MSIAC M&S Newsletter

October 2006

The Modeling and Simulation Information Analysis Center (MSIAC) M&S Newsletter is now available as an automatic service. Simply send an email to digest-subscribe@pan.msiac.dmso.mil to be added to our mailing list. This list is for the Newsletter only and will not be used for any other purpose. Please note that it is not necessary to subscribe each month.

If you would like to submit an article to be highlighted in the *MSIAC M&S Newsletter*, please forward the article (along with its source data and URL, if available) to the MSIAC Help Desk no later than 15 workdays prior to the publication of the next Newsletter. Normally, the Newsletter is published on/about the first of each month. Potential articles as well as questions or comments on the Newsletter can be emailed to msiachelpdesk@msiac.dmso.mil.

The MSIAC also publishes the quarterly *MSIAC Journal On-line*. If you would like to see the current issue of the *MSIAC Journal On-line* visit: http://www.msiac.dmso.mil/journal. If you would like to submit an article for the Journal On-line, please email your paper or article to msiachelpdesk@msiac.dmso.mil at least 45 days prior to the next publication date.

UPCOMING EVENTS

23-30 October 2006
9th Annual Systems Engineering (SE) Conference
San Diego, CA

24-26 October 2006
MSIAC Modeling and Simulation Staff Officer Course (MSSOC)
Scott AFB, IL

30-31 October 2006
Serious Games Summit 2006 (SGS DC)
Washington, DC

30 October- 2 November 2006
Annual ITEA International Symposium
Lake Buena Vista, FL

14-16 November 2006
MSIAC Modeling and Simulation Staff Officer Course (MSSOC)
Norfolk, VA

27-30 November 2006
25th Army Science Conference
Orlando, FL

3-6 December 2006
Winter Simulation Conference (WinterSim)
Monterey, CA

4-7 December 2006
Interservice/Industry Training, Simulation and Education Conference (I/ITSEC)
Orlando, FL

25th ARMY SCIENCE CONFERENCE (ASC)

The 25th Army Science Conference (ASC), sponsored by the Assistant Secretary of the Army (Acquisition, Logistics and Technology), will be held at the Orange County Convention Center, Orlando, Florida, November 27-30, 2006. This silver anniversary conference is a significant milestone for the Army Science and Technology (S&T) community, as it will be 50 years since the Army has been sponsoring this biennial event to promote and showcase the Army's S&T program.

The conference theme is **"**Transformational Army Science and Technology - Charting the future of S&T for the Soldier**."** The

conference will feature talks by prominent individuals from the U.S. and Allied governments, academia and industry - included in the list of speakers are eight Nobel Prize winners - and presentations of papers and posters judged as best among those submitted by scientists and engineers from government, industry and academia. Authors of the most outstanding papers will receive special recognition and awards. Additionally, an International Collaboration Award has been initiated for this and future conferences. The audience will include representatives from academia, industry, U.S. Government and over 30 Allied nations. For more information visit: http://www.asc2006.com/

NOMINATION PERIOD OPENS FOR ANNUAL DOD M&S AWARDS

The nomination period for the annual Department of Defense (DoD) Modeling and Simulation (M&S) Awards opened October 2, 2006. It will close at 5 p.m. EST on Jan. 12, 2007.

Awards will be presented in seven categories for accomplishments during calendar year 2006. A winner –- individual or team –- will be selected in each category. The first six categories correspond with the DoD communities –- *Acquisition, Analysis, Experimentation, Planning, Test and Evaluation, and Training.* The seventh category, a cross-functional area, considers those broader endeavors that impact two or more of the community areas.

All units, organizational elements and government employees –- both military and civilian –- of the DoD Components that are involved with the development and/or use of M&S are eligible.

The awards program was initiated by the Defense Modeling and Simulation Office (DMSO) in 1998 on behalf of the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)): to enhance M&S awareness throughout DoD, and to recognize excellence, innovation, and achievement in advancing the "state of the art" of M&S and/or in contributing to interoperability and reuse in support of DoD M&S objectives.

This includes, but is not limited to, the development of standards and architectures; techniques and tools; synthetic environments; and new military applications. The number of categories has grown from the original four in 1998 to seven. The "Testing and Evaluation" category was added in 2005. "Experimentation" and "Planning" categories were added this year.

The National Training and Simulation Association (NTSA) sponsors a corresponding set of awards for industry, academia and non-DoD government practitioners in support of DoD M&S. DoD winners will be announced in March 2007. Awards, both DoD and non-DoD, will be presented at the DoD M&S Conference in Hampton Roads, Va., May 8, 2007.

DoD and non-DoD nominators submit their nominations to different locations. Detailed nomination procedures and forms for DoD nominees will be available on the DMSO Web site at https://www.dmso.mil/public/community/awards/nomination by 5 p.m. on Oct. 5. Submit non-DoD nominations on the NTSA Web site at: http://www.trainingsystems.org/nomform.cfm or contact Patrick Rowe at NTSA at (703) 247-9471 or prowe@ndia.org.

For information about the awards program and past winners visit: https://www.dmso.mil/public/community/awards/.

For more information about the DoD M&S Awards program contact:
Sherrel Mock,
DoD M&S Awards Project Lead
(703) 824-3437, sherrel.mock.ctr@dmso.mil

THE AIR FORCE TRAINING SYSTEMS PRODUCT GROUP (TSPG) ANNOUNCES MEETING

The Air Force Training Systems Product Group (TSPG) is sponsoring a DoD Database Standards side meeting during the 2006 Interservice/Industry Training

Simulation and Education Conference (I/ITSEC) in Orlando, FL.

The purpose of the side meeting is to provide updates on Service initiatives that can allow sharing of environmental database investments across Service simulation programs.

The side meeting will be held in the Air Force conference room (West Building, Room 101B) at the Orange County Convention Center, Orlando, FL, on Tuesday December 5th, from 2-4:00 PM. Project updates are expected from the Air Force TSPG, Army PEOSTRI, Navy NAVAIR, USSOCOM, and JFCOM.

Attendance is open to all interested parties. Contact Mike Sieverding, AFRL/HEA, 480-988-6561, ext 156, or Michael.sieverding@mesa.afmc.af.mil, for more information.

AFRL SUCCESSFULLY DEMONSTRATES HIGH-ASSURANCE SECURITY ARCHITECTURE

The Air Force Research Lab (AFRL) is working with industry under the High-Assurance Security Architecture for Embedded Systems program to develop and advance the Multiple Independent Levels of Security/Safety (MILS) architecture, an enabling technology offering an affordable near-term solution to building high-assurance systems such as multilevel security systems. AFRL successfully demonstrated the MILS architecture by integrating products from competing commercial off-the-shelf (COTS) vendors to showcase the benefits of the MILS architecture applied to warfighter nodes and connected to the Global Information Grid (GIG).

Raytheon, under contract with AFRL, provided the application software and orchestrated the MILS demonstration, which presented a simulated airborne reconnaissance mission scenario using MILS products supplied by leading software vendors and running on networked processors and workstations. AFRL and its industry partners successfully demonstrated a capability to affordably ensure the separation of multiple levels of data using COTS components.

This technology provides the Air Force (AF) and other services with a capability to protect warfighter data, thereby contributing significantly to the AF's position as a leader in the global information systems technologies defense arena. Furthermore, the MILS architecture is not only applicable to the Department of Defense, but is directly transferable to other domains involving a critical infrastructure, including supervisory control and data acquisition, financial, medical, intelligent transportation systems, and consumer electronics applications—all of which require secure, high assurance performance. (Mr. J. Luke, AFRL/IFTA, (937) 255-6653 x3585, and M r. T. Reinhart, AFRL/IFTA, (937) 255-6548 x3582) For original article visit: http://www.afrl.af.mil/accomprpt/aug06/accompaug06.asp

MODELING, SIMULATION FACING IMAGE FACE-LIFT

(SUFFOLK) - The television series "L.A. Law" sparked a jump in law school applications. "CSI" did the same for criminal forensics. Computer modeling and simulation may never inspire a prime-time show, but a good public relations effort could help the industry grow in Hampton Roads, an industry official said.

"The problem is crystallizing the benefits to excite kids about careers in modeling and simulation," said Steve DelBianco, Vice President of Public Policy for the Association of Competitive Technology, a Washington-based group.

For the past few years, various economic development groups and others have stressed that a homegrown work force is essential to draw more high-tech businesses to the region. It's a top concern of industry leaders.

On Monday, the Modeling and Simulation Advisory Committee added its voice.

The committee, chaired by Del. John Cosgrove, R-Chesapeake, is a year-old creation of the General Assembly. It is made up of industry officials such as DelBianco, as well as representatives from academic and government arenas. Its goal: to make Hampton Roads and Virginia a national leader in modeling and simulation.

It's already big business, annually contributing about $400 million and 4,000 jobs here. In a sign that legislators are beginning to see the potential, Cosgrove said, the General Assembly this year gave $17 million to Old Dominion University and its Virginia Modeling, Analysis and Simulation Center.

John Sokolowski, the center's senior research scientist, said some of the money will be used to hire 17 new tenure-track faculty members, part of a plan to integrate modeling and simulation technology across all departments - including business, education and health sciences.

Despite those strides, committee members said one of the biggest challenges is jazzing up the industry's image. A lot of people still don't understand what it is, they said, and many schoolchildren don't see its relevance beyond video games.

There's good money to be made in Hampton Roads, said Mark Andrew Phillips, a research engineer for General Dynamics Information Technology. A college undergraduate can land a job locally for $45,000 a year, while highly skilled workers can pocket more than $100,000, he said.

"Branding" the industry as one in which "you're helping society, you're helping people" could draw in more people, especially women, said Mary Kasarda, an associate professor of mechanical engineering at Virginia Tech's Center for Intelligent Materials. For complete article by Jon. W. Glass, The Virginian-Pilot visit: http://home.hamptonroads.com/stories/story.cfm?story=109621&ran=164934

MATHEMATICAL SIMULATION MAY HELP EASE AIRPORT CONGESTION

Researchers at Purdue University have created a mathematical simulation that could be used in a new national strategy to ease airport congestion and improve the overall transportation system.

The simulation was created as part of research with NASA to develop "a robust, scalable transportation system concept" that would be more resilient and better able to withstand factors such as severe weather, equipment malfunctions and shifting future demand, said Daniel DeLaurentis, an assistant professor of aeronautics and astronautics.

The study covers various aspects of the nation's air transportation system and takes into account the possible benefits of introducing a new class of small, lightweight jets that could share the load now handled by commercial airliners, reducing congestion at major airports. Companies using these jets are forming air taxi services that could be based at the nation's thousands of small airports to ferry passengers between cities.

"There have been other studies of next-generation air transportation systems, but they typically focus on particular aspects or details, such as the need for a certain kind of airplane, radar system or runway additions at large airports," DeLaurentis said. "What we do in this study is look at technological, economic and policy factors simultaneously, and that was our unique starting point."

A report based on the research was completed earlier this year and submitted to NASA, the sponsoring agency. Report findings include recommended policy changes, as opposed to concentrating exclusively on upgrading technologies.

The researchers took a first-of-its-kind "system of systems" approach, or a method of analyzing a complex system that is made up of many component systems, to study airport issues, DeLaurentis said.

An interdisciplinary team of faculty members and students in civil engineering, aerospace and computer science created the simulation, said DeLaurentis, who led the research. The researchers combined two new mathematical techniques called agent-based modeling and network theory to integrate all of the components within the air transportation system and predict overall performance.

The model mimics the behavior of service providers, such as the major airlines and small air taxi companies, along with the infrastructure providers, such as the Federal Aviation Administration and U.S. Department of Transportation. For complete article visit: http://www.sciencedaily.com/releases/2006/10/061006072310.htm

SCIENTIST AND ENGINEERS SIMULATE JET COLLIDING WITH WORLD TRADE CENTER

Researchers at Purdue University have created a simulation that uses scientific principles to study in detail what likely happened when a commercial airliner crashed into the World Trade Center's North Tower on Sept. 11, 2001.

The simulation could be used to better understand which elements in the building's structural core were affected, how they responded to the initial shock of the aircraft collision, and how the tower later collapsed from the ensuing fire fed by an estimated 10,000 gallons of jet fuel, said Mete Sozen, the Kettelhut Distinguished Professor of Structural Engineering in Purdue's School of Civil Engineering.

It took about 80 hours using a high-performance computer containing 16 processors to produce the first simulation, which depicts how the plane tore through several stories of the structure within a half-second, said Christoph M. Hoffmann, a professor of computer science and co-director of the Computing Research Institute at Purdue.

"This required a tremendous amount of detailed work," Hoffmann said. "We have finished the first part of the simulation showing what happened to the structure during the initial impact. In the coming months, we will explore how the structure reacted to the extreme heat from the blaze that led to the building's collapse, and we will refine the visual presentations of the simulation."

The researchers are analyzing how many columns were destroyed initially in the building's core, a spine of 47 heavy steel I-beams extending through the center of the structure, Sozen said.

"Current findings from the simulation have identified the destruction of 11 columns on the 94th floor, 10 columns on the 95th floor and nine columns on the 96th floor," he said. "This is a major insight. When you lose close to 25 percent of your columns at a given level, the building is significantly weakened and vulnerable to collapse."

The simulation research is associated with an NSF "information technology research project" called Model Reduction for Dynamical Systems, which is led by Purdue and includes researchers from Rice University, Florida State University and the Catholic University of Louvain. The project is headed by Ahmed Sameh, Purdue's Samuel D. Conte Professor of Computer Science. For complete article visit: http://www.sciencedaily.com/releases/2006/09/060911153219.htm