*Welcome to the January/February 2009 edition of the Modeling and Simulation Information Analysis Center (MSIAC) M&S Newsletter. This issue presents a variety of M&S articles and events from communities enabled by M&S within the Department of Defense and beyond. We hope you enjoy the January/February edition and look forward to your comments.*

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

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***ISSUE SPOTLIGHTS***



*The following article about M&S Industry growth originally appeared in the Training & Simulation Journal (TSJ) Online December issue.*

***INDUSTRY ON A ROLL***
***Double-digit growth predicted for M&S training over 10 years***

Strong yet uncertain. Promising but more challenging. Shifting market share with surprising areas of growth. The road ahead for the training and simulation market is anything but certain, according to most industry watchers.

Amid the shaky worldwide economy, the ongoing war and other challenges, the training and simulation industry is experiencing both unprecedented interest and potential financial shortfalls just as it is poised for widespread growth. But even with such formidable threats on the horizon, a strong sense of optimism prevailed among those polled recently by Training & Simulation Journal. More interest than ever in simulation-based training is being expressed by defense forces worldwide because of the cost saving and other benefits it provides, said industry leaders. Where some see hardships (e.g., rising fuel costs), others see opportunity (simulation replacing live training). And a new study projects double-digit growth over the next 10 years. Could it be too good to be true?

By far, the biggest source of concern looking forward is the weakening global economy and its effect on the industry. No doubt some defense projects will face cutbacks as governments worldwide grapple with financial uncertainties, but many industry voices seem optimistic for modeling, simulation and training.

"Simulation offers a number of advantages, most notably cost advantages, that simply cannot be ignored in today's uncertain economic and threat environment," said John Lenyo, president and general manager, CAE USA, which is focused almost exclusively on simulation and training.

Uncertainty in the financial and credit markets, and uncertainty about how the new U.S. administration will tackle budgetary challenges, will make the next 12 to 24 months "very interesting," Lenyo said.

The good news is the expectation that U.S. defense budgets for simulation and training will continue at the same growth pace as they have historically, at least for the next few years, he said. "The U.S. [defense] budgets are planned well in advance, so we don't expect any drastic changes in the short term," Lenyo said.

But longer term, the simulation and training business in the U.S. is tied to procurement of new weapons systems, the upgrade and refurbishment of existing systems, and new tactics, techniques and procedures, he said.

"Again, because of the significant uncertainty in the financial markets and with the elections, it is difficult to predict the future with any great clarity," Lenyo said. Still, CAE believes strongly that the future of simulation is promising, Lenyo said, adding: "The increased cost of fuel, environmental impacts and significant wear and tear on weapon systems all point to the greater use of simulation and synthetic training."

That said, there is an undeniable effect on most businesses as a result of current market conditions. For one thing, the credit crunch has limited access to capital, which is especially detrimental to an industry reliant upon significant resources for development.

"Some of our smaller companies have been struggling a bit with the need for capital for expansion," said Russ Hauck, executive director of the National Center for Simulation in Orlando, Fla. For complete article from the Training & Simulation Journal (TSJ), click here.

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*The following article about USJFCOM partnership originally appeared on the Department of Defense DefenseLink website.*

***PARTNERSHIP KEY TO JOINT FORCES COMMAND EXPERIMENTATION SUCCESS***

SUFFOLK, Va., Jan. 23, 2009 - As U.S. Joint Forces Command pursues capability improvements over the long term, its experimentation chief is keeping one eye focused on current needs -- as defined by warfighters themselves.

Navy Rear Adm. Dan Davenport's job as director of the command's Joint Concept Development and Experimentation, or J9, directorate is to come up with long-term solutions to meet unmet or yet-unrecognized requirements.

"Joint concept development and experimentation is really about finding solutions to the biggest challenges facing [the Defense Department], as defined by our warfighters," he explained.

As Davenport describes the process, the word "partnership" peppers the explanation.

"This effort isn't done in a vacuum," he said. "It's a partnership all the way, from identifying problems to coming up with appropriate solutions to developing the tools to implement those solutions."

The partnership begins at square one, with combatant commanders and service chiefs submitting their most pressing problems or needs, which Joint Forces Command officials call "warfighter challenges."

The command's experimentation directorate compiles these requirements, prioritizing those with the biggest impact on capability and the broadest defense application.

The results, captured in the Joint Concept Development and Experimentation

campaign plan for 2009 and 2010, spell out major projects the command will undertake or support during the next two years.

Marine Gen. James N. Mattis, commander of Joint Forces Command, signed off on the plan last fall, and it is already being implemented to meet some of the biggest military challenges, Davenport said.

The new plan balances near- and long-term needs. "Joint Forces Command is one of [the Defense Department's] primary futures organizations, and we need to be looking to the future," Davenport said.

"But we also need to be contributing to the current fight and current operations," he continued. "So we maintain a balance in our focus between providing near-term solutions and looking to the future and developing concepts and capabilities that will meet those future needs." For complete article, click here.

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*The following article about theater training software originally appeared on the Wall Street Journal Digital Network website.*

***TECHNOLOGY SOLUTIONS COMPANY TO OVERSEE THEATER TRAINING SOFTWARE***

McLean, Va., January 19, 2009 – The Modeling and Simulation Information Analysis Center (MSIAC) is going to provide modeling and simulation (M&S) support to manage the Air National Guard's Expert Common Immersive Theater Environment (XCITE) software.

The XCITE software powers the Air National Guard's Distributed Training Operations Center (DTOC), providing realistic, interactive theater training environments for aircrew members and soldiers. MSIAC will evaluate XCITE and deliver a new operational version that provides higher levels of environment and threat replication. The work will include software development, configuration management, standards compliance and validation/verification.

"Operational demands have increased dramatically for the Air National Guard's DTOC, and Alion is pleased to support the improvement of the training experience with enhanced software," said Dick Brooks, Alion Senior Vice President and Manager for its Distributed Simulation Group. "MSIAC's work will deliver sophisticated software that incorporates the most current environment generation and threat presentation to deliver the training situations that imitate real-war environments."

The period of performance runs through September 11, 2011.

For complete article from the Wall Street Journal Digital Network website, click here.

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*The following article about USJFCOM and NATO simulation originally appeared on the USJFCOM's website.*

***USJFCOM, NATO REACH HISTORIC FIRST FOR SIMULATION FEDERATION***

NORFOLK, Va. - Dec. 2, 2008 – NATO and U.S. Joint Forces Command (USJFCOM) officials recently completed the first use of a new jointly-developed Alliance modeling and simulation (M&S) training capability.

Exercise Steadfast Joiner was a computer-assisted command post exercise to train and evaluate NATO's Response Force (NRF) 12 and showcased the first use of the Joint Multi-Resolution Model (JMRM) Federation, NATO's constructive simulation training capability and a central component in the NATO Training Federation (NTF).

Army Lt. Col. John Janiszewski, chief, USJFCOM Joint Warfighting Center (JWFC) Technical Development and Innovation Branch,

said USJFCOM assisted NATO with the development of the critical M&S capability.

“Project Snow Leopard is NATO’s initiative to develop a distributed network linking NATO organizations, nations, and partners in order to enhance distributed training, education, and experimentation,” said Janiszewski. “Over a two year period our team worked closely with NATO’s Allied Command Transformation and the Joint Warfare Center to develop, test and field this training capability.

“The Steadfast Joiner exercise is a major milestone for NATO and its 26 member nations that validated the NATO Training Federation as a viable training tool for NATO,” said Janiszewski.

He explained that the JMRM is a modeling and simulation federation consisting of two models, the Joint Theater Level Simulation (JTLS) and the Joint Conflict and Tactical Simulation (JCATS). This federation allows an organization to train from the operational level of war down to the tactical level of war.

USJFCOM’s Joint Warfighting Center manages both models and used them in the past to train U.S. forces.

“NATO was exercising a unit using a fictional scenario. The units develop plans that were then input into the simulation,” Janiszewski said. “The simulation replicated the interaction or conflict between NATO forces, civilians and opposing forces. The simulation then provided the results of the interaction to the training audience.”

He said using the NTF enables NATO to train their forces more effectively before deploying to a theater of operations like Afghanistan. “This gives them a means into which they can certify forces as being ready to execute their warfighting mission,” he said.

According to Janiszewski, USJFCOM will continue working with NATO to enhance and refine the NTF. For original article from the USJFCOMs website, click here.

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*The following article on Army field manuals for training originally appeared on the Army.mil website.*

***FM 7-1: ‘HOW’ OF ARMY TRAINING TO BE WEB-BASED***

WASHINGTON, Army News Service, Dec. 19, 2008 - With the release of the Army's latest field manual 7-0, "Training for Full Spectrum Operations," the deputy chief of staff, G-3, told Pentagon reporters Thursday that within three months the Army would be releasing FM 7-1.

"In about 90 days we're going to produce FM 7-1 as an adjunct to 7-0, which is the Army Training Network," Lt. Gen. James D. Thurman said. "It's the application doctrine to these principles of full-spectrum training."

Released Dec. 15, FM 7-0's four chapters address the breadth and depth of Army training concepts - the "what" of Army training.

FM 7-1 will be titled "Battle Focused Training." It will be Web-based and address the "how" of Army training. It will provide examples of concepts in 7-0 as well as training lessons and best practices for implementing the FM 7- 0 concepts.

"What we're trying to do in the Army is write things that are very succinct and direct," Thurman said. "For instance, in FM 7-0, chapter one talks about being trained for full-spectrum ops, chapter two talks about the principles of training, chapter three is the Army training system, then chapter four is the Army training management system."

FM 7-0 was designed to help develop an expeditionary Army, composed of Soldiers and civilians experienced and knowledgeable enough to be comfortable with operating

anywhere along a spectrum of conflict in any type of operation, under any conditions. The principles and concepts are intended to produce leaders who can rapidly and easily adapt to changing, ambiguous situations.

"We think given what we'll be presented with is somewhere between regular warfare and major combat operations so that's how we want to focus our training and leader development," Thurman said. "We believe we can do that and build agile and adaptable leaders, then we can do just about anything across that whole spectrum of conflict."

A key element to FM 7-0 is that the commander decides which tasks his unit will train on in concert with his next higher commander in a pre-training briefing "dialogue." The dialogue also helps commanders decide the conditions for training, where they will jointly take risks and the resources need to replicate the training conditions.

"The one thing we can never lose is the fact that it's all about Soldiers and it's about Soldiers who win the war," Thurman said, "because that's who we ask to do these things; so we can never lose our Warrior Ethos, our training must be realistic, we must set those right conditions and reflect that right operational environment across the spectrum of conflict."

"Standards are constant. We're a standard-based Army, but leaders can change those training conditions to develop those Soldiers and leaders as they see fit," Thurman added.

"We can't train all the tasks that are required, but we must train on the most important task and that's where the commander comes into this, and we believe that what we've laid out in this manual is a clear way ahead of looking at how we continue to deliver full-spectrum forces across the full spectrum of conflict." For original article from Army.mil, click here.

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*The following article about a simulator in Europe helping teens to learn to drive, originally appeared on DoD's DefenseLink website.*

***SIMULATOR HELPS TEENS IN EUROPE LEARN TO DRIVE***

MONS, Belgium, Jan. 12, 2009 - Teenagers here are learning to drive in the rain, in the fog, and even on narrow mountain roads at night. They're driving while their friends talk and laugh behind them, and even while their cell phones ring. But because of new technology, their lives are in no way at risk.

They are the first students to use one of Installation Management Command Europe's new driving simulators. Ten simulators, including one at Supreme Headquarters Allied Powers Europe here, were installed throughout the region to enhance driver's education programs for teenage children of service members and Defense Department civilians.

At first glance, students are pumped by the multi-panel monitors, which include a rear-view mirror, side mirrors and a lifelike perception of peripheral vision. Once they get behind the wheel, however, they're faced with all the complexities of an automobile.

Gavin Wainwright, the father of three teenagers, said he was glad to hear that U.S. Army Garrison Benelux was getting one of the simulators. "I thought it was one of the best things they brought to the community in a long time," he said. "I know it's a lot better than what I went through. I was considering sending one son back to the states last year so he could go through drivers training and then get his license," he said. "It would be a lot more expensive to send him there than this inaugural program, which is free."

His sons, Gavin Jr. and Justin, were among the first graduates of the driver's education course here. About midway through the course, Justin hopped into the simulator, buckled up and asked

the teacher to challenge him on the winding mountain pass.

He chose to use the simulator in manual mode, forcing him to shift as he went up and down hills. Though he completed the two-minute exercise with no faults, toward the end of the lesson he was startled by a sudden curve with no guard rails. Had he been going too fast, he would have slid down the side of the mountain.

"I think it makes them more aware of some of the challenges of driving," his dad said. "They're learning how to be defensive as well as offensive, and how to balance that behind the wheel."

Kregg Kappenmon agreed. He has taught driver's ed for eight years, and said this simulator adds a realism that he's never been able to teach before. He can add weather elements, which require drivers to use their wipers and adjust their speed so they don't hydroplane. He can change the drive from small towns to freeways, forcing students to merge into traffic. He can even add elements of surprise, such as deer and children running into the street.

"The first time they see it out there, it won't be the first time," he said. "It's very, very, very realistic. It gets them to feel the car." For original article from the DefenseLink website, click here.

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*The following article about leveraging gaming technology originally appeared on the Wright-Patterson Air Force Base website.*

***AFRL LEVERAGES GAMING TECHNOLOGY FOR INTERACTIVE MILITARY TRAINING***

WRIGHT-PATTERSON AIR FORCE BASE, Ohio, December 3, 2008 - Blending commercial gaming technology with military-specific databases, researchers at the Air Force Research Laboratory's 711th Human Performance Wing have demonstrated quicker, less expensive ways to develop the next generation of tools for interactive military training.

The 711th HPW's Human Effectiveness Directorate Warfighter Readiness Research Division at Mesa, Ariz. unveiled the technological potential of its gaming research and development project for the first time publicly at the 2008 Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) in Orlando, Florida on Dec. 1.

The fast-track technology demonstration project began in June when two Thurgood Marshall College Fund interns joined RHA for a summer of hands-on programming experience. Their initial success formed the foundation for a project that clearly depicts how modern gaming technology can help cut development time and costs for critical military distributed mission simulations, said 2nd Lt. Luke Lisa, an aerospace engineer who leads the project.

In only six months, researchers integrated high-fidelity real-world aircraft models with existing commercial-off-the-shelf (COTS) X-Plane gaming software to create a realistic flight simulation program with rich COTS graphics.

"That's a testimony to how fast we can develop a product with this method," said Lt. Lisa.

Under a pending technology transfer agreement, RHA's technology will also help improve the fidelity of the Defense Advanced Research Project Agency's PC-based "RealWorld" Air Combat Environment program, according to Craig Eidman, RHA immersive environment engineering lead.

Building on the gaming industry's competitive advancements is an approach that makes sense, said 1st Lt. Clinton Kam, an aeronautical engineer also assigned to the project.
"You have this billion-dollar gaming industry and they're advancing the technology constantly, pushing forward the video cards, the physics cards, the processors," Lt. Kam said. "So our

challenge is, how can we leverage their efforts?"

Researchers are interested in how best to get military training value in a fun, aesthetically pleasing game environment that would provide genuine training effectiveness at the low cost of a computer game.

X-Plane software is known for its fluid graphics, realistic depiction of weather including volumetric (3-dimensional) clouds, and attention to detail such as night-time ground lights and highway traffic. But its military aircraft performance is "low fidelity" relative to real aircraft characteristics and that's where the Air Force tailoring begins.

"Fidelity is how close the flight model of an aircraft fits the real world," Lt. Lisa explains. "So if you are flying an F16 and you're pulling a 6g turn, how much energy do you lose in that turn? The bottom line is, the better fidelity, the more realistic the simulation."

"You don't want the aircraft to do things it wouldn't actually do in real life, such as climbing faster than it's capable of doing," Lt. Kam agreed, otherwise the result could be "negative training" for the warfighter. For complete article from the Wright-Patterson Air Force Base website, click here.

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*The following article about AETC using the Second Life virtual world originally appeared on the Air Force Link website.*

***AETC OPENS VIRTUAL DOORS TO MYBASE***

RANDOLPH AIR FORCE BASE, Texas (AFNS), December 2, 2008 - Air Education and Training Command officials here launched a virtual world Dec. 2 targeting avatars, or people, interested in learning more about the Air Force.

Second Life is a three-dimensional virtual world where users can socialize, connect and explore the digital universe using virtual characters, or avatars, who chat by voice and text.

AETC officials purchased Second Life "land" called MyBase allowing public access to information about the Air Force.

With more than 15 million accounts worldwide registered in Second Life, Air Force officials hope MyBase will attract men and women interested in learning more about the Air Force, said Col. John Thompson, the AETC Future Learning Division chief. The site also provides links for enlistment and commissioning information and how to contact the nearest Air Force recruiter.

One possible long-term use for this technology is to open a private site in a three-dimensional world, yet to be determined, where active-duty Airmen can attend virtual training and are tracked to receive course credit. Offering virtual-based training could offset the cost of travel to training sites around the world which often includes lodging and other expenses.

Additional information about AETC's commitment to transforming its training and education system into a continuous learning culture to meet future Air Force missions can be found in "On Learning: The Future of Air Force Education and Training," available at www.aetc.af.mil/library/whitepaper.asp. For original article from the Air Force Link, click here.

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***NEW ON THE EVENT CALENDAR***

**THE JOINT 2009 SPRING SIMULATION INTEROPERABILITY WORKSHOP (SIW)**
SIW is sponsored by SISO and SCS and will be held from 23-27 March 2009 at the Doubletree Hotel, San Diego-Mission Valley, CA. For more information on the conference, click here.

**Keynote Speaker:** Colonel Mike Sanders
Deputy Director, Modeling and Simulation Coordination Office (M&S CO)

**Tutorial: DoD M&S Standards Vetting Process/Tool**
Kevin Charlow and Marcy Stutzman

The tutorial will describe and demonstrate the DoD M&S Standards Vetting Process/Tool sponsored by the DoD M&S Steering Committee, available for use across the Department.

*The following papers report results from projects sponsored or supported by the DoD Modeling and Simulation Steering Committee and will be presented at the Spring SIW conference:*

**Common Object Model Components: A First Step Toward LVC Interoperability**

Abstract excerpt: Within the DoD, object model proliferation is seen as a persistent barrier to achieving LVC interoperability goals…. While the Joint Composable Object Model (JCOM) project will not solve the broader LVC interoperability problem alone, the initial development undertaken is considered a significant first step toward desired interoperability goals.

**Discovery and Reuse of Modeling and Simulation Assets**

Abstract excerpt: The ability to discover existing modeling and simulation (M&S) resources is a critical need for enabling effective reuse and for reducing the duplication of capabilities. Such visibility and accessibility is key to optimizing the investment of the estimated billions of dollars spent on M&S within the Department of Defense (DoD). Key enabling technologies include an integrated search and discovery capability, and the specification of a consistent set of metadata that can be used to search across multiple registries and repositories.

**DoD M&S Standards Vetting Process/Tool – Common and Cross Cutting**

Abstract excerpt: This paper updates the Modeling and Simulation (M&S) community on the status of the M&S Project "Department of Defense (DoD) Modeling and Simulation Standards Vetting Tool" sponsored by the DoD M&S Steering Committee.

***MSIAC M&S NEWSLETTER***

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