



Director's Corner: A word from CDR Sullivan

Updates about what's taking place within the MOVES Institute



CDR Joe Sullivan, Director of MOVES, regularly makes himself available to students and faculty at the Institute.

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Congratulations to MOVES Summer Grads

This summer we congratulated 9 MOVES students as they crossed the stage to receive their M.S. in Modeling, Virtual Environments and Simulation. These gentlemen will be heading out to locations as distant as Brussels, Belgium to serve in the NATO Command, to as close as San Diego to work for the Naval Computer and Telecommunication Station. To view a comprehensive list of their thesis work, please visit the MOVES website:

www.movesinstitute.org/ed_student_res.html

Current Growth Initiatives

The MOVES team of knowledgeable staff and professors continues to expand and improve. We have the honor of counting three new members among our faculty. Imre Balogh, Ph.D., Research Associate Professor, has joined MOVES as the Chief Architect of Combat XXI. He'll be working on combat models and collaborating with the Human Social Culture Behavior (HSCB) initiative.

COL USA (ret.) Jeff Appleget, Ph.D., former Deputy Director for TRAC and currently serving as a Senior Lecturer for Operations Research, has come aboard as a MOVES faculty member. Jeff joined the HSCB initiative crew and will be collaborating with the Combat Modeling team within MOVES.

Both Ji Hyun Yang, Ph.D., and Quinn Kennedy, Ph.D., are in the process of becoming MOVES team members. Both researchers will be contributing to the Human Factors division. Ji Hyun recently served with the OR and HSI faculty as a National Research Council Post Doctorate. Quinn is a Research Psychologist in the Operations Research Dept.

Faculty Off-Site

All of these individuals joined fellow MOVES faculty for a retreat luncheon in late September. Accompanied by the Dean of Research, Karl van Bibber, MOVES faculty spent an afternoon briefing one another on current projects, refining future research goals, and discussing the rapidly accelerating field of modeling and simulation. Overall it was a valuable time to identify areas of overlap and common interests. Several areas of strength that surfaced during the conversation included combat modeling, human factors & perceptual modeling, and sensor technology. We plan to hold more faculty gatherings like this in the near future and look forward to sharpening the strategic vision for MOVES.

I/ITSEC

From November 30th through December 3rd, a significant portion of MOVES will be representing the Institute at the annual Interservice/Industry Training, Simulation, and Education Conference in Orlando, Florida. Along with featuring Delta3D and the SAVAGE Research Group, we'll be sharing booth # 2663 with one of our sponsors, the Navy Modeling and Simulation Office (NMSO), as well as the NPS Alumni Director, Kari Miglaw. There will be a special MOVES Alumni Reunion get-together at the conference, so I hope to run into a few of you there. For those not familiar, I/ITSEC is by far one of the most comprehensive gatherings for modeling and simulation. Over the summer we had the privilege of hosting a group from the National Training and Simulation Association (NTSA) and the I/ITSEC Paper Review Committee. Special thanks to Barbara McDaniel and VADM Harms for coordinating this trip. During their tour of the Institute we shared interactive demonstrations of our research projects and engaged in Q&A dialogue about our initiatives. After personally getting the opportunity to meet with many of the individuals on the I/ITSEC Committee during their visit, I am anticipating a very full and rewarding conference in Orlando this year.

Counterterrorism Project

MOVES Research Associate Steve Lieberman recently received funding to be the PI for two counterterrorism projects. The projects clearly demonstrate the value of the NSI Ph.D. Scholarship Program. The first project, "A Hub for Counterterrorism" will use a blend of open-source online collaboration and social networking tools, to develop the framework for a dynamic compendium of international counterterrorism knowledge on the internet.

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Happy Holidays from all of us here at the MOVES Institute!

Where Are They Now? Alumni Update

Featuring: MAJ Joe Nolan, U.S. Army



Egypt, Norway, Republic of Djibouti, Australia, Thailand, Iraq. MAJ Joe Nolan, a 2005 graduate of the MOVES Institute, has supported training exercises in collaboration with allied military personnel in each of these areas through his work as a U.S. Army JFCOM Modeling and Simulation Exercise Planner. Now settled in Suffolk, Virginia, a budding Mecca for all things M&S, MAJ Nolan balances his time between work, spending time with his family, coaching little league baseball and volunteering at his local church. Here MAJ Nolan responds to a virtual Q&A interview about what he has been up to since he left the NPS campus.

Where are you currently stationed? What is your job title?

My current duty station is the Joint Warfighting Center (USJFCOM J7), and my job title is (FA-57 Simulation Operations) U.S. Army JFCOM Modeling and Simulation Exercise Planner.

What is unique or interesting about the place you are currently stationed?

Hampton Roads is developing into a Model and Simulations center of excellence on the East



MOVES Alumnus MAJ Joe Nolan in front of the Al Faw Palace, at Victory Base Camp in Iraq, just west of Baghdad while serving on the MNF-I. The Al Faw Palace serves as the headquarters for Multinational Forces-Iraq and Multinational Corps -Iraq.

Coast with the fusion of the USJFCOM's J7 Joint Warfighting Center's training center, and J9 experimentation staff section; Old Dominion University's Virginia Modeling and Simulation Center (VMASC); and our industry partners to include Northrop Grumman, General Dynamics, Lockheed Martin and others. Having all of these key players in the same region provides opportunity to drive innovation, reduce cost and provide timely, quality support to the warfighter.

What are you working on and how does it relate to M&S?

I'm working on technical support to Training Operations. I lead a team of military, government service civilians and contractors. We develop, test and execute simulations and communication architectures for joint and combined CJCS-directed exercises. We support the U.S. Pacific Command's Terminal Fury exercise program, as well as regional engagement events to include Talisman Saber with Australian Defense Force and Cobra Gold with Royal Armed Forces of Thailand. I manage the creation of a digital training environment to educate joint, combined, and service staffs in joint tactics, techniques and procedures. I also advise senior exercise planners on simulation and communication requirements related for training, development and acquisition.

What are the applications you are using?

We train joint task forces using numerous models and simulation tools designed to stimulate command and control systems which drive boards, bureaus, centers, cells and work group's decision-making process at the Joint Task Force level. In order to drive down costs, our approach is to leverage Service models as much as possible to keep the Joint costs down, and develop integration tools to link these disparate systems under a common architecture. The spin-offs of our work then become freely available to the Services to leverage for their own Title 10 training events.

We call this federation of models the JLVC (Joint-Live-Virtual-Constructive federation). This federation developed out of Millennium Challenge 2002, where the Joint National Training Capability (JNTC) was developed. The JLVC is a scalable federation that leverages Service models to provide a robust training environment for joint task force certification. The JLVC can be as small or robust as needed solely based on training audience's requirements. You can use as much or as little as needed, which makes this federation a very cost effective option for joint and service training. One of the core concepts of the JNTC was to link Joint & Service Command and Control Systems (work-

ing with USJFCOM J8), leverage Service-level Models and Simulations, and distribute it world-wide over a network (in our case, the Joint Training and Experimentation Network (JTEN)). By linking C2 systems, models and simulations, and an available network, we have met the expectations laid out by the MC02 share-holders, and gone beyond.

For events that do not require robust C2 stimulation, and must remain unclassified for purposes of regional engagement events, we use the Joint Theater Level Simulation (JTLS) which is a very basic hex-based model. It provides minimal C2 stimulation, but lends itself well to regional engagement events where the scenario serves as a venue to foster interpersonal communications between partner nation staffs vice certification of a joint task force.

What aspects do you particularly enjoy about your position, what's the best part of your job?

I enjoy working with the Combatant Commands to develop simulation and communications architectures to meet training objectives in an efficient, cost-effective manner to keep resource expenditures at a minimum. For a MOVES student, this is truly one of the key jobs that leverages all aspects of the education and experience obtained at the Naval Postgraduate School. From development to application, this assignment runs the gambit, and should be sought after by all Service-members graduating from the MOVES Institute.

Any advice for current MOVES students?

The biggest piece of advice I would give is to gain a firm understanding of the mechanics of networks and security (in addition to M&S – NOT in lieu of). Seek out opportunities to link M&S work with C2 systems. Title 10 individual training and the virtual domain are very important, but that is not the only flavor of simulations. Most, if not all, simulations used in the Joint and Service level above ship/crew/individual level use constructive simulations to stimulate command and control systems. Seek out opportunities to learn, experiment and train on the fundamentals of linking simulations with command and control systems. Also, learn the basics of USMTF, OTH-Gold and TADIL-J/Link 16, how simulations produce them, and how they can be routed to C2 systems.



NTSA and I/ITSEC Committee Visit the MOVES Institute

Written By: Curt Blais

Reviewers for the 2009 Interservice/ Industry Training, Simulation, and Education Conference (I/ITSEC) and representatives from the National Training and Simulation Association (NTSA, <http://www.trainingsystems.org>) visited the MOVES Institute on July 29, 2009. Conducted annually in Orlando, Florida, I/ITSEC is the premier conference on military training, simulation and education, attracting over 15,000 attendees each year to paper presentation sessions, tutorials, and an extensive show floor of vendor and research projects and products. Members of the 2009 conference committee met in Monterey to complete reviews on submitted papers and to finalize session agendas. As one of the group's activities in Monterey, they requested a visit to the MOVES Institute to learn about the variety of Modeling and Simulation technical and educational activities occurring in the Institute.

MOVES faculty and students gave presentations and demonstrations to over 40 members of the group, showing the variety and depth of research and development activities at the Institute. The interactions generated much interest and enthusiasm, proving beneficial to all. Thanks to all the visitors who took time out of their busy conference preparation activities to meet with us!

If you want to see the latest and greatest in training, simulation, and education technologies, I/ITSEC 2009 is scheduled from November 30 to December 3, 2009, in Orlando, Florida. The conference agenda and registration is available online at <http://www.iitsec.org>.

**Be sure to visit the
MOVES booth # 2663!**



VADM Harms and Debbie Berry (past chair of I/ITSEC), along with MOVES Deputy Director Paul O'Connor show off the cake that was served during the NTSA and I/ITSEC Paper Review Committee tour of the MOVES Institute in July.



VISIT MOVES AT THE I/ITSEC CONFERENCE BOOTH #2663

NOV. 30-DEC.3 — ORLANDO, FL



**JOIN US FOR A
SPECIAL ALUMNI REUNION RECEPTION
HOSTED BY THE NPS ALUMNI RELATIONS OFFICE
TUESDAY, DEC. 1 FROM 4-6PM - MOVES BOOTH**



Career Opportunities with MOVES

**Be sure to check the MOVES website for
current openings:**

http://www.movesinstitute.org/about_career.html

Now Hiring:

*** Research Faculty Member * Research Assistant: Hardware/Software Engineer ***

Value of Attending the Summit: A Canadian Perspective

Featuring: Paul Roman, PhD



Paul Roman, Associate Professor at the Royal Military College and M&S Policy Advisor to the Canadian Army, gives the Research Summit a thumb's up! Paul presented, "Serious Games, Virtual Worlds and MMOGs-Building the Puzzle Without the Picture" during the Research Summit. Photo Credit: Chelsea Roman.

My attendance at the NPS MOVES Institute Research Summit was long overdue. For the last couple of years I learned about the summit with only a couple of weeks notice making it impossible to get through the visit clearance and unforecast spending hoops required to attend. This year, thanks to an invitation by Professor Bill Becker prompted by an enthusiastic Major Ben Brown (USMC), I was able to make the trip to beautiful Monterey, and I am very glad I did! In my role as an M&S policy advisor to the Canadian Army, I found much of the applied research and development to be directly relevant to the Canadian Army and Canadian Forces. As a joint Canadian Forces, the Army takes the lead in land operations but these are conducted

in a joint context making the USMC examples presented at the summit of considerable interest. The MOVES model as I perceive it is to have world class academics performing lines of research whose relevance is challenged and validated through graduate student projects. This is a powerful model that helps ensure a pragmatic approach to R&D in support of the Navy. As a rule, I try to find at least three nuggets worthy of follow-up activity when I attend conferences and symposia. This is not always possible depending on the conference. My list of follow-ups from the research summit is approximately eight, making my attendance next year extremely likely!

MOVES Research Summit Showcases Cutting Edge Projects Written By: Curt Blais

The MOVES Institute held its 9th annual Research Summit July 21-23, 2009 at the Naval Postgraduate School, Monterey, California. Over 70 attendees representing government, military, industry, and academic organizations enjoyed an information-packed two-and-a-half days showcasing MOVES research and development projects and products. Demonstrations and student poster presentations on Wednesday evening highlighted the Summit, providing attendees an up-close, and sometimes hands-on, look at the various activities, technologies, and accomplishments across the Institute. The first two days of the Summit opened with keynote addresses from invited VIPs. On the first day, John Tangney, ONR, presented "Synthetic Environments for Assessment," discussing the importance of synthetic environments for enabling investigations of new systems, capabilities, and operations. On the second day, Bill Paisley, NMSO, presented "Conducting M&S in the Future: A Data Perspective," discussing the importance of data management across the M&S Enterprise. The presentation identified contributions MOVES is making to DoD initiatives in the design of metadata describing M&S resources in the DoD M&S Catalog and for describing and storing standardized Verification, Validation, and Accreditation (VV&A) documentation. Following the second day keynote address, LCDR Rob Betts, USN, presented "The Graduate's Perspective," giving his views of life following completion of the MOVES program. LCDR Betts graduated in September, 2008 and is now serving as a simulat-

ion officer for Training Group Pacific in San Diego. His continuing connections to MOVES are bringing new opportunities to faculty and students to observe and evaluate major Navy exercises, and to help address technical challenges in the set-up, conduct, and review of these complex events. In turn, MAJ Ben Brown, USMC, presented "The Student's Perspective," describing his experiences so far in MOVES. Both presentations provided fresh insights into the relevance and applicability of the MOVES degree program to challenges

arch and Analysis Center, Monterey (TRAC-Monterey). The work being completed for the ONR HSCB Modeling program is a study of the relationship between the social theory of anomie and the emergence of insurgency. New modeling and simulation capabilities are required to include such theories and real-world data into training, analysis, and decision-support systems to assist warfighters address today's complex warfare environment. Equally important to presentation of MOVES research in the Summit is the opportunity to hear from the attendees. The question & answer periods, open discussions during the symposia topics, suggestions and recommendations during the board of directors lunch, and offline meetings among attendees, faculty, and students are invaluable for helping ensure MOVES is addressing the most important M&S challenges. We greatly appreciate the attendees' expertise and enthusiasm, and look forward to these interactions each year. Numerous working relationships were started or strengthened during the Summit. If you would like to review what was presented, the Research Summit presentations and demonstration abstracts are available at <http://www.movesinstitute.org/about.html>. And it's not too early to mark your calendars! **The 10th Anniversary MOVES Institute Research Summit is scheduled for 13-15 July 2010. Save the date!**



WHERE TACTICAL MEETS TECHNICAL

ing today's warfighters. A new area of research receiving great attention is the Human Social Culture Behavior (HSCB) Modeling program out of the Office of Naval Research (ONR) and the Defense Advanced Research Projects Agency (DARPA). This is also one of the Key Technical Areas identified by the DoD Modeling and Simulation Coordination Office. Chris Darken led a symposium during the Summit to present and discuss major areas of study and the unique role MOVES and NPS can play in providing multidisciplinary research and education to the program. Curt Blais described the research partnership between MOVES, the NPS Graduate School of Business and Public Policy and the Army Training and Doctrine Command



MOVES Visits NASA AMES Center Students Execute Simulated Shuttle Landings



In September, members of the Human Factors and Training Systems Focus Group at MOVES, led by Professor Sadagic and Professor McCauley, went on a field trip to the NASA AMES Research Center at Moffett Field. The Branch Chief (Aerospace Simulation Operations Branch), Bimal Aponso, gave the group an excellent, in depth tour of the Vertical Motion Simulator (VMS). All four students in attendance were able to personally execute Shuttle Landings; two in fixed-base mode and two in full motion.



The VMS is the largest vertical motion base in the world (approximately 70 feet). Various terrain databases were observed as well as day and night scenes. After the VMS tour, the group was shown how research projects are prepared as a fixed-base development project in the "high bay" before they are moved by crane onto the VMS motion platform. After lunch, Jay Shively, head of the Army Aeroflightdynamics Directorate (AAFDD) and COL Terry Turpin,

researcher and test pilot, gave an update on their research program, which consists of two main projects: Single-Operator control of multiple unmanned vehicles, and Sensor/Display development for helicopter brownout conditions. One of the professors in attendance, Dr. McCauley shared this about the trip, "Our students will not soon forget their experience of landing the space shuttle! Since our students study M&S, they have some appreciation of the complex modeling that enabled their shuttle landing experience. How much better is that

than a PowerPoint presentation!?" The tour was very informative; packed with information. We did not have an opportunity to visit the Human Factors group and their three simulators, which leaves fertile ground for the next visit." Those in attendance and featured in the picture included (from left to right): Professor Amela Sadagic, MAJ Will Glaser, MAJ Ben Brown, Professor Mike McCauley, LCDR Rich Morrison, and LT Herb Hernandez.

Deployable Virtual Training Environment - Special Session Held at MOVES



Three days, four students, and two weeks worth of material; piece of cake for challenge-hungry Marines. The DVTE (Deployable Virtual Training Environment) Familiarization Course was administered at the

MOVES Institute to a small but eager group over the summer quarter. After having taught himself about VBS 2 (Virtual Battlespace 2, an interactive, three-dimensional battlefield simulation system), Maj Brown was ready to learn about the remaining simulation training programs available in DVTE. He contacted the Marine Expeditionary Force Simulation Center in Camp Pendleton, and they kindly agreed to fund two of their contractors to come to NPS and teach the course. According to the Marine Corp Systems Command website, "DVTE is a first person skills sustainment trainer that trains Marines by using a simulation network with reconfigurable workstations capable of emulating a variety of weapon systems. Individuals select the weapon, vehicle, or leadership billet desired, then join a virtual battle space where others and synthetic forces are engaged in virtual operations." During the three days of instruction, the students, two MOVES M.S. candidates and two MOVES faculty members, were introduced to the different simulations within the DVTE program and were taught how to navigate the program once it's up and running. For Maj Brown, the exposure to the DVTE suite was an important skill building session to better prepare him for Marine life outside the Institute, "DVTE is important in the USMC Simulation community, and I am sure I will be involved with it upon graduation. I want to know as much as I can about it before leaving here."

Bill Becker, who was in on the ground floor of DVTE development, took this course to gain insight on how DVTE is being taught to Marines. John Falby chose to participate so he can give MOVES students hands-on experience with real-world simulation training programs during their time at NPS to better prepare them for their future jobs. Whatever the motivation for taking the intensive DVTE immersion course, all those who participated in the session were able to walk away with a more thorough and comprehensive knowledge of what DVTE has to offer.



Participants in the DVTE Course along with their instructors (top Left to Right): Maj Chris Fitzpatrick, Instructor Bill McPhee, Instructor Ken Aegeter, (Bottom Left to Right): Sr. Lecturer John Falby, Research Asst. Professor Bill Becker and Maj Ben Brown.

HELP WANTED: PARTICIPANTS FOR USER STUDY NEEDED

Evaluating 'look & feel' of Urban Warfighting Simulations

Throughout the month of September Dr. Amela Sadagic began conducting a study that engaged NPS students and faculty in evaluating the 'look-and-feel' of simulated units shown moving through urban environments performing different warfighting operations. "The MOVES institute has a number of well established research efforts in



An NPS student participates in evaluating simulated units moving through an urban warfighting operation. More evaluators needed!

the domain of combat modeling and modeling of human behavior, both very important segments of the larger M&S domain agenda. This study is our contribution towards a validation of those models. Our goal is to make sure that models proposed and developed by our research teams pass a necessary test of being evaluated by the user community and subject matter experts in the military domain, and that they reflect expected and desired performances as defined by military manuals and practice", commented Dr. Sadagic.

The models of synthetic units and their actions in an urban environment have been a part of the ongoing research by Dr. Chris Darken and the Delta3D team, who are collaborating with Dr. Sadagic in this effort. The study is still ongoing, and people interested in taking part as evaluators are invited to contact Dr. Sadagic to schedule their participation (asadagic@nps.edu). "We also hope that this study will provide participants with good insight into the research efforts of the MOVES Institute. Our plan is to use this work as a springboard for future efforts in this domain, including new thesis topics for our students."

This study is part of a larger research project called Behavioral Analysis and Synthesis for Intelligent Training - BASE-IT (<http://www.movesinstitute.org/base-it>) funded by the Office of Naval Research (ONR).

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The second project is entitled "Using Artificial Societies for Counter Insurgency (COIN)." Along with TRAC-MRY, Steve's team will be using novel approaches to agent-based modeling that combine social and behavioral science theories as java-based "plug and play" modules to investigate the way a society will react to blue-force and insurgent/terrorist actions.

ADL

We continue to make headway with initiatives in Advanced Distributed Learning. Dr. Bob Wisher has been actively working on behalf of MOVES while simultaneously immersing himself in authoring a variety of publications concerning ADL and the future of e-learning. Dr. Wisher spent a successful week on campus the first week of November discussing collaboration opportunities with fellow faculty. He was also the featured speaker at the Nov. 5th Brown Bag gathering. Dr. Wisher spoke about patterns of forgetting and how the advantages of using training technologies to obtain higher learning outcomes may affect skill retention.

Research Summit 2010

Mark your calendars and make plans to join us for next year's tenth anniversary Research Summit. **The dates will be 13-15 July 2010.** Read about why the Research Summit is a valuable opportunity from both a participant and a MOVES professor on page 4 of the newsletter.

Happy Thanksgiving from all of us here at the MOVES Institute!

THE MOVES INSTITUTE

Check out the **new and improved website** for the MOVES Institute!

www.movesinstitute.org

The complex block features the MOVES Institute logo at the top. Below the logo is a promotional message about a new website. The background of the lower half of the block is a collage of words related to technology and learning, such as 'DISINTEGRATE', 'EXPLORE', 'INTEGRATE', 'COOPERATE', 'LIVE', and 'LEARN'. In the center of this collage is a photograph of a group of people sitting around a table in a meeting room, with some using laptops and a presentation screen in the background.