



WELCOME TO THE SEPTEMBER / OCTOBER 2011 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.

Please note that although the wording in the excerpts may not always correspond to official DoD Usage, the full articles available through the links provide valuable insights into the significant ways that modeling and simulation help foster innovation. We hope you enjoy this issue and welcome your comments.



MSIAC to Exhibit at I/ITSEC 2011 as a Partner in the M&SCO Booth



More than 20,000 of the world's professionals in M&S focused on Training will be at this year's I/ITSEC, including 4,000 conference delegates, 8,000 exhibit personnel, and 595 exhibiting companies.

Read how **MSIAC will be educating attendees** on how they can benefit from working together (see p. 2) (Photo credit: NTSA/I/ITSEC)

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The Modeling and Simulation Information Analysis Center (MSIAC) is a DoD-chartered technical resource center providing information on M&S policy, practice, technology, and applications. Acting as Your GPS for M&S™, we offer help, and can find, share, and confirm M&S information. Our quality support is based on understanding the M&S community's needs, an extensive M&S knowledge base, and our experience in technological and operational solutions. Come visit us in Booth 335 where we are exhibiting as a valuable partner of the Modeling and Simulation Coordination Office (M&SCO). Also, be sure to catch our presentation in the Innovation Showcase on Wednesday, November 30th, at 1:15 PM.

Keep up to date on information regarding I/ITSEC by visiting the MSIAC [website](#) and following MSIAC on [twitter](#).



First Army Shapes Full-Spectrum Simulation Exercise

Fingers tapped away furiously on computer keyboards while friendly and mock enemy maneuver graphics flashed across large screens as National Guardsmen from Kansas participated in a 'first-of-its-kind' exercise designed to test the full range of their combat leadership and Soldier skills.

More than 350 Soldiers from the Kansas Army National Guard's 35th Infantry Division headquarters participated in a newly-developed seven-day full-spectrum simulations exercise Sept. 20-26.

Advisors from First Army, headquartered at Rock Island Arsenal, Ill., were on hand to ensure the exercise remained focused on preparing the 35th ID for potential Contingency Expeditionary Force missions. Over the past few years, the majority of reserve-component training was focused exclusively on preparing the units for deployment to Iraq or Afghanistan for Operations New Dawn and Enduring Freedom.

Exercise director and commander of First Army Division East, Maj. Gen. Kevin R. Wendel, said the new full spectrum

simulation exercise allows the command to execute the full range of military operations in a realistic, joint, interagency and coalition environment.

“As the exercise director, my job is to help the division achieve their training objectives and to influence and shape the exercise by working with the team of senior mentors, trainers and support teams,” he explained.

First Army oversaw the development of the new simulations training exercise as part of its mission to train and validate reserve component forces prior to an overseas deployment.

This article originally appeared on the U.S. Army website. For the complete article, [click here](#).



Fort Campbell's New Helicopter Simulator Provides Virtual Training

It looked like a scene out of a science fiction movie on post Wednesday morning as a group of 101st Combat Aviation Brigade noncommissioned officers trained on a new simulator for the first time.

The Non-rated Crew Member Manned Module, or NCM3, came to post last week to be used for the first time beyond the testing stages. The module is a simulator that was created to train helicopter crews on the rear of both the CH-47 Chinook and UH-60 Black Hawk.

Through specially created virtual reality glasses, which fit as night vision goggles would, Soldiers can perfect gunnery tasks. Also included in the simulator are ways to perfect and practice sling load and hoist operations without ever leaving the ground.

The training can be linked with the Aviation Combined Arms Tactical Trainer, allowing crew chiefs and other Soldiers to communicate seamlessly with the helicopter's pilot who may be training in a different simulator.

The NCM3 includes task-driven scenarios, which can be adjusted by the instructor to include weather conditions, lighting variations and other specific situations.

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Fort Campbell's New Helicopter Simulator

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“The weapons are M240[H]s that we actually use in the Army,” explained Sgt. 1st Class Richard Madill. “The only thing they did was they took the mechanism out that allows it to fire. That’s the big modification that’s made. It has sensors all over to allow you to control it. It tells you when you have your mock ammo loaded, it tells you when they pull the triggers and different things like that.”

Even the simplest of everyday occurrences adds realism to the experience.

“It creates thunderstorms, and when it has the thunderstorms, you can actually hear the thunder,” Madill said. “You can see the lighting.”

Madill is a subject matter expert from the Directorate of Training and Doctrine at Fort Rucker, Ala., who actually helped in the design of this one-of-a-kind simulator.

The realism goes beyond what the gunners or other crew members might see on the screen during the simulated flight. The weaponry is also affected by a control load box, which gives the Soldier a sense of wind resistance on the gun.

This article originally appeared on the U.S. Army website. For the complete article, [click here](#).



Talk to the Virtual Hands: Body Language of Both Speaker and Listener Affects Success in Virtual Reality Communication Game

Modern technology allows us to communicate in more ways than ever before, but this virtual communication usually lacks the body gestures so common in face-to-face interactions.

New research, published Oct. 12 in the online journal PLoS ONE, finds that the lack of gestural information from both speaker and listener limits successful communication in virtual environments.

Participants in the study played a communication game, in which one partner had to describe a word’s meaning to his partner so that the partner could guess the word.

Importantly, the partners could only interact through animated avatars; in some cases the avatars were controlled by virtual reality suits worn by the participants, while in other cases the avatars remained static throughout the game or acted out pre-recorded gestures.

The researchers found that the best performance was obtained when both avatars were able to move according to the motions of their owner.

Specifically, they found that, in addition to the body language of the speaker being important, the body language of the listener impacted success at the task, providing evidence of the need for nonverbal feedback from listening partners in successful communication.

The researchers note that there are limitations to nonverbal communication in virtual reality environments. First, they found that participants move much less in a virtual environment than they do in the “real world.” They also found that the perspective of the camera in the virtual environment affected the results.

Lead author, Dr. Trevor Dodds maintains, “this research demonstrates that virtual reality technology can help us gain a greater understanding of the role of body gestures in communication. We show that body gestures carry extra information when communicating the meaning of words.

Additionally, with virtual reality technology we have learned that body gestures from both the speaker and listener contribute to the successful communication of the meaning of words. These findings are also important for the development of virtual environments, with applications including medical training, urban planning, entertainment and telecommunication.”

This article originally appeared on the ScienceDaily website. For the complete article, [click here](#).





Annual Ulchi Freedom Guardian Exercise Concludes

Exercise Ulchi Freedom Guardian concluded after two weeks of intense training across South Korea.

The computer simulation exercise is held every summer to hone the warfighting skills of the combined defense team in South Korea.

Led by the ROK-U.S. Combined Forces Command, the exercise provides commanders and staff at all levels the opportunity to train for full-spectrum military operations.

During the exercise, the 8th U.S. Army moved its operational headquarters from one post to another and set up a joint task force headquarters. Army Lt. Gen. John D. Johnson, the 8th Army's commander, said his unit "is evolving to better support the Republic of Korea-U.S. Alliance."

An important part of that evolution, Johnson said, is his unit's ability to quickly set up a deployable combined headquarters, with a U.S. and ROK integrated staff. Johnson said he was pleased with the results of this year's exercise.

"I'm absolutely convinced that we can tackle whatever challenges are thrown at us," the general said. "We are ready to deter or defeat any threat here on the Korean Peninsula." Johnson also praised the efforts of other U.S. Army units that supported the exercise, including U.S. Army Pacific, III Corps, the Pennsylvania Army National Guard's 28th Infantry Division, the 20th Support Command and the 200th Military Police Command.

"I'm proud of how our entire Army team performed during this exercise," the general said. "This training helps prepare us to rapidly respond to any provocation or crisis, and be ready to fight and win."

Command Sgt. Maj. Rodney D. Harris, the 8th Army's senior noncommissioned officer, said the exercise gave his soldiers the opportunity to train as they would fight.

"And I was thoroughly impressed by their pride, professionalism and dedication," Harris said. Ulchi Freedom Guardian is one of the largest annual military command post exercises in the world. The second of two annual

exercises held in South Korea, UFG follows exercise Key Resolve/Foal Eagle, which takes place each spring.

This article originally appeared on the Department of Defense website. For the original article, [click here](#).



Full Spectrum Training Environment Tests Medical Support, Ground Forces Together

In rhythmic cadence a doctor barked orders, "There's no change. Give shock. Administer CPR. The patient is not breathing."

The tent was full of onlookers, the room was quiet. Nurses, doctors and medics rushed to find instruments and equipment to save the patient, a life-sized, computer-monitored mannequin connected to a power and fluid supply. He simulated breathing and his eyes even fluttered as he fought for air.

The Joint Multinational Training Command provides a challenging training environment and all the training aids and devices needed ensure the medical staff from the 30th Medical Command are trained, while supporting the 173rd Airborne Brigade Combat Team's Full-Spectrum Training Environment, or FSTE, rotation, hosted at Hohenfels Training Area, Oct. 3-24.

"This is maximizing the training value for the U.S. Army in Europe," said Col. William D. Jones, chief of the Joint Multinational Simulations Center, or JMSC. "The JMSC has developed a list of events and activities to stimulate the environment, while enlarging the play to enhance training scenarios to accommodate the large-scale mission of the 30th MEDCOM. For example, a mass-casualty event will happen during the exercise to allow the hospital staff to fully exercise the staff."

In its entirety the 30th MEDCOM would support an area the size of Afghanistan. Their involvement with the 173rd Airborne Brigade brought unique challenges in addition to the scripted scenarios.

"This training is valuable because you're not supporting an imaginary brigade," said Jones. —continued





Full Spectrum Training Environment

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“It’s a better training event for the 30th MEDCOM, and we can do it for other multifunctional units in Europe.”

At the Grafenwoehr Training Area’s Camp Aachen, the 84-bed combat support hospital is a complex tent structure with multiple, interconnected additions that provide life-saving services.

On the inside it looks like any hospital. There is an intensive-care ward that hosts up to 60 patients; a supply section that houses enough supplies to last several days on site; an intensive care unit with up to 24 beds; a laboratory for blood analysis and storage; a radiology department and an operating room.

The massive structure is constructed inside a fenced cantonment area away from the boots-on-the-ground training, but connected by technology.

This article originally appeared on the U.S. Army website. For the complete article, [click here](#).



New Software Models Immune Responses

Researchers with the Virginia Bioinformatics Institute at Virginia Tech have released an upgrade to the institute’s ENteric Immunity SIMulator (ENISI) software, which models immune responses to beneficial and harmful bacteria that enter the gastrointestinal tract of mice, pigs, and humans. ENISI allows users to create enteric systems such as the gut-associated mucosal immune system in silico, providing a better glimpse of how the immune system responds to pathogens that invade the bacteria-rich environment of the gut.

ENISI was initially designed by the Center for Modeling Immunity to Enteric Pathogens (MIEP) to model inflammatory bowel disease.

The upgrade allows investigators to simulate immune responses in a mouse infected with *Helicobacter pylori*. The MIEP team plans to expand the software to simulate infection with enteroaggregative *Escherichia coli* and

other enteric pathogens, such as *Clostridium difficile* and *Cryptosporidium parvum*. Future upgrades will allow users to run simulations via the ENISI website and eventually be able to visualize in silico cells or lesions forming in real time, rather than only seeing the outcomes of such interactions.

“ENISI is unique because it’s specific to the gut, simulating each individual cell rather than creating broad mathematical models,” said Kate Wendelsdorf, a Ph.D. student in the genetics, bioinformatics, and computational biology program at Virginia Tech. “Thus, it’s more faithful to a living system and allows us to simulate a million individual cells, more than any other simulator. It’s a powerful tool for understanding interactions between gut pathogens and the mucosal immune system.”

This article originally appeared on the ScienceDaily website. For the complete article, [click here](#).



VCU Developing First Virtual Training School for Educators

Technology used by the military to train soldiers on a virtual battlefield is being adapted by the Virginia Commonwealth University School of Education to prepare America’s next generation of school leaders more effectively and at less cost.

Using a five-year, \$5.2 million grant from the U.S. Department of Education, researchers with “Project ALL” (Authentic Learning for Leaders) are developing the world’s first computer simulator that puts prospective administrators in the challenging role of leading a virtual middle school and then assesses their performance with those real world situations.

Job candidates work through a year-in-the-life of a school principal and see hundreds of leadership-related events, opportunities, problems and possible solutions that are not always covered in textbooks or graduate lectures.

Situations include dealing with demanding parents, completing personnel evaluations and enforcing curriculum decisions. As the user makes decisions, the

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VCU Developing First Virtual Training School

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simulation algorithm calculates a profile of strengths and weaknesses and that profile is sent back to the user and forwarded to the employer. “You see the problems faced by principals every day,” said Project ALL Simulation Director Dale Mann, Ph.D. “You make choices and you see the immediate and vivid consequences of those choices.”

As the pattern of decisions emerges, they begin to affect the trajectory of the school. Bad choices lead to a cascade of unfortunate events, such as low student achievement or a hostile faculty. Better choices lead to a more successful school, more trust from the central office and even a promotion.

“The simulator highlights patterns, such as whether the prospective educator is more likely to respond to central office requests over building-level needs, whether he or she prefers direct instruction over technology, or if that person is more comfortable with personal communication than impersonal communication,” said Project ALL Director Charol Shakeshaft, Ph.D., professor and chair of the VCU School of Education Department of Educational Leadership.

Web-enabled simulations have saved as much as 85 percent on training budgets because they can be used anywhere and at any time.

This article originally appeared on the Virginia Commonwealth University website. For the complete article, [click here](#).

19th Annual Future City® Competition

National Engineers Week Foundation Opens Pre-Registration

Hampton Roads’ students and those from nearly 40 other regions across the country to be tasked with creating alternative energy resources that maintain a healthy planet.

Can local middle schoolers do a better job of solving our nation’s energy crisis than our world leaders? Finding an alternative energy resource for fossil fuels remains one of

the country’s top priorities, and academics, politicians, and engineers are among those searching for solutions. This fall, middle schoolers from across the nation will join them in tackling this issue.

As students return to school after summer vacation, Hampton Roads’ middle students will be among those participating in National Engineers Week Foundation’s 2011-12 Future City® Competition, continuing in its 19th year. They will be asked to design a method of providing electricity for a future city using an energy source that does not deplete natural resources and has limited impact on the environment.

Registration for the popular competition is now open, allowing schools an opportunity to sign up early and get organized for the fall. The deadline for schools nationwide to register is in late October. Future City is also looking for engineering and technical professionals who may be interested in serving as mentors.

For more information, school registration, or to volunteer in the Future City Competition, visit www.futurecity.org or www.futurecityvirginia.org.



I/ITSEC 2011: M&S 101 Course

The **M&S 101 Course** will be presented on November 28, 2011, in Room 307 AB, from 8:30 – 10:00 AM.

MS 101 presents basic Department of Defense (DoD) Modeling and Simulation (M&S) information. Targeting newcomers to defense M&S, MS 101 helps the newcomer get started and provides a broad familiarization to M&S as it is being used in DoD. MS 101 presents basic M&S terminology and describes the DoD M&S vision and strategy and how these evolved. The DoD Modeling and Simulation Management Plan is described in detail, to include a layman’s description of the Global Information Grid, High Level Architecture, Test and Training Enabling Architecture, and Data Discovery.

The presentation addresses issues on representation of the natural environment, systems, and humans and organizations; Verification, Validation, and Accreditation (VV&A); information on current defense M&S —*continued*





I/ITSEC 2011: M&S 101 Course

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programs; and M&S information sources. The target audience is the newcomer to M&S who needs a quick dose of M&S to assist them in becoming more proficient in their jobs. No prerequisite knowledge is needed to attend this tutorial.

This tutorial is appropriate for managers at all levels and includes more defense programmatic information than the more technically-focused tutorial, Fundamentals of Modeling and Simulation.

For more information about the M&S 101 course, please contact Mr. Larry Harris, lharris@alionscience.com.

■ ■ ■ The Modeling and Simulation Catalog for Discovery, Knowledge and Re-use

A key to fulfilling the DoD Net-centric Vision is Discovery. “Guidance for Implementing Net-Centric Data Sharing” (DoD 8320.02-G) defines discovery as the ability to enable consumers to find out who is responsible for specific assets, where the assets are located, what kind of data is available, and how to go about accessing them. Often the focus is on a search tool or website.

However, there are associated efforts to create and maintain the metadata, processes to ensure connectivity and business models that support the entire process that must be in place to create the environment needed to make the search engine successful. If you or your organization creates a product that has the potential to be made available on the GIG, you will be involved.

Multiple locations throughout DoD contain metadata about tools and data. The M&S Catalog provides a portal to discover and access M&S metadata maintained at nodes distributed across DoD networks in a centrally managed, “de-centrally” executed process that employs metadata collection and management. The intent is to link information stores and thus preclude redundant location updating. The M&S Catalog uses standard metadata schemas based

on the DoD’s Net-Centric Data Strategy Community of Interest (COI) metadata specifications. A major schema supporting discovery and reuse is the DoD M&S COI Discovery Metadata Specification (MSC-DMS), promulgated by the DoD M&S Coordination Office (M&SCO) and used by the M&S Catalog.

The M&S Catalog supports source providers and user queries on DoD tools, available data, and activities (e.g., AoAs, studies) supported by the tools. Currently we have 16 sources of data including: Army, Air Force, MSIS, Navy and others that have provided 7,101 initial records of information, but plans on the horizon are being made to bring in hundreds of source providers.

The catalog’s requirements are based on interviews with leadership, managers and technical personnel in the communities and services supported by M&S. The M&S Catalog discovery service was updated greatly this year so that DoD CAC users can access information via a powerful COTS search engine enterprise suite. Some of these new features include 1) automated faceted search selections guided by community tailored taxonomies, 2) key word search across the metadata or within subsets of tools tailored via the faceted selections or within a specific metadata element, 3) Key word search using a Federated search with DoD Enterprise Catalog, 4) user-guided output formats and, 5) search results analysis tools.

For more information about the M&S Catalog contact Ms. Brandi Greenberg, bgreenberg@alionscience.com.





M&S WHAT & WHEN

Follow MSIAC on Twitter

To provide a broader reach throughout the M&S community and beyond, MSIAC has started utilizing social media. Twitter provides the opportunity for MSIAC to quickly share information, gather market intelligence and insights, and build relationships with people who care about M&S. MSIAC tweets range from interesting articles found within the M&S community, breakthroughs in M&S technology, to alerts for the releases of M&S publications. Follow us on twitter at www.twitter.com/msiac.



The M&S Journal

The Winter Issue of the M&S Journal is almost here! This issue will focus on M&S Education and Workforce Development.

Topics discussed will include insight into M&S education, human capital strategies in the M&S community, the STEM strategy plan, and M&S education's return on investment.

Sign up to receive your electronic copy by sending an email to subscribe@dod-msiac.com. To find previous editions of the M&S Journal, please visit <http://www.dod-msiac.org/journals.html>.

The M&S Journal is a theme-based, quarterly publication of technical articles that highlight M&S technology, applications, prototype processes or products, points of view, or emerging philosophies.

It is published by the Modeling & Simulation Coordination Office (M&SCO). The M&S Journal is a valuable resource for the M&S community: across DoD, other government agencies, international partner organizations, industry, and academia. The M&S Journal occasionally publishes special issues devoted to a particular topic.

The M&S Journal is currently accepting paper submissions. All submitted technical papers for the M&S Journal

undergo rigorous review following an initial screening for conformance to basic requirements. Publishing in the M&S Journal affords authors both an online and print forum for their M&S technical papers, gaining recognition and publicity throughout the DoD M&S community. Authors also receive extended visibility for their ideas through free online access to their article on the MSIAC website.

Please contact the MSIACHelpDesk@dod-msiac.org for more information, or if you would like to submit a technical paper to the M&S Journal.



MSIAC M&S Newsletter

The Modeling and Simulation Information Analysis Center (MSIAC) M&S Newsletter is now available as an automatic service. The MSIAC M&S Newsletter is a bi-monthly publication that brings you the most recent information and events from within the M&S community.

How to Subscribe

Simply email digest-subscribe@lists.dod-msiac.org to be added to our mailing list. This list is for the Newsletter only and will not be used for any other purpose. Please note that it is not necessary to subscribe each month.

Submit an Article

If you would like to submit an article to be highlighted in the MSIAC M&S Newsletter, please forward the article (along with its source data and URL, if available) to the MSIAC Help Desk no later than 15 workdays prior to the publication of the next Newsletter. Potential articles as well as questions or comments on the Newsletter can be emailed to: MsiacHelpDesk@dod-msiac.org.





Modeling & Simulation CALENDAR OF EVENTS

Please visit the complete MSIAC Calendar for a list of events currently scheduled to take place in the M&S community. The complete MSIAC Calendar is available on our website, www.dod-msiac.org/calendar.html.

Promote an Event

If you would like to promote an M&S event on the MSIAC Calendar, please email the event information to MsiacHelpDesk@dod-msiac.org.

Upcoming Events

Aircraft Survivability Symposium 2011

November 1 – 3, 2011
Monterey, CA

8th Annual Disruptive Technologies Conference

November 8 – 9, 2011
Washington, DC

Physics-based Modeling In Design & Development for U.S. Defense Conference

November 11 – 17, 2011
Denver, CO

2011 Chemical and Biological Defense Science and Technology (CBD S&T) Conference

November 14 – 18, 2011
Las Vegas, NV

11th Annual CMMI Technology Conference and User Group

November 14 – 17, 2011
Denver, CO

I/TSEC 2011

November 28 – December 1, 2011
Orlando, FL

Winter Simulation Conference (WSC)

December 11 – 14, 2011
Phoenix, AZ



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