



Welcome to the June/July 2008 edition of the Modeling and Simulation Information Analysis Center (MSIAC) M&S Newsletter. In this issue you will find 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 June/July edition and look forward to your comments.

The MSIAC notes that the wordings in the excerpts do not always correspond to official DoD usage, but that the full articles available through the links provide valuable insight into the applications of M&S technologies throughout the community.

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The following article about the plans of the Honorable Mr. John Young, Undersecretary of Defense (AT&L), for a Wikipedia-like Database, originally appeared in Inside the Pentagon, June 5, 2008 issue.

YOUNG PLANS WIKIPEDIA-LIKE DATABASE FOR DOD-LED S&T EFFORTS

The Pentagon's research and engineering directorate will develop a Wikipedia-like database of all ongoing science and technology development work within the services and the Defense Department to foster a more joint approach to the S&T enterprise, DOD's procurement chief said this week.

Despite \$10 billion in defense funding invested in science and technology development for the current fiscal year, Pentagon acquisition czar John Young said the department still lacks a clear database that allows researchers from the services' main research labs to see what technologies are being developed throughout DOD.

The new project is designed to provide such visibility to military researchers. It will also allow those personnel to be able to "link up" with R&D elements across the Pentagon, in order to collaborate on current and future development work, he said during a June 3 Navy symposium in Arlington, VA.

Young has tapped defense research and engineering's plans and programs director Alan

Shaffer to create the Wikipedia-like database.

"I personally believe that every program manager will take a few minutes and put in some comments into the Wikipedia about the programs that they are trying to do and the problems with what they are doing," Young said.

He added that other research entities within and outside DOD would also be able to access the database, fostering a more interagency approach to S&T programs.

The new database would also help remedy some of the communication and coordination stovepipes that arise among various service organizations working similar technology development efforts, he said.

Young said Defense Secretary Robert Gates recently asked him about the specifics of a certain technology development program. Unable to answer Gates' question off the top of his head, Young saw the need for the S&T Wikipedia.

"I needed a [Wikipedia] tool to answer some of those questions," Young said. "But the real benefit of this tool is to let people who are actually doing the work . . . link themselves with each other and do what is right for the tax payer". For the original article from Inside the Pentagon, click [here](#).

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THIRD ANNUAL CAPITOL HILL MODELING AND SIMULATION EXPO

The Congressional M&S Co-chairs, Congressman J. Randy Forbes (VA-04) and Congressman Solomon Ortiz (TX-27), will host the Third Annual Capitol Hill M&S Exhibition on July 15, 2008. The Caucus will co-host the expo with event sponsor, the National Training and Simulation Association. For more information on this event, click [here](#).

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The following excerpt of an article about USJFCOM Teaming with Allied Command Transformation (ACT), to help develop a NATO training federation, originally appeared on USJFCOM's website.

USJFCOM TEAMS WITH ACT TO HELP DEVELOP NATO TRAINING FEDERATION

(NORFOLK, Va. – June 2, 2008) – U.S. Joint Forces Command (USJFCOM) is working with NATO's Allied Command Transformation (ACT) on a capability that will allow for better training of multi-national forces deploying in support of operations.

The NATO Training Federation (NTF) is designed to provide NATO countries with an interoperable and common training environment, one that is faster, more compatible, and of higher-quality and fidelity.

British Lt. Col. Mark Shelford, ACT project manager for NTF, explained the purpose.

"The NATO Training Federation allows distribution training and multi-commander training means that you can get everybody working together, literally, on the same piece of music, training together, meeting each other via VTC, and getting to trust each other before they actually deploy to theater rather than never having done it before."

Shelford explained how the new training capability will offer something unseen by NATO.

"As far as NATO's concerned, we haven't had a centrally-organized, computer-assisted exercise system before. So the NATO Training Federation is going to give us a huge uplift in exercise and training capability."

Army Lt. Col. John Janiszewski, chief of USJFCOM's training development and innovation branch and USJFCOM lead for the project explained how this will benefit the warfighter.

"What that enables us to do is conduct coalition training in a common environment. We're increasing

our relationship and our ability to work together with the NATO countries. We've got the similar training environment so when we come together to train we're using the same thing, we're all familiar with it and ultimately that's going to lead to better coordination when we actually do real world operations."

Shelford discussed some of the instances where NTF can help prepare warfighters going into theater.

"How are we going to use the NATO Training Federation? Well, we'll be able to train prior to deployment on all types of operations that are required by the commander to successfully execute his mission, so everything from time-sensitive targeting, hostage release, conventional battle group interactions, as well as the air and maritime pieces."

Janiszewski said the next step is to provide the Joint Warfare Centre in Stavanger, Norway with the latest software version of the Joint Multi-Resolution Model, the core simulation tool for NTF, this July. He said the plan is to test it in the Joint Warfare Centre's laboratory to make sure everything runs properly. For the complete article from USJFCOM, click [here](#).

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The following excerpt of an article about a Cooperative Research and Development Agreement (CRADA) between USJFCOM and Old Dominion University, originally appeared on USJFCOM's website.

USJFCOM SIGNS AGREEMENT WITH OLD DOMINION UNIVERSITY RESEARCH FOUNDATION

(NORFOLK, Va. - April 29, 2008) -- U.S. Joint Forces Command (USJFCOM) signed a cooperative research and development agreement (CRADA) with the Old Dominion University Research Foundation (ODURF) here today to support joint training and experimentation using modeling and simulation.





The CRADA between USJFCOM and ODURF provides a three-year agreement with two one-year options, focusing on using Virginia Modeling, Analysis and Simulation Center (VMASC) capabilities to advance modeling and simulation (M&S) and research and development (R&D).

Navy Rear Adm. Miles B. Wachendorf, USJFCOM's chief of staff who signed the CRADA explained that one of the greatest benefits of this CRADA is that it will enhance command efforts to build partnerships.

"When we talk about security in general, it's not just the military dimension, a growing piece of this is how we can bring all of the elements of government at all levels and sometimes international capabilities together to go after a common threat or mitigate a common problem, so that's nothing but good. This capability will help us," he said.

Greg Knapp, USJFCOM's executive director of joint training, explained the benefit for USJFCOM.

"This will facilitate a greater transfer of information between what ODU is developing and a much broader partnership than we have," said Knapp. "What this does for us is it helps them bring the best of that information to our facility and inculcate it into our laboratory environment."

Army Lt. Col. John Janiszewski, USJFCOM's principle investigator for the CRADA explained how the agreement will enhance training development and benefit the warfighter in theater.

"It's going to allow us to better replicate the kind of conditions they're facing through a training event so that the tools that we use to train them prior to deploying in theater gives them an accurate representation of the environment that they are going to," he said. For the complete article from USJFCOM, click [here](#).

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The following excerpt of an article on MSIAC's Help Desk, originally appeared in TSJ's (Training and Simulation Journal), June/July 2008 issue.

HELP DESK

DoD analysis center provides M&S expertise

As modeling and simulation takes on ever-growing importance in the design and development of weapons systems, U.S. Defense Department offices and military contractors sometimes find they lack the money and expertise to act on their M&S requirements. But help is available to approved organizations through an Alexandria, VA-based office specifically set up to provide immediate and long-term assistance.

The Modeling and Simulation Information Analysis Center — or MSIAC (pronounced "MISS-ee-ack") — is owned by the Defense Department and operated by contractor Alion Science and Technology. Its responsibilities include providing free help-desk assistance to eligible offices and access to a large group of subcontractors which can give expertise on a for-fee basis for more complex "technical-area tasks," said Dane Mullenix, director of the center.

"When we're asked to look at a task under this contract, as a prime, we go out and put together a team of the best and brightest, if you will, focused on the particular customer task," Mullenix said. "To date, approximately 160-odd subs have participated with Alion in these various technical-area tasks."

The services rendered for those tasks are billed to the office or company using them, and it is primarily that money for which the center receives a 3.5 percent reimbursement rate (the Defense Department gets the majority) that keeps MSIAC in business, Mullenix said. MSIAC gets no appropriated funding.

"The good work that we're doing for customers comes back to the community at large by funding the actual MSIAC core," he said, referring to the help-desk services. MSIAC's future relies on its success. "In general





there has been slow growth," Mullenix said. "We have never been a burden on funding; we've always generated at or above what we've spent."

MSIAC is one of 19 Defense Department-run "information analysis centers" (IACs) chartered to provide expertise in a particular area.

MSIAC's sponsor is the Defense Technical Information Center (DTIC), which also charters nine other IACs. For the complete article from Training and Simulation Journal (TSJ) Online, click [here](#).

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The following article on improving safety for the Rotorcraft Aircrew Systems Concepts Airborne Laboratory (RASCAL), originally appeared on NASA SimLabs News, May 2008.

IMPROVING SAFETY FOR THE RASCAL

The US Army Aeroflight Dynamics Directorate located at NASA Ames operates a research helicopter called the RASCAL (Rotorcraft Aircrew Systems Concepts Airborne Laboratory). The RASCAL is a Blackhawk modified for fly-by-wire control systems research. Fly-by-wire means the control elements are actuated electronically rather than mechanically.

The RASCAL vehicle has two flight control systems. One is the research fly-by-wire system (RFCS) which is flown by the Experiment Pilot on the right seat. The other is the standard Blackhawk mechanical system, which is kept as a safety back-up and is flown by the Safety Pilot on the left seat. Control automatically switches to the Safety Pilot if the system detects a failure in the RFCS.

In a recent simulation, Army researchers evaluated safety improvements to allow landing with the RFCS engaged. Currently, the Safety Pilot must take control for low altitude maneuvers or to land.

SimLabs' Vertical Motion Simulator (VMS) modeled two configurations. In one configuration, a safety pilot

flew the baseline Blackhawk model with full motion. For the other configuration, an evaluation pilot controlled the aircraft via a desktop set of inceptors in the lab representing the fly-by-wire research Flight Control System.

A requirement to be able to switch between the two configurations during a run was especially challenging for VMS engineers. The control software had to ensure that the transitions between the two configurations were smooth even during a failure or after large pilot inputs.

The Army's objective is to be able to operate RASCAL below 25 feet altitude with an acceptable level of risk. RASCAL could then be used to research flight control system enhancements and new guidance displays that would assist the pilot in landing a helicopter in unfavorable visual conditions. For the original article from NASA SimLabs News, click [here](#).

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The following excerpt of an article about the Greenhouse gases, Regulated Emissions and Energy use in Transportation (GREET) model's updates for environmental impacts of fuels, originally appeared on ScienceDaily's website.

NEWEST GREET MODEL UPDATES ENVIRONMENTAL IMPACTS OF SPECIFIC FUELS AND AUTOMOBILES

ScienceDaily (May 10, 2008) — The newest version of the Greenhouse gases, Regulated Emissions and Energy use in Transportation (GREET) model from the U.S. Department of Energy's (DOE) Argonne National Laboratory will provide researchers with even more tools to evaluate and compare the environmental impacts of new transportation fuels and advanced vehicle technologies.

Led by Dr. Michael Wang, a group of Argonne transportation researchers regularly update key parameters and assumptions in the GREET model on the basis of new research and development in fuel





pathways and vehicle technologies. Today, GREET can simulate more than 100 fuel production pathways and more than 80 vehicle/fuel systems. The model has more than 4,000 registered users worldwide.

The newest update released May 9 will allow scientists to model combustion of ethanol produced from Brazilian sugarcane and used by U.S. automobiles; production and use of bio-butanol as a potential transportation fuel; and production and use of biodiesel and renewable diesel via hydrogenation, coal/biomass co-feeding for Fischer-Tropsch diesel production and various corn ethanol plant types with different process fuels.

In addition, simulations of many existing fuel pathways in GREET are updated. For example, petroleum refining energy efficiencies in GREET are updated with recent survey data from the Energy Information Administration. Enhancements to current pathways include three methods for dealing with co-products for soybean-based biodiesel, compression energy efficiencies for natural and hydrogen gases are calculated with the first law of thermodynamics and a tube trailer delivery option for hydrogen gas to refueling stations.

In addition to the fuel-cycle GREET module, the vehicle-cycle GREET module incorporates an additional platform, allowing researchers to model sport utility vehicles in addition to cars and light trucks. That version better evaluates the energy consumption required to produce the aluminum used in the chassis of automobiles.

Several state and federal agencies have used GREET to aid in their considerations of potential fuel greenhouse gas regulations. For example, the U.S. Environmental Protection Agency uses a specific set of assumptions with the GREET model in its analysis of the reductions in greenhouse gas emissions resulting from the potential expanded use of renewable and alternative fuels. For the complete article from ScienceDaily, click [here](#).

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The following excerpt of an article about a new DHS virtual classroom capability designed by Engineering and Computer Simulations (ECS), originally appeared on the National Center for Simulation's website.

ECS TO DESIGN VIRTUAL CLASSROOM

Avatar-based instructional delivery will provide the Department of Homeland Security on-line/virtual world, 3D secure social network for training and education capability.

Working in conjunction with the U.S. Army RDECOM Simulation and Training Technology Center and the Department of Homeland Security, Engineering and Computer Simulation (ECS) will design a virtual classroom capability. The classroom will incorporate avatar-based instructional delivery and, when fielded, will provide the Department of Homeland Security a 3D secure social network for on-line/ virtual world training and education.

ECS will design and deliver the virtual classroom capability to support critical curriculum and educational goals using web-based instruction. Instructors and students will interact and collaborate within the 3D secure social network environment controlling representations of themselves called avatars. Using enhanced communications through Voice Over Internet Protocol (VOIP) and instant messaging in the virtual world, real-time information exchange of presentations, information, and collaboration takes place and enables individuals and/or groups of individuals to receive realistic and timely training and mission rehearsal for disaster response and other important missions.

When complete, the virtual classroom will be integrated into the Joint State Response Training System's (JSRTS) Emergency Management Nexus (EM-Nexus), the National Guard's custom-built virtual world, also under development by ECS.

LTC Ray Compton, Acting Director of RDECOM's Simulation and Training Technology Center, stated "The virtual classroom is a critical step in advancing





online training and education initiatives.” He added,

“Leveraging the National Guard EM Nexus program allows the Army and Department of Homeland Security to get increased capability and at the same time ensure interoperability of programs.” For the complete article from The National Center for Simulation, click [here](#).

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The following excerpt of an article about a new virtual classroom technology, originally appeared on the University of Central Florida Institute for Simulation and Training (UCF IST) website, Spring 2008.

THE UNIVERSITY OF CENTRAL FLORIDA (UCF) AND LOCKHEED MARTIN ANNOUNCE PARTERSHIP TO EXPAND NEW SCREENING AND TRAINING FEDERATION

The University of Central Florida (UCF) and Lockheed Martin announced a partnership that will help expand a technology developed at the university that could revolutionize the way employees are screened and trained for a variety of professions.

“Today we announce a memorandum of understanding with Lockheed Martin that establishes our desire to work together for the purpose of ongoing research activities into education, simulation technology and its use in training students and teachers,” said Terry Hickey, UCF provost and executive vice president.

College of Education Professors Lisa Dieker and Mike Hynes, in conjunction with UCF’s Institute for Simulation and Training, Computer Science and student actors from the Interactive Performance Lab, developed a virtual, interactive environment that can give teachers real experience in handling a classroom. Lockheed Martin brings years of experience to the partnership including research, concepts and prototypes of models and simulations in the areas of teacher training and professional development.

Using a combination of technology, real life experience and entertainment the university has been able to create scenarios that are very realistic and have already assisted new teachers in thinking differently about their classroom. In fact, several teachers who tested out the virtual classroom continue to talk about how they need to change their teaching or to “try” again to make sure they meet the needs of these students who are not real.

“This partnership provides a unique opportunity to blend technology from academia and industry to benefit our mutual efforts in advancing education,” said Dale Bennett, president of Lockheed Martin Simulation, Training & Support.

In its current form, teaching candidates or players enter a Virtual Classroom at the Teaching Academy on UCF’s main campus. There they encounter five virtual characters projected on a huge screen. Research shows these personalities are usually present in middle school students. For the complete article from the University of Central Florida Institute of Simulation and Training News, click [here](#).

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The following excerpt from an article about the DoD fielding counter-terrorism technologies, originally appeared in the National Defense Magazine, July 2008 issue.

OFFICE SEEKS TO QUICKLY FIELD COUNTER-TERRORISM TECHNOLOGIES

Ben Riley, director of the Defense Department’s rapid reaction technology office, wants to tell vendors, laboratories or anyone else who has a gadget that can help defeat terrorists, insurgents or other bad guys, that he’s here to help.

The office has two test beds available to those who want to try out technologies in a simulated urban or maritime environment.

About five times per year, the office opens up the national counter-insurgency counter-terrorism test





site in the confines of the Yuma Proving Grounds in Arizona to those wishing to see how their technologies operate in a mock city.

The site is open to “small companies that might not have the resources to afford range time and test time,” Riley said in an interview.

The office will cover almost all expenses and include a test report on the data collected, he said.

The site features roads, buildings, four-lane highways, including a cloverleaf turnoff, and simulates the electromagnetic environment found in major cities.

Companies developing intelligence, reconnaissance and surveillance sensors, communication devices, and canine teams have used the facility.

The office will install culverts, dig ditches, and if truly needed, build a bridge — “within reason,” he added. “Your expense if you’re that company, is to get that system or whatever it is out there,” Riley said.

“If it absolutely does not work, we won’t hold it against you,” Riley said. Companies and labs are welcome to return after they make refinements. Many have done so, and he has seen how they have taken the data and improved their products, Riley said.

The office’s focus is on technologies that can mature in six to 18 months and be applied to the so-called global war on terrorism.

Bits and pieces of the now defunct office of force transformation were folded into the rapid reaction technology office. One of the programs inherited was Stiletto, an experimental boat that has found a second life as a platform for testing in sea environments. Like the Yuma site, the boat is available to labs and companies who wish to use it as a way to collect data. For the complete article from the National Defense Magazine, click [here](#).

MSIAC M&S NEWSLETTER

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