MSIAC M&S Newsletter

May/June 2010 1

Welcome to the May/June 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 May/June 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

DTIC awards SNIM

DoD M&S SC commissions DoD M&S Catalog

M&S tools for enhancing human cognitive effectiveness made available

Avatar project to help military amputees

Gritty realism special effects simulated

Computer model for locating sunken oil from spills developed

DoD Modeling and Simulation Staff Officer Course (MSSOC) available

M&S Journal accepting papers

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The following article on SNIM originally appeared on DTIC's website.

DTIC AWARDS SNIM

Ft. Belvoir, VA (May 25, 2010) – On May 24, 2010, the Defense Technical Information Center (DTIC) awarded nine indefinite delivery, indefinite quantity (ID/IQ) contracts under a multiple award contract (MAC) covering Software, Networks, Information, Modeling and Simulation (SNIM). Awardees of Prime Contracts for SNIM are as follows:

Alion Science and Technology Corporation, Applied Research Associates, Inc., Battelle Memorial Institute, Booz Allen Hamilton, Inc., ITT Corporation, Inc., L-3 Communications, Inc., MacAulay Brown, Inc., Science Applications International Corporation, and Wyle Laboratories, Inc.

With a maximum value of $2 billion over the next 5 years, SNIM serves as an efficient contracting vehicle to quickly get information assurance, software data and analysis, modeling and simulation, knowledge management and information sharing services into the hands of DoD components, other Government agencies, industry, and academia.

"The purpose of SNIM is to leverage the best and the brightest in order to solve the Government's toughest problems and ultimately satisfy the needs of our Nation's Warfighter," explained Terry Heston, Program Manager for the Information Analysis Centers (IACs).

SNIM provides a unique and symbiotic relationship for both customers and the science and technology community. Customers fund Technical Area Tasks (TATs), which yield new Scientific and Technical Information (STI). Under SNIM, all newly created STI will be added to one of the following IACs, thus becoming readily available to the entire scientific community: Modeling and Simulation Information Analysis Center (MSIAC), Information Assurance Technology Analysis Center (IATAC), or Data and Analysis Center for Software (DACS).

"Customers who use SNIM not only save federal resources by not duplicating work that's already been performed, but also strengthen our scientific community by adding new pieces of STI for others to use," Heston explained. "In a time of shrinking budgets and increasing

responsibility, IACs are a valuable resource for accessing evaluated STI culled from efforts to solve new and historic challenges."

For more information on SNIM, click here.

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The following article from The Office of the Secretary of Defense (OSD), Cost Assessment and Program Evaluation (CAPE), Joint Data Support (JDS) Division, was submitted by Brandi Greenberg.

THE DEPARTMENT OF DEFENSE MODELING AND SIMULATION CATALOG

In order to manage and employ Modeling & Simulation (M&S) capabilities effectively across the Department of Defense, senior leaders and managers must have visibility into the DoD's M&S portfolio. Knowing which tools and data exist along with descriptive information concerning its relevance is vital to ensure that organizations supported by M&S can find the tools that meet their requirements, or to determine they need to develop capabilities that fill identified gaps.

This visibility is established through a discovery process that has at its core a search capability.

The DoD M&S Steering Committee has commissioned the creation of the M&S Catalog to establish this search capability for organizations that are supported by M&S. This will enable a web-based discovery service that provides a "card catalog" level of detail about M&S tools, data, and services. By ensuring the metadata of their products is captured in the M&S Catalog, managers can expand their user base. Those organizations that use or are supported by M&S will have access to existing tools, data, and services.

Modeling and Simulation has become a common tool throughout DoD. A major challenge is knowing whether a required M&S capability or data source exists or needs to be created. Establishing visibility into the M&S resources across the DoD enterprise is one of the goals of the DoD Net-centric Vision. This effort is totally dependent on the descriptions and contact information (metadata) being posted in a common format on the Global Information Grid (GIG). Discovery services using a search engine with access to those descriptions can allow users to locate the product that best meets their requirements.

As part of their efforts to address M&S capability gaps common to organizations across the DoD enterprise, the DoD M&S Steering Committee commissioned an M&S Catalog search tool to provide a web-based discovery service focused on M&S tools, data, and services. The search tool capabilities were guided by interviews with senior leaders, users, and technical personnel in the communities that participate in the M&S Steering Committee. The intent is to make the search tool as intuitive and effective as possible to guide a user quickly to a manageable set of alternatives to evaluate.

Additionally, in response to the request of senior level managers, the tool will have the capability to perform analysis of the characteristics of the search result set of resources.

The key to the value of the M&S Catalog is the breadth and accuracy of the information it contains. A significant effort is being under taken to encourage organizations across the DoD enterprise to integrate the information about their products with the M&S Catalog. Metadata can be accepted from a collection such as a service M&S Resource Repository (MSRR) or directly from the manager of a product. The vision is to interface as closely to the origin of the metadata as possible so that the motivation to keep it current is high.

The resulting visibility into the M&S world will provide significant benefits throughout DoD. Resource owners can use the catalog to maintain their own inventories as well as identify

new customers. Resource seekers can rapidly find what they need and identify potential cost avoidances by learning of existing efforts. The department will achieve better resource management by ensuring resources are not applied to create existing capabilities, but instead focus on those areas where capabilities are lacking.

You can see a glimpse into the visibility of the net-centric future by accessing the M&S Catalog at https://MSCatalog.osd.mil, which requires a CAC card.

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The following article was written and submitted by Chris Forsythe and Michael L. Bernard, Sandia Laboratories.

M&S TOOLS FOR ENHANCING HUMAN EFFECTIVENESS: SANDIA NATIONAL LABORATORIES MAKES COGNITIVE TOOLS AVAILABLE FOR NATIONAL SECURITY APPLICATIONS

Military analysts, working in various disciplines, don't often have time to read and assess the vast numbers of documents and information sources associated with their work. This problem is compounded by the growing numbers of published materials from traditional and non-traditional media sources.

From books and professional journals to blogs and podcasts, a multitude of information and social networking sources threaten to overwhelm the analysts' ability to absorb, assess and produce a comprehensive end product. Despite technological advances, most would assert that the human analyst plays a vital role in reading and providing a perspective that cannot be duplicated through computer technology.

The philosophy guiding Sandia National Laboratories' (SNL) cognitive technologies development highlights the vital role humans play.

The SNL Media Analysis Toolset illustrates this approach. Consider a situation in which there are several media outlets that provide the population of a given region with their primary source of information concerning U.S. actions and interests. Furthermore, there is potential for local entities to manipulate these outlets to advance ideas contrary to U.S. interests. To detect such manipulation, analysts would need to continually monitor each media source for broadcasts that reflect shifts in the selection and coverage of events, and general sentiment toward the U.S. The Media Analysis Toolset analyzes documents and plots trends over time concerning sentiments. Trends are then highlighted to allow the analysts to quickly sort through the volumes of data to identify the media source, the originator of the information and the person reporting the information. Recent research illustrates the validity and utility of the Sandia Media Analysis Toolset. Test subjects played the role of a media analyst and were given a stack of documents to read. They were then asked to rate the level of anti-American sentiment expressed within each document. When the sentiment ratings obtained with the Sandia Media Analysis Toolset were compared to those produced by the human raters, there was a statistically significant correlation.

This means that the Sandia Media Analysis Toolset provided ratings of the documents that were comparable to those that would be obtained by a human reading and assessing each document.

The toolset provides a variety of tools for text-based analyses of documents and may be readily tailored to the specific needs of different jobs and tasks. Examples include:

- identifying key ideas within a document
- comparing documents from different sources or authors

- detecting shifts in ideas expressed over time
- categorizing documents
- ranking documents based on their expression of specific ideas
- identifying associations between ideas, people, places, etc.
- visualizing the relationship between documents
- spidering the internet or other databases to find similar documents, authors or sources.

To date, the most extensive use has occurred for the U.S. Department of Energy's (DoE) Yucca Mountain Project. A tremendous document set consisting of a variety of formats located in disparate databases and file servers has evolved over several decades. DoE used these tools to search, map, relate, filter, categorize, and triage the documents per their contents and metadata. Analysts have increased their productivity by as much as 90% and reported savings in schedule and cost, as well as increased accuracy and comprehension.

Sandia National Laboratories is a contractor-operated government laboratory of the U.S. Department of Energy. The tools described in this article are freely available for use by U.S. government agencies. Inquiries should be directed to the office of Dr. John Wagner at 505.845.7295 or jswagne@sandia.gov.

For more information from Sandia Labs, click here.

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The following article on an avatar project helping military amputees originally appeared on the Department of Defense website.

AVATAR PROJECT SEEKS TO HELP MILITARY AMPUTEES

FORT DETRICK, Md., April 28, 2010 - In the blockbuster movie "Avatar," Jake Sully, a former Marine who lost the use of both legs in combat, climbs into a vessel that magically restores his body when he assumes a new, 10-foot-tall avatar identity.

A new project being funded through the Advanced Army Medical Technology Initiative promises to bring some of that same technology to real-life wounded warriors to promote their rehabilitation and help to ease their reintegration into society.

The Amputee Virtual Environment Support Space (AMVESS) project aims to create a virtual world in which military and veteran amputees can swap information and provide the peer support many lose when they leave military treatment facilities, explained Ashley Fisher, a program manager at the Army's Telemedicine and Advanced Technology Research Center here.

The project will provide wounded warriors a specialized version of the popular "Second Life" computer simulation game, Fisher said. Users will log onto the program through their computers to create an avatar of themselves -- essentially a virtual being, complete with the physical characteristics they assign it.

The avatar will be able to interact with other registered avatar beings - fellow amputees, caregivers, even friends and loved ones - in a virtual world that's unencumbered by the restrictions of time, distance or disability.

As AVESS develops, users also may be able to check in with their professional caregivers, asking questions, getting information updates, and even seeing online demonstrations of the

best way to do a physical therapy exercise or adjust a prosthetic device.

The Telemedicine and Advanced Technology Research Center awarded a contract to ADL Co-Laboratories last fall to assess the program's feasibility and identify the best way to deliver it to military amputees.

"We tasked them with coming up with a roadmap, letting us know what was possible in developing a virtual world for amputee veterans, and letting us know what issues there are in terms of privacy, access, authenticating who was coming into the environment, all those types of issues," Fisher said.

In wrapping up the first phase, the company created a demonstration environment using a standard Second Life platform. "So we did a walk-through of that, and got to see what the capabilities were," Fisher said.

For complete article from the Department of Defense, click here.

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The following article on special effects at a U.S. Marine Corps training village originally appeared on the Training and Simulation Journal (TSJ) website.

GRITTY REALISM SPECIAL EFFECTS ADD CHAOS AND STRESS TO U.S. MARINE CORPS TRAINING VILLAGE

It was the usual hubbub outside the Afghan police station. A U.S. Marine officer chatted with the district governor and local police chief while several villagers milled around nearby.
Earlier, 1st Lt. J.P. Bayer had assured the governor that his Marines would work with local officials to improve their village, and together he and his 11-member squad walked through the village and its market, which was unusually still.

"We want to work together with him to bring security to this area," the lieutenant said, as the interpreter translated English to Pashto.

The policeman reminded Bayer that he's the "only one" and that he lacks proper equipment to deal with criminals and heavily armed Taliban insurgents who threaten the area.

Just then, a bomb buried somewhere in the marketplace exploded, sending dust and shrapnel flying. An Afghan man screamed in pain as the entourage darted into the police station.

For Bayer and his team from 11th Marines' Civil Affairs Group, the attack — simulated inside the high-tech Infantry Immersion Trainer (IIT) at Camp Pendleton, Calif. — would test their combat training, instincts and leadership. Perhaps more important, it would reveal what they did right and what they didn't.

His squad joins more than 2,500 Marines who have trained in the IIT during the past six months. The 32,000-square-foot facility is a mock Afghan village built inside a large warehouse once used for packing tomatoes. It opened in late 2007 as a prototype specifically geared to train Marine squads, including infantrymen and combat support groups such as Bayer's.

Those who built and run the IIT want to help troops prepare for the range of combat missions that can unfold in the so-called "three-block war." It's meant to provide an authentic experience, complete with all the chaos, smoke, noise and blood of real combat.

But it's more than just another urban training range. Unlike traditional Military Operations in Urban Terrain facilities that long have served as the mock village where leathernecks train for mounted and dismounted operations, the IIT features more "Hollywood effects," including pyrotechnics, realistic buildings and battlefield smells. It also features avatars, interactive life-

sized holograms projected on walls and doors designed to prompt reactions from the Marines.

For complete article from TSJ Online, click here.

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The following article on a computer model locating sunken oil originally appeared on the ScienceDaily website.

COMPUTER MODEL FOR LOCATING AND FORECASTING SUNKEN OIL FOLLOWING SPILLS

A team of researchers at the University of Miami (UM) has developed a computer model for finding and projecting in time sunken oil masses on the bottom of bays, after an oil spill. The unique model can be used in oil spill planning, response, and recovery applications.

"Sunken oil is difficult to 'see' because sensing techniques show only a small space at a point in time. Moreover, the oil may re-suspend and sink, with changes in salinity, sediment load, and temperature, making fate and transport models difficult to deploy and adjust," says James Englehardt, UM professor of environmental engineering in the College of Engineering and team leader for the project. "For these reasons, we have developed a unique approach to the problem, bridging sampling plan techniques with pollutant transport modeling, to create models of sunken oil.

The model was developed for the Emergency Response Division of NOAA/NOS/OR&R (NOAA's Ocean Service Office of Response and Restoration), in Seattle, and the project was funded by the Coastal Response Research Center, University of New Hampshire.

The two-year project had three main objectives: compile and summarize data on the occurrence of sunken oil, directed by the project team including end users and NOAA liaison; develop a 2-D multimodal predictive Bayesian Gaussian model of sunken oil locations across a bay to accept spatial field data and hydrodynamic information and forecast sunken oil locations in time; and verify the model versus sunken oil data, as possible, and simulated datasets.

For original article from ScienceDaily, click here.

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DoD MODELING AND SIMULATION STAFF OFFICER COURSE (MSSOC)

17-19 August 2010
Wright-Patterson AFB, OH

This three-day course provides a broad overview of modeling and simulation (M&S) policy and activities of the Department of Defense (DoD), with discussion of how DoD employs M&S in support of training, analysis, acquisition of new products and systems, test and evaluation (T&E) and experimentation. The course focuses on M&S terms, concepts, applications, and information resources, preparing attendees for positions that require conversancy in these topics. Students will gain familiarity with major M&S concepts, policies, organizations, programs, activities, and issues within the Department of Defense. Continuous Learning Units (CEUs) are available for this course.

For more information on MSSOC, 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.

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

Instructions for Authors

- Submissions may be entirely new work, or previously published papers that would benefit from a wider exposure and would provide valuable resources for M&S users.
- The M&S Journal does not accept papers that are structured as commercial advertising, or as promotions of products or services.
- Submission must be previously cleared material for open distribution, and should include reprint permissions.
- Manuscripts should be between five to fifteen pages, or 500 to 5,000 words.
- Manuscripts should be submitted in Microsoft Word format.
- The M&S Journal Editorial Board reserves the right to modify a paper for the purpose of typographical or grammar corrections.
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Please contact the MsiacHelpDesk@dod-msiac.org for more information, or if you would like to submit a technical paper to the M&S Journal.

To see the latest issues of the M&S Journal, click here.

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Please visit the MSIAC Calendar for a list of events currently taking place in the M&S Community.

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