Homeland Security

Research * Innovation * Transition

Conference Program

Naval Postgraduate School
Monterey, CA
Aug 21—24, 2007

Presented by

AIAA/Homeland Security Program Committee
PM & AM Research
Association of Old Crows
Marine Technology Society

Co-Sponsored by

Naval Postgraduate School
American Institute of Astronautics and Aeronautics

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Friday August 24, morning

Session A **0800 - 1200** **Glasgow 102**

Unmanned Sensor Platforms Land, Sea, Air

Chair: Dr. Ned Allen, Chief Scientist, LMCO Skunkworks

- Patrick Murphy, Science and Technology Directorate, *Unmanned Systems for Homeland Security*
- Dave Thomasson, Branch Chief Aircraft/UAV Detection and Development, DHS Science and Technology Special Programs Directorate, *DHS S&T Project CHLOE Overview—Sense and Avoid*
- Dr. Ed Chow, Manager, Information System Projects Office, NASA JPL, *Autonomous Sensor Fusion, Event Detection, and Unmanned Platform Retasking*
- Michael Conners, Executive Advisor, US Government Security, Booz Allen Hamilton; Chairman, Homeland Security Public Policy Subcommittee, AIAA, *Use of Unmanned Aerial Systems in the Context of the Next Generation of Air Transportation Systems*
- Fred Edworthy, Aeros, *Lighter than Air Technologies*
- Dr. Demoz Gebre-Egziabher, Assistant Professor, Aerospace Engineering & Mechanics, University of MN Twin Cities, *Use of Miniature Aerial Vehicles for Infrastructure Management and Security*
- Greg Kogut, Space and Naval Warfare Systems Center (SPAWAR), *Intelligent Radiation Detection and Location from an Unmanned Ground Vehicle; Robotic Systems Pool*
- Larry Branthoover, DTI VP of OSD Programs, Defense Technologies, Inc., *OpenUMI, Common Control for Multiple, Heterogeneous Unmanned Vehicles using STANAG 4586 and JAUS standards*

Session B **0800 - 1200** **Ingersoll 122**

Human Factors and Social, Behavioral, and Economic Sciences

Chair: Dr. Tiffany Lightbourn, DHS S&T Human Factors

- Professor Bojan Cukic, Co-Director, NSF Center for Identification Technology Research (CITeR), WVU, *Biometrics – Performance, Security, and Social Impact (B-PSSI): A System Level Perspective*
- Jim Barnes, Boeing -- Santa Susana Field Laboratory, *A Short Review of Radiological Terrorism; The Threat and Countermeasures*
- Dr. Jay Nunamaker & Matthew L. Jensen, University of Arizona, *Automatic, Multimodal Evaluation of Human Interaction"*
- Victor Anderson, Supervising Health Physicist, Radiologic Health Branch, California Public Health Department, *Equations for Disaster – Annualized Nuclear/Radiological Terrorism Risk Analysis*
- Dr. Isaac Maya, University of Southern CA CREATE, *The Center for Risk and Economic Analysis of Terrorism Events (CREATE) at the University of Southern CA*

Thursday August 23, afternoon

Session A **1300 - 1700** **Glasgow 102**
Chem/Bio II

Chair: Raymond Zilinskas, MIIS, Center for Nonproliferation Studies, *Assessing the Bioterrorism Threat: Problems and Possibilities*

Dr. William Samuels, Director, Center for Water Science and Engineering, (SAIC), *Integrated Network-Based Models for Spill Response and Homeland Security*

LCDR Warren Yu, Fleet Numerical Meteorology and Oceanography Center, *Cultivating Innovation to Rapidly Field Web-Based Tools to DOD - Chemical Downwind Forecasts*

Matthias Frank, Lawrence Livermore National Laboratory, Applied Physics and Biophysics Division, *Exploring rapid screening of human breath for early detection of respiratory disease and counter-terrorism applications*

Jeff Mohr, US Army Dugway Proving Ground, *Factors Associated with Testing Biological Defense Equipment*

Dr. Alexander Asanov, TIRF Technologies, *Portable and Handheld TIRF-EC Biosensors. Dynamic DNA and Protein Microarrays for Rapid Detection of Pathogens*

Dr. Jay West, Arcxis Biotechnologies, *BIOPHALANX: a hand portable discrete monolithic microarray Biothreat Detector* AND *Tentacle Probes: discrimination of difficult single nucleotide polymorphisms*

Dr. Bob Cherry, CHP, Earth Tech, *Emergency Response to Cesium-137 Contamination in a Steel Mill*

Session B **1300 - 1700** **Ingersoll 122**
Communications, Operations and Interoperability & Advanced Data Analysis III

Chair: Gene Hayman, Manager of Business Development, Boeing Advanced Air Traffic Management, *Next Generation Air Transportation System*

Panel discussion: *LMCO, Boeing, Raytheon, CSC*

Dr. Bryan Gorman, Oak Ridge National Laboratory, *Innovation, Interoperability, and Homeland Security*

Mathias Kölsch, Assistant Professor of Computer Science, NPS, *Computer Vision for Automated Video Analysis and Integration*

Professor Susan Sanchez, Co-Director SEED Center, NPS, *Multi-agent Simulations and Designs of Experiments for analysis of complex adaptive solutions*

Ronald Glaser, Program Manager, Sandia National Laboratories, *Trans-enterprize Services Grid SOA for Public Alert and Warning*

As a courtesy to your colleagues, please remember to silence beepers, pagers and cell phones during the sessions.

Please wear your Name Badge. Entry to sessions, poster event and meals will require a Conference Name Badge with your name on it!

Conference Schedule-at-a-glance

All functions take place on the campus of the Naval Postgraduate School unless otherwise indicated

Monday August 20, 2007

1700 - 2000 Packet pickup and Reception..... Monterey Hyatt

Tuesday August 21, 2007

0800 - 1200 Plenary Session & Continental Breakfast..... King Hall
sponsored by Booz Allen Hamilton

1200 - 1300 Lunch..... Ballroom

1300 - 1700 A: *Chem/Bio I* ..... Glasgow 102
B: *Communications, Operations & Interoperability AND Advanced Data Analysis I*..... Ingersoll 122

1700 - 1800 Reception and Cash Bar..... Quarterdeck Lounge

1730 - 2000 Poster Session ..... Ballroom
Sponsored by GE Homeland Protection

Wednesday, August 22, 2007

0800 - 1200 A: *Maritime, Coastal & Port Security*..... Glasgow 102
B: *Communications, Operations & Interoperability AND Advanced Data Analysis II*..... Ingersoll 122

1200 - 1300 Lunch..... Ballroom

1300 - 1700 A: *Explosives Threats, Detection, Mitigation, and Response* ..... Glasgow 102
B: *Emergency Preparedness & Response*..... Ingersoll 122

Thursday, August 23, 2007

0800 - 1200 A: *Border Security*..... Glasgow 102
B: *Infrastructure Protection & Geophysical Applications to Natural Disasters* ..... Ingersoll 122

1200 - 1300 Lunch..... Ballroom

1300 - 1700 A: *Chem/Bio II* ..... Glasgow 102
B: *Communications, Operations & Interoperability AND Advanced Data Analysis III*..... Ingersoll 122

Friday August 24, 2007

0800 - 1200 A: *Unmanned Sensor Platforms, Land, Sea, Air* . Glasgow 102
B: *Human Factors & Social, Behavioral, and Economic Sciences* ..... Ingersoll 122

(schedule and speakers subject to revision)

The mission of the *Homeland Security: Research * Innovation * Transition* conference is to form teams and develop partnerships to expedite the transition of technologies/concepts to Users in the field.

Tuesday August 21, Morning

Plenary Session **0800 - 1200** **King Hall**

Welcome, Dr. Kevin Kremeyer, PM&AM Research and Conference Chair
Homeland Security Test Bed Capability of NPS, Dr. Leonard Ferrari, Provost and Academic Dean, Naval Postgraduate School
Keynote Address: S&T Overview and Transition, Robert Hooks, Director of Transition, DHS S&T
University Opportunities, Matt Clark, Director of University Programs, DHS S&T
Homeland Security PhD Program-Disruptive Technology, Dr. Terry Pierce, Associate Dean for the School of International Graduate Studies, NPS
Operations Analysis and the Homeland Security Institute in Resource Allocation and Utilization, Ervin Kapos, Director, Operations Analysis, DHS S&T
CBP Unmanned Aircarft Systems, SW Border Operations, Pete McNall, Deputy Director Unmanned Aircraft Systems, DHS/CBP
S&T Innovation opportunities, HITS/HIPS programs, Rolf Dietrich, Deputy Director of Innovation, DHS S&T

Lunch **1200 - 1300** **Ballroom**

Thursday August 23, morning

Session A **0800 - 1200** **Glasgow 102**
Border Security

Chair: Don Vincent, Booz Allen Hamilton, *Protecting Border Against Adaptive Threats*
- Captain Dave Newton (USCG), Director (acting) Borders and Maritime Security Division, DHS S&T Directorate, *DHS S&T Border Security Program – Re quirements & Action*
- Dr. Neill Symons, Sandia National Laboratories, *Experiments and Active and Passive Detection of Small Border Tunnels*
- Curtiss Padgett, NASA Jet Propulsion Laboratory, *Preparing Wide Area Imagery for Image Analysts and Automated Processing in Real-time*
- Jay Nunamaker and Elyse Golob, Director of the UA's Office of Economic and Policy Analysis, University of Arizona, *University Research Laboratories and Test Sites for Border Security: Sensors, UAVs, Credibility Assessment and Network Analysis*
- Steve Payne, Lawrence Livermore National Laboratory, *Next Generation Materials for Radiation Detectors*
- Viswanath (Wish) Krishnamoorthy, Director of Technology, Qynergy Corp., *Boron Solid State (BoSSTM) Neutron Detector*

Session B **0800 - 1200** **Ingersoll 122**
Infrastructure Protection and Geophysical Applications to Natural Disasters

Chair: Dr. Shekar Viswanathan, National University
- Cmdr. Jim Bounds, National University, *How to become Tsunami Ready*
- Derek Hesse, Idaho National Lab, *Critical Infrastructure Protection – Improving Cyber & Control Systems Security*
- Edward Lesnowicz, Jr., Col USMC (ret), NPS *Application of Multi-Agent Simulation and Analysis Support for the protection of off-shore oil facilities*
- Dr. Jeffrey Paduan, Associate Professor of Oceanography, NPS, *Real time mapping of coastal ocean surface currents: Applications to Search and Rescue and Hazardous Spill Mitigation*
- Juan Meza, Department Head, Lawrence Berkeley National Laboratory, *Advanced Algorithms for Analyzing Vulnerabilities in the Electric Power Grid*
- Dr. Budhendra Bhaduri, Oak Ridge National Lab, *High Resolution Population Dynamics Modeling to Assess Human Dependence of Critical Infrastructures*
- Curtis Papke, Critical Infrastructure Test Range Director, Idaho National Lab, *Analyzing Airborne Options for Emergency Wireless Communications*
- Dr. Alper Caglayan, Milcord LLC, *Bayesian Activity Monitor for Botnet Defense*

Lunch **1200—1300** **Ballroom**

Save the date

2nd Annual

Homeland Security

Research * Innovation * Transition

August 26 - 28, 2008

Naval Postgraduate School
Hyatt Regency Monterey

More information will be available at
www.physics-math.com/events

Special Thanks

Wendy Walsh, Naval Postgraduate School
Jason Dunton, GE Homeland Protection
Michael Conners, Booz | Allen | Hamilton

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Dr. Wadad Dubbleday, SPAWAR
Point Lobos Section, American Institute of Aeronautics and Astronautics
Tucson Section, American Institute of Aeronautics and Astronautics
Gen. Bob Dickman, AIAA
Bruce, Sybille and Kyle at the Hyatt Regency Monterey
The Monterey Visitor and Convention Office

Dr. Kevin Kremeyer..... Conference Chair; HSPC Chairman
Jeanne Gibbs..... Conference Manager, Website Design
Sara Falconer ..... Conference Coordinator, Program
Denise Blum..... Office Administrator

Tuesday August 21, afternoon

Session A **1300 - 1700** **Glasgow 102**
Chem/Bio I

Co-Chairs: Jason Dunton, Proposals Manager, and Scott Sutherland, Technical Product Manager, GE Homeland Protection

- Dr. Marc Colosimo, The MITRE Corporation, *Genomics for Bioforensics*
- Dr. Ron Fricker, Associate Professor, Naval Postgraduate School, *Statistical methods for improving Biosurveillance Systems Performance*
- Dr. Grace Hwang, The MITRE Corporation, *Bio-threat Aircraft Warning System-Plasmonic Sensing of Biological Analytes Through Nanoholes*
- Dr. Peter Chu, Professor, Naval Postgraduate School, *Two types of chemical Dispersion in San Diego Bay*
- Dr. Victoria VanderNoot, Biosystems Research Department, Sandia National Labs, *Portable Bioagent Detection Systems for Nat'l Security Applications*
- Dr. Albert Loui, Lawrence Livermore National Laboratory, *Sensing volatile organic compounds using a portable device based on piezoresistive cantilever arrays*

Session B **1300 - 1700** **Ingersoll 122**
Communications, Operations and Interoperability & Advanced Data Analysis I

Chair, Luke Klein-Berdt, Chief Technology Officer, DHS Office for Interoperability and Compatibility

- Dr. John Stine, The MITRE Corporation, *The Unique Requirements for Tactical Mobile Wireless Networks*
- Dr. Gurminder Singh, Professor of Computer Science, NPS, *TwiddleNet: Smart phones as Personal Servers for First Responders*
- Dr. Carol Woody, CERT Technical Staff, Carnegie Mellon University, *Assessing the Quality of a Business Process Implemented across Systems of Systems*
- Dr. Alex Bordetsky, Professor, NPS, *Network-Centric TNT MIO Experiments and Testbed: History and Plans*
- Dr. Kathy Wang, The MITRE Corporation, *Using Honeyclients for Detection and Response Against New Cyber Attacks*
- Hervey Martin-Rude, Senior Test Officer, IEWTD, *Intelligence Systems Integration Laboratory at Ft. Huachuca, AZ*
- James Smith, Carnegie Mellon Software Engineering Institute, *Interoperable Acquisition for Homeland Security*

Alternate Speakers:
***Rex Buddenberg, Naval Postgraduate School, *Interoperability Engineering*
***Eric Johnson, New Mexico State University

Reception Cash Bar and Hors d'oeuvres	**1700 - 1800**	**Quarterdeck Lounge**
Poster Presentations	**1730 - 2000**	**Ballroom**

Wednesday August 22, morning

Session A **0800 - 1200** **Glasgow 102**
Maritime, Coastal and Port Security

Chair: Dr. Wadad Dubbelday, SSC-SD Coordinator SPAWAR
- Captain Dave Newton (USCG), Director (acting) Borders and Maritime Security Division, DHS S&T Directorate, *DHS S&T Maritime & Cargo Security Program – Requirements & Action*
- Dr. Russ Graves, The MITRE Corporation, *Adaptive Risk Readiness Model Applied to Port Security*
- Terry Norbraten, Dr. Curt Blais & Wilfredo Cruzbaez, NPS, *Perimeter Security Analysis for U.S. Military and Civilian Ports of Interest*
- George Lane, Southern University, *Use of Modified Line-throwing Devices using Compressed Air in Maritime Interdiction Operation (MIO) Applications*
- Dr. Wayne Patterson, Space and Naval Warfare Systems Center (SPAWAR), *Electromagnetic Systems Performance Predictions*
- Dr. Ed Chow, Manager, Information System Projects Office, NASA Jet Propulsion Laboratory, *Intelligent Autonomous Glider for Long Duration Automatic Coastal Persistent Surveillance*
- Jim Winso, Space Micro Inc., *Geometrically Optimized, Labr3:Ce Scintillation Sensor Array for Enhanced Stand-off Direction Finding of Gamma Radiation Sources*

Session B **0800 - 1200** **Ingersoll 122**
Communications, Operations and Interoperability & Advanced Data Analysis II

Chair, Joe Kielman, Basic and Futures Research Program Manager, DHS S&T, Visual and Analytical Research
- Professor Craig Knoblock, University of Southern California/Geosemble Technologies, *Geospatial Visualization of Multiple Media for Large-Scale Strategic Knowledge Discovery*
- Dr. Ed Chow, Manager, Information System Projects Office, NASA/JPL, *Federated Policy-Based Network Management for Cross Security Domain Operations*
- Dr. John Aberdeen, Lead Scientist, The MITRE Corporation, *Rapidly Retargetable Approaches to De-identification in Medical Records*
- Tom King, Oak Ridge National Laboratory, *Visualizing Energy Resources Dynamically On Earth (VERDE)*
- Nicholas Orlans, The MITRE Corporation, *Fingerprint 3x2 Challenge*
- Dr. Greg Shannon, CounterStorm, Inc., *Field Experiences Detecting Threats Via Statistical Content Anomalies*
- Heidi Buck, SPAWAR, *Automated Imagery Analysis for Maritime Domain Awareness*

Lunch **1200 - 1300** **Ballroom**

Wednesday August 22, afternoon

Session A **1300 - 1700** **Glasgow 102**
Explosives Threats, Detection, Mitigation, and Response

Chair: Hacene Boudries, Research and Applications Development Manager, GE Homeland Protection, *Explosives Detection*
- Dr. Nesrin Sarigul-Klijn, Leader of Space Engineering Research and Graduate Program (SpaceED), UC Davis, *Distressed Aircraft Recovery Technique (DART)*
- Edward Lesnowicz Jr., 2Col USMC (ret), NPS, *Application of Multi-Agent Simulation and Analysis Support of TOPOFF exercise*
- Dr. Shekar Viswanathan, National University, *Detecting explosives using an Ultra-High Speed Gas Chromatograph*
- Dr. Ernesto Cespedes, Program Manager, Idaho National Laboratory, *Idaho National Laboratory's Explosives Detection and Mitigation Programs*
- Steve Eng, Booz Allen Hamilton, *Thoughts on Detection Requirements*
- Matthias Frank, Lawrence Livermore National Laboratory, Applied Physics and Biophysics Division , *Real-time Detection and Identification of Explosives and Drugs with Single Particle Aerosol Mass Spectrometry (SPAMS)*

Session B **1300 - 1700** **Ingersoll 122**
Emergency Preparedness and Response

Chair: Dr. Ed Chow, Manager, Information System Projects Office, NASA Jet Propulsion Laboratory
- Bob Welty, San Diego State University, *The importance of University involvement in regional grant submission, community readiness and governance structure*
- Jim Barnes, Boeing, Santa Susana Field Laboratory, *A Philosophy of Response to Radiological Events*
- Dr. Vythilingam (VJ) Wijekumar, Indiana University of PA, *Innovative Education and Training of CBRNE First Responders in Nuclear and Radiological Response Operations*
- Dr. Ed Chow, Session Chair, *Non-kinetic Effects Model for Emergency Preparedness and Response Training Simulation*
- Dr. Stuart Rubin, SPAWAR SD, *On the Need for KASERs in Decision Support for Homeland Security Application*
- Dr. Aruna Apte & Major Curt Heidtke, NPS, *A Prepositioning Model in Anticipation of Natural Disasters*
- Dr. Susan Heath and Dr. Aruna Apte, Assistant Professors, NPS, *Traveling Salesman Subtour Problem for Evacuating Disabled People in Case of Disaster*
- Dr. Susan Heath, Assistant Professor, Graduate School of Business and Public Policy, NPS, *Emergency Personnel Resource Allocation In Mass Casualty Disasters*