MSIAC M&S Newsletter

July/August 2010 1

Welcome to the July/August 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 July/August 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

Improved pilot training

Virtual war room needed

Mobile Counter-IED Interactive Trainer (MCIT)

Experiment looks to inform future Joint Force Operations

Coalition Warrior Interoperability Demonstration

Air Force "Technology Horizons"

Serious games for urban problems

M&S Journal accepting papers

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The following article on pilot training by Gretel C. Kovach, originally appeared in the San Diego Union-Tribune.

SIMULATORS LIFT PILOTS' TRAINING
-- Marines prepping for copter upgrades

Capt. Bret Morriss couldn't resist firing a few rockets into the field when his helicopter simulator "flew" over a San Diego baseball stadium. "The Yankees were there," he joked.

Sports aside, Marine Corps pilots like Morriss are rooting for a different team of "Yankees," and "Zulus," too. The 3rd Marine Aircraft Wing based in San Diego County is rolling out two of the service's new helicopter – four – bladed upgrades of the UH-1 Huey and the AH-1 Cobra.

On Thursday the air wing celebrated the latest milestone in the Corps' maturing helicopter program, dedicating $30 million full-motion simulators to train pilots at Camp Pendleton on the new helicopters made by Bell.

The change is part of an overhaul of Marine Corps aviation, sweeping aside aircraft that date in many cases from the Vietnam War era.

West Coast Marines are leading the transition to the new "Yankee" Huey, the UH-1Y, and they also will be the first to receive the "Zulu" model of the Cobra, the AH-1Z, scheduled for delivery in September. Meanwhile, East Coast Marines have already deployed to Afghanistan with the new MV-22 Osprey tilt-rotor, which is replacing the CH-46 "Battle Phrogs" used to evacuate the U.S. Embassy in Saigon in 1975.

For complete article from the San Diego Union-Tribune, click here.

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The following article on a Virtual War Room, originally appeared on the National Defense Magazine website.

VIRTUAL WAR ROOM NEEDED FOR FEDERAL CRISIS RESPONSE, SAYS REP. RANDY FORBES

The BP oil spill once again exposed the federal government's difficulties in coordinating disaster response, said Virginia Congressman J. Randy Forbes. The solution: Create a virtual war room for interagency collaboration during national emergencies.

Forbes is a long-time advocate of modeling and simulation technologies. His district is home to U.S. Joint Forces Command, one of the Defense Department's biggest users of simulation systems.

Virtual collaboration tools should have been used to better respond to disasters such as the oil spill in the Gulf of Mexico, Forbes said this week during a House Armed Services Committee hearing on the use of modeling and simulation to enhance military readiness.

The federal agencies responsible for disaster response often are disconnected and unable to coordinate their efforts rapidly, he said.

"Whether it is Katrina or the Gulf oil spill, America needs a process to bring to bear creative solutions to critical problems quickly if not proactively," said Forbes.

In the case of the oil spill, government officials lacked the tools and processes to evaluate the ideas that were proposed to plug the leaking well and sop up the slick, said Forbes. He expressed frustration about being approached by a constituent who handed him a proposal describing a device that could be used on barges to suck up contaminated seawater.

"I found out there were thousands of ideas like that across the country," he said. "We just don't have the mechanism in government to handle those kinds of ideas and those kinds of thoughts."

Forbes is sponsoring legislation that would create "immersive" simulation tools to promote interagency collaboration during a federal emergency. The intent is to model proposed solutions in virtual environments, similarly to the way the Pentagon uses digital simulations to experiment with new weapons. "Imagine a crisis solution in hours or days rather than months," said Forbes, who is founder and co-chair of the congressional modeling and simulation caucus.

"I believe that modeling and simulation is the very industry that could serve as the platform upon which to build a national crisis response solution repository staffed by the best, the brightest and most creative of our government response agencies."

For complete article from the National Defense article, click here.

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The following article about a Counter-IED Trainer, was contributed by the Joint IED Defeat Organization (JIEDDO) Public Affairs Office.

JIEDDO EDUCATES TROOPS TO COUNTER IED WITH MCIT

The Mobile Counter-IED Interactive Trainer (MCIT) is an integrative training solution that combines videos, virtual gaming technology, hands-on displays and static visuals to educate troops about IEDs and how to defeat them. The University of Southern California Institute for Creative Technologies developed the training to increase Counter Improvised Explosive Device (C-IED) awareness for service members. The Joint Center of Excellence (JCOE) owns MCIT and received funding from the Joint IED Defeat Organization (JIEDDO).

The training content is broken into four trailers, or Conex Boxes (CBs), each focusing on a

specific element of the C-IED effort. The first CB provides an initial orientation about insurgent forces' exploitation of American troops' actions.

The second CB educates trainees about IED fabrication using region-specific materials, providing insight into homemade explosives (HMEs). Hands-on materials and bomb examples make this training impactful for trainees. The third CB reinforces Counter Remote-controlled IED Electronic Warfare (CREW) systems and procedures and incorporates informative videos featuring deployed Soldiers in Iraq and Afghanistan. In the final CB, trainees conduct simulated mission scenarios from the perspectives of coalition troops and insurgents. The scenario incorporates interactive virtual exercises in realistic surroundings and assesses trainees' performance.

The MCIT is unique among other trainers currently in use; it incorporates simulation and immersion into an IED- and terrain-specific scenario. At the completion of the hour-and-a-half-long training series, trainees will have a historical understanding of the IED as a weapon and will be able to recognize:

- CREW systems and their usage
- various geo-specific IED threats and emplacement techniques
- mission and intelligence reports
- various IED/HME components and signatures
- dismounted "search" methodology
- "insurgent" bomb-maker methodology
- Terrain Analysis for IED emplacement

Currently there are three active MCITs in use by the Army and Marines. Located at Fort Bragg, Camp Pendleton and Camp Shelby, the MCIT has become an important part of warfighter training at each location and serves as the only simulative C-IED training available to the troops. MCIT is currently the most-used trainer at Fort Bragg. JIEDDO and JCOE are developing an additional eleven MCIT series to meet the emerging needs of warfighters combating insurgents' IEDs. JIEDDO also received requests to deliver the MCIT to Coalition troops in Afghanistan for real-time C-IED training.

For more information on the MCIT, click here.

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The following article on U.S. Joint Forces Command's (USJFCOM) experiments conducted, originally appeared on the USJFCOM's website.

EXPERIMENT LOOKS TO INFORM FUTURE JOINT FORCE OPERATIONS

(SUFFOLK, Va. - Aug. 12, 2010) -- Personnel from U.S. Joint Forces Command's (USJFCOM) Joint Concepts Development and Experimentation Directorate (J9) and several partners conducted the last in a series of experiments designed to test the joint force's ability to employ and support geographically dispersed units.

"The Joint Distributed Operations (JDO) Project is a two-year effort to assess the challenges, potential solutions and benefits of conducting these types of operations, which involve units operating at the edges of mutual support," said Jim Nichol, JDO project lead. "The overarching aim of the project is to retain and apply lessons learned from the last eight years of conflict to enable future joint forces to conduct agile distributed operations."

Joint distributed operations support the full range of military operations, including combat, engagement, security, and relief and reconstruction. In this particular experiment, the joint task force (JTF) headquarters faced problems and issues during all four types of operations. Having a scenario loaded with challenges allowed the experimenters to test their potential solutions to the breaking point.

"We fully recognize that we are conducting distributed operations today in both Iraq and

Afghanistan, so our goal is to analyze shortcomings and to assess potential solutions by documenting the best practices and lessons we are learning in theater," Nichol said.

"Through experimentation, we want to determine whether or not these solutions, best practices and lessons learned hold up under pressure."

The J9 is in the 21st month of the project and has conducted multiple experiments of different types examining the JDO concept. Some involved hundreds of runs through constructive simulations, from which experimenters extracted analytic data speaking to the efficacy of proposed solutions, Nichol said. The latest experiment introduced the human element to those solutions.

"We wanted to take that analytic power and join it with the human dimension of decision making and the interactions that take place," he said.

"We wanted to marry up the quantitative and qualitative decisions and bring them together to have a complete answer."

For complete article from USJFCOM, click here.

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The following article on the Navy's Coalition Warrior Interoperability Demonstration (CWID), originally appeared in Chips, the Department of the Navy's Information Technology Magazine.

COALITION WARRIOR INTEROPERABILITY DEMONSTRATION

A unique environment of virtual reality, sophisticated technology and real warfighter conditions

It's not Afghanistan, but it will simulate the austere, remote and hostile conditions of being there. I'm talking about CWID — Coalition Warrior Interoperability Demonstration — where information technologies are assessed against simulated operational scenarios.

For 2009-2010, CWID is using an Afghanistan backdrop for combined operations. U.S. homeland security/defense scenarios will integrate virtual natural disasters, health pandemics and terrorist threats. CWID supports Department of Defense homeland defense and security acquisition decisions within a venue that provides significant savings to the government.

CWID's 18-month cycle begins with a Federal Business Opportunity posted on www.fbo.gov that asks industry to provide near-term technology solutions, also known as interoperability trials (ITs), designed to improve information sharing for both military and emergency first-responder operations.

CWID focuses on assessing new technologies and upgrades to existing versions of command and control (C2); communications systems; and intelligence, surveillance and reconnaissance (ISR) systems. CWID 2010 will execute in June. The complexity of staging and executing approximately 40 ITs across multiple U.S. and international sites, with more than 1,500 participants and 20 participating nations, is immense and requires vigorous C2 and exhaustive planning, according to Dennis Warne, CWID site manager for Naval Surface Warfare Center Dahlgren.

"We are coordinating command and control over the Pacific and Atlantic, across Europe, Lillehammer, Norway, in Germany, in Italy. We run the trials during the day, but think of what time it is in Italy and Europe," Warne said. No other virtual or real-world environment can duplicate the unique characteristics of the CWID infrastructure."

CWID is a Chairman of the Joint Chiefs of Staff-directed annual technology discovery and risk reduction event which identifies information-sharing solutions for operational problems. The Defense Information Systems Agency (DISA) manages CWID's day-to-day operations using the CFBLNet, or Combined Federated Battle Laboratories Network, which will span 15 time zones, from New Zealand to the United States,

and across Europe.

CWID encompasses an environment of virtual reality, sophisticated technology and real-world conditions that video game fans would love to enter. But there is nothing playful about CWID. To participate, proposed technologies must fill warfighting gaps and be interoperable, not only with joint partners, but with NATO partners, and at another level, with nongovernmental organizations to coordinate disaster relief responses and humanitarian aid.

For complete article from Chips, click here.

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The following article on Air Force science and technology planning, originally appeared on the Wright-Patterson Air Force Bases' website.

AIR FORCE'S "TECHNOLOGY HORIZONS" MAKES SCIENCE FICTION A REALITY

7/16/2010 - WASHINGTON (AFNS) -- With innovations seemingly plucked from the latest futuristic Hollywood movie script, Technology Horizons outlines the Air Force's major science and technology objectives through the next decade, officials said here July 14.

Highly adaptable, autonomous systems that can make intelligent decisions about their battle space capabilities and human-machine brainwave coupling interfaces are but two significant technologies contained in the document, said Dr. Werner J.A. Dahm, the Air Force chief scientist.

"These are hands down, slam dunk, among the biggest findings in Technology Horizons; this is one of those 'a-ha' moments for the Air Force," Dr. Dahm said. "If you come back 20 years from now, you'll see an Air Force that looks substantially different than what you see today, and it will look that different, in part, because of Technology Horizons."

Air Force Research Laboratory engineers will use the document to help plan technologies of the future, and have already begun implementing some of the key findings in Technology Horizons.

"We will be making greater use of autonomous systems, reasoning and processes in almost everything the Air Force does," Dr. Dahm said.

"This is not only in terms of increasing and enhancing remote-piloted aircraft, but in developing new ways of letting systems learn about their situations to decide how they can adapt to best meet the operator's intent."

He described how future autonomous aircraft would be able to sense battle damage and make intelligent decisions about their remaining capabilities.

"Such adaptable autonomous systems will be able to automatically re-plan their mission to maximize their effectiveness," Dr. Dahm explained. "In decision-making systems and processes, these systems can give us a tremendous operational edge over potential adversaries who are limited to human decision and control."

He explained that in today's combined air operations centers, for example, there are several hundred people involved in assembling daily air tasking orders. Adaptable autonomous decision-making systems can handle many of these steps, reducing the number of people who must be deployed.

Such advanced levels of autonomy, Dr. Dahm added, complement another key focus of Technology Horizons: human performance augmentation.

"Natural human capacities are becoming increasingly mismatched to the data volumes, processing capabilities and decision speeds that technologies either offer or demand," Dr. Dahm said.

He said autonomous systems and advanced

human-machine interfaces are among ways the service can meet this rapidly growing challenge.

"To identify threats in full-motion video, we can outfit a helmet with literally hundreds of brainwave sensors and begin to localize and identify reactions you have, even below the level at which you could put them into words," Dr. Dahm said.

For complete article from the Wright-Patterson Air Force Base, click here.

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The following article on a video game helping solve urban problems, originally appeared on the National Defense Magazine website.

VIDEO GAME TACKLES "SERIOUS" URBAN PROBLEMS

The work force of tomorrow can learn a lot by playing video games today, say the folks at IBM.

The company in October will make available CityOne, a free online game that takes the concepts behind the popular SimCity series and tries to up the real-world ante. IBM's version of the city simulator features problems and solutions that leaders in urban environments actually might encounter when they go to work.

One of the game's scenarios involves a city where water usage increases twice as fast as the population, supplies are becoming strained and possibly polluted, and the municipality is losing almost half of its water through leaky pipes. On top of all that, energy costs continue to rise. To complete the mission, the player must come up with a way to deliver the highest water quality at the lowest cost in real time.

"The purpose of this game is to educate," Program Manager Phaedra Boinodiris said. The solutions to the problems presented by CityOne are ones that IBM could help with in real life. CityOne also presents challenges related to alternative energy, overcrowding and retail. In all of the missions, the user must determine the best way to balance the city's financial, environmental and sociological interests.

IBM has produced "serious" games before, mostly focusing on business processing management. More than 1,000 colleges and universities use IBM games in their curriculum. Boinodiris sees CityOne and future games reaching a wider audience, including the defense industry. After discussions with military leaders, she believes that there is a need for games that simulate supply chain issues.

As for CityOne, the next phase may be to take the generic urban template used in the game and tailor it to the needs of customers in different regions.

For original article from the National Defense Magazine, click here.

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THE M&S JOURNAL IS CURRENTLY ACCEPTING PAPERS

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. 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.

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