



**WELCOME TO THE JUNE/JULY/AUGUST 2014 EDITION** of the M&S Newsletter. This issue presents articles ranging from the Army's next generation of simulation training to a simulation showing a way to increase coffee plant yields. Additional articles feature hardware in the loop, National Center for Simulation hall of fame inductees, and the new Virtual Battlespace 3 (VBS3). Please note that the complete or original articles are available through the links provided.

*This will be the final edition of the M&S Newsletter. It has been a pleasure bringing you the latest news and events in M&S over the years. Thank you for your support and involvement.*

—M&S Newsletter Staff

## “Live Synthetic” Army’s Next Generation of Simulation

Photo Credit: Photo illustration by Peggy Frierson



*Live synthetic is the Army's next generation of simulation.*

**SOLDIERS FROM A BRIGADE COMBAT TEAM ARE AT A COMBAT TRAINING SITE** doing a routine live-fire exercise. Well, maybe not so routine.

Suddenly enemy jets pop out of the clouds streaking toward them. The Soldiers scramble for cover as missiles rain down.

They hear the explosions from the missiles impacting all around them, see the flames and debris, and smell the smoke.

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## “Live Synthetic” Army’s Next Generation of Simulation

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But this is where it gets a little bit eerie.

Those enemy jets are being piloted a thousand miles away by fellow brigade combat team, or BCT, Soldiers, some in aircraft simulators and others on computer gaming stations.

The Soldiers see the visual recreations of those jets in real-time through special glasses that allow them to see the real world around them, while simultaneously viewing the simulations. Data from the simulations stream in to the Soldiers’ glasses from satellites and ground relay stations.

In turn, the pilots in simulators and those using gaming stations see what Soldiers are doing in the live environment by satellite and unmanned aircraft video feeds and sensors on the Soldiers that transmit precise locations and activities.

Sounds of the battle are generated through special earpieces that harmonize with the visuals and the smells are pumped in through special odor machines.

Pipe dream? Not really, said Colonel John Janiszewski, director of the National Simulation Center, U.S. Army

Combined Arms Center, Fort Leavenworth, KS.

“We’re now looking at a concept called the Future Holistic Training Environment Live Synthetic” that will eventually do this and much more, he said. “We’re now documenting the requirements,” he said.

By next year, Janiszewski plans to define the specific requirements for live synthetic and hopes to begin fielding systems by fiscal year 2022 and have them in place Army-wide by fiscal year 2025.

In the meantime, the National Simulation Center, or NSC, is having discussions with industry and experts in the science and technology community to “close some of those gaps” in capability.

Although simulators have been around for decades, the problem is that most were designed to be used in isolation. Live synthetic fuses them all seamlessly.

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

## National Center for Simulation to Honor Hall of Fame Inductees

**THE NATIONAL CENTER FOR SIMULATION (NCS)** as part of the celebration of its 20th year anniversary, presented for induction the inaugural class of the NCS Modeling and Simulation Hall of Fame on March 26, 2014 in a special ceremony at the Orange County Convention Center.

Army General (Ret.) Paul Gorman is among the first inductees. General Gorman was a strong advocate for training and simulation throughout his career. He supported revolutionary training simulation for the Army as early as the implementation of the multiple integrated laser engagement system (MILES); and also impacted early systems such as simulation networking (SIMNET) and the “live, virtual, constructive” paradigm.

“As a strong supporter of simulation and its use in training our warfighters, I am pleased to be part of the National

Center for Simulation’s Modeling and Simulation Hall of Fame,” said Gorman. “I have long held that all training, short of combat is simulation. I applaud the National Center for Simulation in elevating the use of modeling and simulation for our military and civil sector as well.”

The Hall of Fame will honor men and women who have made meaningful contributions to improving, changing or enhancing modeling and simulation in any of the disciplines included in its diverse use. Including Gorman, the inaugural class is as follows:

- Vince Amico** – Training simulation technology pioneer for the Navy
- Luis de Florez**, RADM, USN – Institutionalized synthetic training within the Navy during WWII
- Dr. Richard C. Dehmel** – Scientist who developed and implemented the first mathematical flight models for simulations





## National Center for Simulation to Honor Hall of Fame Inductees

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**The Honorable Lou Frey** – Congressman champion of Orlando defense simulation cluster  
**Priscilla Getchell** – WWII Link Trainer instructor serving in the WAVE Corps  
**Paul Francis Gorman**, General, USA (Ret) – Revolutionized Army training and the effective use of simulators  
**Dr. John C. Hitt** – Academic pioneer and advocate for modeling and simulation  
**John P. Jumper**, General, USAF (Ret) – Set distributed mission training policy for Air Force  
**Edwin Albert Link** – Inventor of the Link Trainer and “father” of simulation technology

**Albert Henry Marshall** – Key pioneer whose inventions led to the development of the MILES system  
“We’re excited to recognize these ten passionate and dedicated people who have made significant contributions to the growth of Modeling and Simulation,” said NCS President and CEO Lieutenant General (Ret) Tom Baptiste.

*This article, written by Dolly Rairigh Glass, originally appeared in the Team Orlando 10-4 March 2014 edition. For complete article, [click here](#).*



## Latest “Virtual Battle Space” Release Adds Realism to Scenarios, Avatars

**THE MOST RECENT VERSION OF THE ARMY’S 3D VIRTUAL TRAINING GAME**, Virtual Battle Space 3, allows players to personalize their avatar within the simulation and the scenes and scenarios look a lot more real as well.

Using new human dimensioning modeling within Virtual Battle Space 3, known as VBS3, Soldiers using the training will put in personal characteristics, including their own height, weight, Army Physical Fitness Test scores and even their weapons qualifications scores, “so then the avatar will only be as capable as the individual Soldier,” said Robert Munsey, an analyst with U.S. Army Training and Doctrine Command Capability Manager – Virtual & Gaming.

Soldiers who are not qualified on a weapons system will not be able to use it in the simulation. And unlike in some video games, where every player is represented on the screen with a hulking, ripped avatar – with VBS3, an overweight Soldier will also be overweight on the screen. And with the system’s fatigue modeling, his character will get tired faster too, Munsey said.

Munsey said within the game, a fatigue bar at the top left

Photo Credit: VBS3



*The most recent version of the Army’s 3D virtual training game, Virtual Battle Space 3, allows players to personalize their avatar within the simulation and the scenes and scenarios look a lot more real as well.*

hand side of the screen will “go down a lot quicker” for somebody that has scored a 160 APFT score, versus the person who has an average at 220...”

“If the Soldier is one of those 270-300 physical training performers, the fatigue model will model that in the game,” he said. “Then the leaders, the small unit leaders have the capability to understand the

performance of their squad.”

Soldiers who have used the system have noticed the difference, Munsey said.

“When they tested this last year, one of the Soldiers said ‘I look fat,’” Munsey said. “And the other Soldier sitting right next to him said ‘that’s because you are fat.’”

The Army’s VBS3 system is a multi-user “realistic semi-immersive environment” that allows units, usually company and below, to train at home station on more than 150 battle drills, platoon level collective tasks, combined maneuver tasks and other collective tasks.

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





## Dyess AFB Receives First C-130J Simulator

Photo Credit: U.S. Air Force photo/Staff Sgt. Richard Ebensberger



*U.S. Representative Randy Neugebauer speaks at the dedication ceremony for the new C-130J Super Hercules simulator April 22, 2014, at Dyess Air Force Base, TX. Dyess is the first installation to receive this modern C-130J simulator with Vital-10 technology. Vital-10 is an advanced visual display package with a higher resolution and a more realistic display. System benefits include the ability to accomplish initial and recurring qualifications for missions, such as the Joint Precision Airdrop System and Heavyweight Assault Landings.*

**THE 317TH AIRLIFT GROUP HELD A DEDICATION CEREMONY** for a new C-130J Super Hercules simulator on April 22, 2014.

Dyess AFB is the first installation to receive the \$26 million C-130J simulator with modern Vital-10 technology. Vital-10 is an advanced visual display package with a higher resolution and a more realistic display.

“One great aspect about the simulator is that we can alter the location, weather, variables, altitude and threats on the spot,” said Major Seth Schwesinger, the 317th Operations Support Squadron chief of group training. “It gives us the flexibility to pause at a certain point to provide instruction, rewind the scenario and try it again.”

The cost to run the simulator is an estimated \$850 an hour, a savings of \$1,500 compared to an approximated flying cost of \$2,300 an hour, which will allow the 317th Airlift Group to save an approximate \$3 million annually. Additionally, the simulator will save the group approximately \$400,000 annually in personnel and travel costs by conducting required training on site.

The new simulator is a proven tool used to build and maintain operator proficiency in the aircraft throughout multiple mission sets, including those not readily available during local flying, Schwesinger said.

Essentially, the C-130J simulator and the C-130J are one and the same, but with better cost savings and a safer way of doing things, Schwesinger added.

“We also have the ability to compound elements into a training scenario in a safe environment that mimics the aircraft,” Schwesinger said. “This gives instructors the capacity to monitor training to enhance the learning of the aircrews.”

One of the benefits of the simulator is being able to train in scenarios you wouldn’t want to do in an actual aircraft.

“Other than off-station missions, local training was limited to the Dyess AFB area, which is flat and can have unpredictable weather patterns,” Schwesinger said. “The simulator allows us to be put in any location to train in high-pressure altitude operations with high temperatures to see how the aircraft performs with these different variables added to the training scenario.”

The simulator is also capable of different tactical training scenarios, including specific threat generators, which instructors are able to place along certain locations of a route.

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





## Multi-National Air Support Experts Receive Training at Joint Multinational Readiness Center



Photo Credit: Staff Sgt. Caleb Barrieau

*An Air Force Joint Terminal Attack Controller, with the Bullseye Team at the Joint Multinational Readiness Center in Hohenfels, Germany, provides feedback to Lithuanian Special Operations soldiers after completing a squad tactics lane. JTAC Soldiers execute complex air-to-ground missions that integrate ground-based radio operations with fixed and rotary wing aircraft in combat environments. The training they receive at JMRC with its advanced simulations and real-life squad tactics lanes will prepare them for real combat scenarios.*

**EXPERT OBSERVER/COACH-TRAINERS AT THE JOINT MULTINATIONAL READINESS CENTER** in Hohenfels, Germany concluded a complex air-to-ground training event integrating simulations, ground-based radio operations and fixed and rotary wing aircraft over a four-day period.

This technical training exercise combined mentors and trainees from around the world using advanced simulations equipment based at the Hohenfels Training Area, the U.S. Army's only overseas Combat Training Center.

To answer the question of how to provide resource intensive training to a highly-technical military occupational specialty, such as that of the Joint Terminal Attack Controllers, known as JTACs, the U.S. and its allies and partners are turning to advanced, state-of-the-art simulations programs and systems that are delivering the realism required to maintain their demanding skill sets.

“We can simulate virtually any type of training by bringing together geographically separated military units from different parts of the world, all participating in a realistic real-time exercise at cost to the players involved,” explained Mr. Larry Smith, Simulations Expert at the Joint Multinational Readiness Center, or JMRC.

It's not just simulations training that multi-national JTAC Soldiers received at Hohenfels.

In JMRC's immersive field environment, the JTACs underwent realistic hands-on squad tactics lanes in tandem with the reinforcement of their skills in the simulation center.

“This kind of training is the closest thing these teams could do without coming into direct contact with the enemy,” explained Staff Sergeant Daniel Hampton, Air Force JTAC trainer from JMRC's Bull's-eye OC-T, who assisted with the field portion of the training event.

In support of theater security cooperation, the Special Operations community plays a significant role in facilitating this kind of training with the U.S.'s European multinational allies.

“While the Special Operations Forces Cell manages the program, most of what we've been doing has been simply to foster some synergy between the simulations community and the USAF JTAC folks here at JMRC. At the end of the day, what we're doing is setting the conditions to achieve a strategic effect via tactical level training,” said Lt. Col Peter Russo, Senior Trainer on JMRC's Wolverine OC-T, specializing in Special Operations Force training and mentorship.

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





## Computer Simulation Shows Adding Trees to Coffee Growing Land can Increase Yields

**A COMPUTER SIMULATION CREATED AND RUN BY A PAIR OF RESEARCHERS** at Humboldt State University in California, shows that coffee growers in Jamaica could improve coffee harvests if they planted trees in some of their cropland. The two, Steven Railsback and Matthew Johnson have published a paper describing their simulation and results in Proceedings of the National Academy of Sciences.

Whether to dedicate land specifically to a single crop (land sparing) versus mixing one crop with others (land sharing) has been a problem farmers (and researchers) have been working on for thousands of years. In this new effort, the researchers at Humboldt looked specifically at the way coffee plants are grown to see if they could figure out a way to improve yields. Most coffee growers tend to dedicate land to coffee plants—experience over the years has shown it to be the most productive.

But there is a known problem—the coffee berry borer—a beetle that bores into a coffee berry to lay its eggs, stealing

profits from farmers. Railsback and Johnson noted that a certain kind of bird, a warbler, is a predator of the beetles that eat coffee beans.

But, because they have nowhere to roost in land dedicated to coffee growing, they don't offer farmers much help. They wondered what would happen if farmers planted just enough trees among the coffee plants to provide roosting places for the birds—would that cause a decrease in berry borers and thus an increase in harvests?

To find out, instead of trekking to Jamaica to talk farmers into giving it a try, the two created a computer model that simulates various bird, beetle and coffee tree environments. Interestingly, they found that if they set the parameters just right, the loss in production due to less land devoted to coffee plants and tree shade, could be more than made up for by less losses due to the berry borer.

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



## M&S Journal

The latest issue of the *M&S Journal* is available now and focuses on M&S Research. You can download a copy and access all the previous issues of the *M&S Journal* at:

<http://msco.mil/MSJournal.html>.





## Ahead of the Curve

Photo Credit: Major John J Bailer



*Chief Warrant Officer 4 Michael Council (right) and Chief Warrant Officer 3 James Dunlop confirm computer system connections during testing of a new Hardware in the Loop system, connecting Patriot Missile systems at Rhine Ordnance Barracks with similar systems at Fort Bliss, TX.*

**THEY SAID IT COULDN'T BE DONE.** However, Colonel Greg Brady, Commander 10th Army Air and Missile Defense Command (AAMDC), a native of Chicago, says "It will be done." The 10th AAMDC, based out of Rhine Ordnance Barracks Germany, in conjunction with 32nd AAMDC located in Fort Bliss Texas are doing something together that hasn't been done before. It's Called "Hardware in the Loop" or HWIL for short.

HWIL is an experimental technical procedure that allows Air Defense Units to digitally communicate over vast distances. In this case, this untried Army procedure will allow units from Fort Bliss Texas to digitally communicate, using their tactical equipment, with units located in Rhine Ordnance Barracks in Germany, over 5,000 miles.

"The challenge is," according to Lieutenant Colonel Jennifer Schulke, G3 Operations Officer for the 10th AAMDC assigned to the 10th, a native of California, "the systems we're using weren't originally designed to function this way. We're pushing this technology. The distances we normally operate are significantly shorter."

"This is very exciting," says Lieutenant Colonel Brian Bowen, Chief of Staff for the 10th, "it's not every day you get to add a page in Army doctrine." The 10th and the 32nd have just added a new capability in their tool bag. They are now able to train units across 5,000 miles, where as before, units had to be "co-located" in order to work properly.

"But not anymore" says Major Ernest Harrell, Acting Commander of 5/7 Air Defense Artillery (ADA). Once the experimentation is complete, the 10th and 32nd can train without being co-located. Also, once this comprehensive testing is absolute, the units can submit their findings and procedures to the Army's Training and Doctrinarian Command.

"Taking the lead increases our capability, and will drive how the Army allocates funding to its units" says Colonel Brady.

All of this innovation is taking place in their newly upgraded Lab (Rhine Ordnance Barracks building 380). "A lot of firsts going on here, says Chief Warrant Officer 3 James Dunlop, from Seattle, assigned to the 32nd AAMDC, Fort Bliss Texas. Before, if we wanted to train units not co-located we had to move our people and equipment to another facility. But now, we can conduct this training in our own backyard. It's a win win."

"Anything can be done. It's just computers and software. It's really about time and money when it comes down to it. Both of which, we never have enough of," says Major Rich Dixon, 32nd simulations officer out of Fort Bliss, TX.

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*This article originally was written by Major John J. Bailer and an adapted version, "New Technology Connects Air Defenders Over Thousands of Miles" appeared on page 6 of Kaiserslautern America. For complete article, [click here](#).*



## FEATURED HIGH LEVEL TASK

High level tasks are special technology-related projects that will enhance the applications of M&S throughout the DoD for the benefit of our Warfighters. By focusing on the goals stated in the “Strategic Vision for DoD Modeling and Simulation,” these high level tasks are delivering solutions that will contribute to closing fundamental gaps in current M&S capabilities.



## M&SCO Unveils Updates to the M&S Catalog

**LAST FALL, THE DEPARTMENT OF DEFENSE MODELING AND SIMULATION COORDINATION OFFICE (M&SCO)** debuted a streamlined and more customer-friendly Modeling & Simulation (M&S) Catalog, and we promised back then to deliver even more advanced features. Today, we proudly announce that the updated features are now available for Catalog users. These improvements will increase search capabilities and access to the M&S Catalog including user upload of data.

To recap, the M&S Catalog is a means to share, discover and potentially reuse existing models, simulations, data, and related tools within the Defense community. The Catalog provides the ability to search using an enhanced user interface. This interface supports users by allowing them to submit a simple keyword search and provides filtering options for refining and tailoring search results.

With the latest updates, the search capabilities are enhanced. Users will now have the option to create and save searches, set up system alerts to automatically notify them if a record that meets their saved search criteria is added or changed, and export search results in both XML and Excel.

Also new is the ability for people without a Common Access Card (CAC) to request access to the M&S Catalog. Access to the catalog has been improved through a Department of Defense (DoD) program called the External Certification Authority (ECA). This program helps entities such as industry partners and other external organizations gain access to the DoD-approved certificates. The ECA program provides a mechanism for interested users to securely communicate with the DoD, and authenticate to DoD

Information Systems. Previously, M&S Catalog users must have been issued a valid DoD CAC before gaining access to the advanced features mentioned above.

Finally, the changes also include features supporting user-maintainability of the Catalog data. M&S Catalog users are able to upload their sharable data and maintain their own registry of resources by approved organizations.

Stay on the lookout for even more added features as M&SCO continues to expand the M&S Catalog’s capability. Forthcoming features include improving the system-to-system publishing to the M&S Catalog through Web Services and the federation with other DoD sources (i.e., DTIC).

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*For more information about the M&S Catalog or the ECA program, contact us at: [MSCatalogHelpDesk@mscatalog.msco.mil](mailto:MSCatalogHelpDesk@mscatalog.msco.mil). CAC'd or ECA approved individuals can access the M&S Catalog at: <https://mscatalog.msco.mil>*



## M&S WHAT AND WHEN

### MODELING & SIMULATION CALENDAR OF EVENTS

#### **2014 Fall Simulation Interoperability Workshop (SIW)**

September 8 – 12, 2014  
Orlando, FL

#### **28th International Symposium on Ballistics**

September 22 – 26, 2014  
Atlanta, GA

#### **2014 Precision Strike Technology Symposium (PSTS-14)**

October 21 – 23, 2014  
Laurel, MD

#### **17th Annual NDIA Systems Engineering Conference**

October 27 – 30, 2014  
Springfield, VA

#### **I/ITSEC 2014: Interservice/Industry Training, Simulation & Education Conference**

December 1 – 4, 2014  
Orlando, FL

#### **Winter Simulation Conference 2014**

December 7 – 10, 2014  
Savannah, GA

#### **26th Annual SO/LIC Symposium & Exhibition**

January 26 – 28, 2015  
Washington, DC



## The M&S Newsletter

The M&S Newsletter is a DoD Modeling and Simulation Coordination Office (M&SCO) publication that provides information concerning interesting M&S developments, articles, and a calendar of events for the M&S community.

This is the final issue of the M&S Newsletter

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