introduction and use of evolving technical tools.

Although the project is complete, Davenport said he expects more work to be done in the future. "Our work in this area has already produced practical tools for the cyberspace community to use," he said. "We know there is ongoing interest in this topic across DoD and we anticipate follow-on work with a variety of partners." For original article from USJFCOM, click here.

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The following article on a simulation of an Unmanned Aerial Systems (UAS) operating in the National Airspace System (NAS), originally appeared on NASA SimLabs website.

UAS/NAS SIMULATION IN THE CREW VEHICLE SYSTEMS RESEARCH FACILITY (CVSRF)

A real-time distributed simulation of Unmanned Aerial Systems (UAS) operating in the National Airspace System (NAS) was conducted in the Air Traffic Control simulator at the CVSRF. The simulation was the first phase in the Navy's Live-Virtual-Constructive Distributed Environment (LVC-DE) project investigating methods for integrating the Navy's Broad Area Maritime Surveillance (BAMS) aircraft into the NAS.

This simulation connected five separate facilities across the nation into one distributed airborne simulation. Participants included CVSRF ATC TRACON controllers and pseudo pilots (generating civil air traffic scenarios), a Navy RQ-4N BAMS UAS simulator in Bethpage, NY, "conflict" military aircraft targets from the Naval Air Station Patuxent River, MD, and data collection at SIMAF facility at Wright-Patterson AFB, Dayton, OH.

NASA's portion of the simulation was conducted entirely at the unclassified security level, but was integrated real-time with classified facilities via a "cross domain solution" guard system provided by the fifth participant, the Army's Redstone Test Center in Huntsville, AL. The ATC simulator at the CVSRF simulated the Los Angeles TRACON airspace with representative civil traffic operating in and out of LAX airport as well as overflights. Ames SimLabs developed the traffic scenarios and TRACON displays and was the lead facility for integrating the distributed simulation, providing software expertise and building facility "toolboxes" for network connectivity.

The simulation demonstrated the feasibility of the distributed simulation approach and investigated different military/civil ATC strategies for communicating intent for the BAMS aircraft. During the final week of the study, several two-hour data runs were completed successfully with no unplanned downtime due to equipment or software issues. Controller and pilot displays as well as voice communications were recorded and will be analyzed by the USAF. During the final days of the simulation the B747-400 simulator at the CVSRF was integrated into the LVC-DE simulation network and flown in the scenario.

Distributed simulation traffic was properly displayed on the B747 Traffic Collision Avoidance System (TCAS) display, and the B747 track data was properly displayed on the BAMS collision avoidance and TRACON displays. The ability to integrate and fly a TCAS-equipped commercial airline flight simulator in the distributed simulation was a significant enhancement to an already valuable UAS/NAS simulation capability at NASA Ames Research Center. Planning is underway for the next phase of the LVC-DE project with further simulations expected in 2010. For original article from NASA SimLabs, click here.

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The following article on the US Marine Corps expanding immersive training, originally appeared in the Training Simulation Journal (TSJ).

THE REAL DEAL

US Marine Corps set to expand immersive training

Two years after opening an innovative facility that combines live and virtual combat training, the U.S. Marine Corps plans to build more of the high-tech immersive environments.

New Infantry Immersion Trainers (IITs) at Camp Pendleton, Calif., and Camp Lejeune, N.C., will build on developments the Corps made with its first immersion trainer, a $2.5 million facility opened in a former tomato processing plant aboard Pendleton in 2007.

The new facilities will incorporate many of the same methods to familiarize Marines with what they'll see in war zones, including the use of foreign role players, digital holograms that resemble insurgents and special effects that simulate improvised explosive blasts and the chaos afterward.

The $15.3 million trainer at Pendleton, adjacent to the existing indoor facility near Camp San Mateo, will be the Corps' first outdoor immersion trainer, said retired Lt. Col. Rich Engelen, a range requirements officer with Training and Education Command, based at Marine Corps Base Quantico, Va. The $7.4 million facility planned for Lejeune will be in a warehouse on the base's mainside industrial area.

The Corps chose to expand its immersion facilities to increase the number of Marines who receive the training. Since the existing trainer opened at Pendleton in fall 2007, about 12,400 trainees have gone through it, Marine officials said. A smaller immersion trainer overseen by the Marine Expeditionary Rifle Squad program based near Quantico is used to assess combat gear but does not train large Marine units.

The immersion trainers are important, Marine officials say, because they give Marines a chance to experience a taste of combat before they actually deploy, to test themselves while hearing different languages in tense situations and discern who is the enemy. But the Corps hasn't been able to provide this type of training to as many Marines as it would like.

"One of the things that we realized through the experience at ... Camp Pendleton is that the IIT that they put in the old tomato factory just had limited throughput," Engelen said. "They had an ability to host squads for training, but not in the volume that they wanted."

Construction on the facilities has yet to begin, but planning is underway for both of the facilities.

The completion date for the Pendleton facility is May 2010, while the Lejeune shoothouse could open in early 2011.

The IIT concept was a joint research effort of the Office of Naval Research's TechSolutions office and the Army Research Development and Engineering Command's Institute for Creative Technologies at the University of Southern California.

The new facilities will offer Marine units training options that don't exist now. At Pendleton, some units will be able to train for days, maneuvering through existing outdoor urban training facilities before sending squads of Marines through both the indoor and outdoor immersion trainers, Engelen said.

A conceptual drawing for the new Pendleton IIT shows it could have dozens of buildings, a marketplace, cemeteries and mosques. Like existing outdoor urban training facilities, it also will have observation decks on the second floor of buildings, where the units can be observed during training. For the complete article from TSJ Online, click here.

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DTIC® 2010 Conference
Hilton Alexandria Old Town
Alexandria, Virginia
March 22-24, 2010

The Defense Technical Information Center (DTIC), premier provider of information for the defense community, will host its 36th annual conference. The conference will address DTIC's role as the Department of Defense (DoD) technical information broker. Speakers from government, private industry, and DTIC will address evolving information technologies.

The conference will bring together information professionals from the science, technology, research and development, and acquisition communities who create, disseminate and use DoD scientific, research, and engineering information.

The conference will also feature a number of government and commercial exhibitors, including the MSIAC, demonstrating and discussing the latest information services and technology. For more information on the DTIC Conference, click here.

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Please visit the MSIAC Calendar for a list of events taking place in the M&S Community.

MSIAC M&S NEWSLETTER

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