

# ~ The Rapid Responder ~

The Newsletter of the RAPID RESPONSE INSTITUTE

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**MONMOUTH  
UNIVERSITY**

where leaders look forward<sup>SM</sup>



**Rapid Response Institute**  
Established 2004

**PREVENT  
PROTECT  
RESPOND  
RECOVER**

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# RRI receives First Place Award

Monmouth University's Rapid Response Institute and Joint Mobile Command and Training Center's effort, as part of the U.S. Army's Edgewood Chemical Biological Center's (ECBC) Coalition Warrior Interoperability Demonstration (CWID'07) Team, was awarded **First Place** for the **Integrated Information Management System (IIMS) Interoperability Trial Demonstration** by the International Association of Emergency Managers (IAEM) Technology & Innovation Awards, Division 2, State/Regional National Government, International for Non-Profit Organization. The IIMS demonstrated that interoperability is possible among multiple organizations and disparate technologies.

ECBC's Joint Science and Technology Office (JSTO) sponsored a tech-based effort called Shared Common Operating Picture (Shared COP) for Homeland Security and Homeland Defense. The Shared COP objective was to demonstrate end-to-end interoperability escalation capability from the civilian first responder to the emergency manager to the Department of Defense and back down. The demonstration built a temporary global network over which cutting edge communications technologies interact to support scripted scenarios. Technologies were evaluated for utility, interoperability with existing and new systems, and security.

(Continued—see **First Place Award** on **Page 2**)



Joint Mobile Command and Training Center at the Fort Belvoir's  
Defense Threat Reduction Agency during the CWID '07

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# First Place Award

(Continued from Page 1)

The emergency management applications of MU's Joint Mobile Command and Training Center truck were communicating using satellite communications (SATCOM) from the Defense Threat Reduction Center's (DTRC) locations at the Dahlgren Naval Warfare Station and Fort Belvoir back to the Department of Homeland Security's Open Platform Emergency Network (DHS OPEN) servers and then via Unclassified but Sensitive Internet Protocol Router Network (NIPRNET) to the CWID network and host site in Dahlgren, VA. Messages received in Dahlgren were converted by the Integrated Information Management System (IIMS) from the Common Alerting Protocol (CAP), used by civilian first responders, to the United States Message Text Format (USMTF), used by the military. The CWID exercise simulated a biological attack on the United States, and emergency messages were passed to and from the unclassified to classified arena via data guard software to the military's Joint Warning and Reporting Network (JWARN) and Joint Effects Model (JEM) systems, tracking the events as they unfolded. This was the first successful demonstration of full interoperability between civilian and secure military emergency management software systems.



**The Joint Mobile Command and Training Center being "put-to-the-test" at CWID '07**

The IAEM Technology & Innovation Awards recognize the development of technology and innovation to improve emergency management operations, public education, or the emergency management/homeland security field. The 2007 Technology & Innovation Awards were presented at the IAEM 55<sup>th</sup> Annual Conference & EMEX 2007, November 11-14, 2007, in Reno, NV.

The International Association of Emergency Managers (IAEM) is a non-profit organization consisting of more than 4,000 emergency management professionals from local, state, and federal governments, the military, private industry, and volunteer organizations. IAEM has consistently promoted the goals of saving lives and protecting property during emergencies and disasters since its founding in 1952 as the U.S. Civil Defense Council.

## ***NJIT & NJ Business Force "Virtual" Hurricane Response Exercise HOT WASH . . .***

On December 12 and 13, 2007, the RRI participated in a "Virtual Hurricane Response Exercise" to evaluate the state's response capabilities to a Category 3 hurricane hitting New Jersey. On January 9, 2008, the RRI hosted the NJIT and New Jersey Business Force "Virtual" Hurricane Response Exercise HOT WASH Meeting to review the results. According to Colonel (Ret.) Hank Straub, Projects Director for the New Jersey Business Force/Business Executives for National Security, the goal of the exercise was to "achieve coordinated responses with public sector partners when the scale of a disaster requires private sector assistance."

The HOT WASH, which was moderated by Dr. Mike Chumer of NJIT, was attended by the participants of the exercise, as well as representatives of the Department of Homeland Security's National Protection and Programs Directorate, FEMA Region II Office, and US Health and Human Services Region II Office.

Following the meeting, attendees were given a tour of the Joint Mobile Command and Training Center truck to demonstrate its capabilities for disaster response.

## RRI Participates in Capital Yacht Club's 2008 Emergency Management System Initiative



Pictured (l to r) are: Carl Shirtzinger; Col. Lovell; Captain Peter Hartsock; Col. Oplan; Rodger Theil; and James Hammill



Pictured are (l to r) Carl Shirtzinger; Rodger Theil; Col. (ret) Robert Duncan; James Hammill; Captain Peter Hartsock; and Dr. Barbara Reagor

Dr. Barbara T. Reagor and Senior Contract Researcher James Hammill were invited to attend a presentation given by USCG Rear Admiral (Ret.) Robert Duncan on lessons learned during the Katrina Disaster. The event was held at the Capital Yacht Club on Friday, February 29, 2008, as a kick-off for the Club's 2008 Emergency Management System Initiative. This initiative is a pilot for the DC Maritime Emergency Management System. Reagor and Hammill provided presentations of MU's capabilities to Washington D.C. emergency response officials as well as the Coast Guard and Secretary of the Interior.

The meeting was also attended by Dr. Peter Hartsock, Captain, United States Public Health Service; Carl Shirtzinger of Zinger Enterprises; Col. Lovell, CAP HQ Director of Operations; Col. Oplan, CAP Deputy Commander, Middle East Region; and Mr. Rodger Theil, CAP National Historian.

The purpose of the initiative is to identify new strategies and related technologies that are being developed to better plan for and respond to such manmade disasters as 9/11 and such natural disasters as Hurricane Katrina. Emphasis on high reliability, interoperability and providing a wide range of applications and availability, while maintaining low cost, is an integral part of the initiative.

Admiral Duncan gave the keynote presentation; he also illustrated how the lessons learned during the Katrina disaster have influenced his current work, as Vice President of Rivada Networks, on developing a cost-effective public safety communications network leveraging commercial wireless networks in a public/private partnership. Also presented were:

- RRI's high tech/low cost Joint Mobile Command and Training Center truck;
- The high tech/low cost satellite-controlled, solar-powered boats developed by NASA and their capabilities while staying in open water for extended periods of time. The boat can also be operated via satellite from the RRI truck;
- The HIGHMAV Project, a counterpart to the NASA Project, which has developed a high tech/low cost lighter-than-air aerostat which can provide real-time aerial video and other reconnaissance abilities;
- The TIDES Project of the National Defense University, which concerns mass available shelter at low cost and easy distribution;
- The Titan Energy Project, a complement to the TIDES Project, which deals with the production of potable water; electrical generation ability; heating and air conditioning; and communications capabilities, including satellite.

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## RRI Awards Subcontract to CERMUSA of St. Francis U

 help create RRI's All Hazards Exercise Training Tool (AHETT). CERMUSA is a research facility dedicated to finding best practices and methodologies for telemedicine and distance learning applications. CERMUSA's experience in distance learning applications and methodologies will aid the RRI in determining appropriate delivery methods and training for AHETT.

CERMUSA has agreed to leverage the distance learning, wireless, and remote video conferencing capabilities for use within the AHETT development. It will research "State of the Art" communication methods and modalities that can be used by the RRI in delivering the AHETT to civilian and military populations in either rural or suburban environments. CERMUSA will also provide technical support to the RRI in the areas in which it has expertise, including video conferencing, mesh networking, satellite communications, and virtual classroom software applications.

CERMUSA and the RRI will hold end user workshops with potential users of the tool. These workshops will help determine current delivery methods as well as determine specifications and requirements for appropriate delivery tools. In later workshops, participants will use prototyping to evaluate a particular tool and/or delivery method. CERMUSA's existing body of knowledge in distance learning will be leveraged in designing and conducting the workshops.

Final delivery of the All Hazards Exercise Tool Deployment Requirements Document (AHETT-DRD) is set for May 1, 2009.

## Rapid Response Institute Celebrates 3rd Anniversary



The Rapid Response Institute celebrated its 3rd Anniversary on Friday, November 17, 2007, at its annual Anniversary and Awards Celebration in the Tyrrell Board Room in Bey Hall. The celebration was attended by members of the RRI, including its current and former student employees, as well as members of the RRI Steering Advisory Committee.

President Gaffney attended and expressed his congratulations and well wishes to the Institute members as well.

Director Barbara T. Reagor and Chief Technology Officer Bill Tepfenhart presented members of the RRI with certificates and coffee mugs to show their appreciation for a "job well done" during the past year. In addition, Professors Allen Milewski and Robert Kelly were each presented with a special award for his work on the "DECIDE" project (Dynamically Enhanced Command Information Delivery), which was successfully delivered to the U.S. Army Department of Defense on September 27, 2007. (See article on Page 6 for details).

Director Reagor has always attributed the great success of the Rapid Response Institute to the hard work and dedication of all of its members—professors, staff, and student employees—as well as to the support received from members of the RRI Steering Advisory Committee. Following the presentation of the awards, all enjoyed refreshments, including the traditional RRI Anniversary Cake!



RRI Steering Advisory Committee members with Director Reagor and Dr. Tepfenhart (left to right: Jim McDonald; Miles Truesdell; Michael Meddis; Barbara Reagor; Daniel DeMarinis; Bob Marchand; Bill Tepfenhart)

## *Rapid Response Institute presents research to FEMA Region II . . .*

On Friday, February 8, 2008, President Paul G. Gaffney II and members of the Rapid Response Institute were pleased to host a meeting in the RRI Research and Demonstration Center Trailer with Regional Administrator Stephen Kempf, Jr. and the following senior members of FEMA Region II: Colonel Robert Freehill, Defense Coordinating Officer; Mark Walters, Division Director for Management; Mitch Erickson, Science and Technology Directorate; Sean Waters, Emergency Analyst; Terra Flynn, Preparedness Officer; Dean Matthews, Emergency Management Program Specialist (Terrorism); and Dug Salley. Also attending the meeting were: Michael Smith, University Relations, S & T Directorate, Department of Homeland Security; Tom Gagliano, Senior Vice President, and John Gagliano, Senior Vice President, Chief Operating Officer and General Counsel, both of EPS Corporation.



Colonel Robert Freehill, Preparedness Officer Terra Flynn, and Program Specialist Dean Matthews, of FEMA Region II participate in demonstration of E-Vest Prototype in the RRI Research Center Trailer

The RRI presented its research to the attendees and then conducted demonstrations of the MapSketch, Visualization, and E-Vest prototypes. Following lunch, all were given a tour and demonstration of the Joint Mobile Command and Training Center truck.

## *Dr. Tepfenhart Rolls out Public Health Tool Deployment Program for the Monmouth County Health Department*

Dr. William Tepfenhart has completed work on developing a fully integrated data software solution that supports the delivery of functional and data management capabilities for use by health departments and first responders. On December 19, 2007, he launched the new database to selected Monmouth County municipalities to begin utilizing it in a "pilot program."

The solution shall allow individual counties to serve their local communities and critical organizations within each community while allowing counties to coordinate resources across the state. This makes the solution extensible and scalable as more communities take advantage of it.

Dr. Tepfenhart is continuing his work on the implementation of this project with Michael Meddis, Monmouth County Public Health Coordinator, and the Monmouth County Health Department. "I find that one of the pleasures associated with developing software lies in the knowledge that my products can help people live better and more comfortable lives," said Tepfenhart. "The development of this particular software program has been particularly rewarding for me. This program helps the heroes of our own communities. There is something satisfying about being able to look at a first responder as they rush off to help someone in trouble and thinking that maybe, just maybe, I have helped ease their worries in some minor way."

The U.S. Army's Edgewood Chemical and Biological Center accepted the deliverables in fulfillment of Mod P002 of Contract W911SR-04-C-0041 from the Rapid Response Institute in December 2007. The contract required the RRI to "create a Research Demonstration Center . . . [and] develop visualization techniques

utilizing low cost integrated monitor/projection technologies to present first responders and their managers with real-time status reports of data . . . that could support a response to a bio-terrorist attack or other hazard and the potential to convert, in real time, between paper maps and digital images . . . The Research Demonstration Center would allow for the development of integrated software applications and specifications for video wall projection and interactive video map table to enhance training and incident command capabilities."

The RRI coined the name "DECIDE" (Dynamically Enhanced Command Information Delivery) for this project. The delivery was in the form of seven documents and two electronic files detailing and supporting the research of the project. Prototypes were also developed and demonstrated to the project managers from ECBC on September 27, 2007. The prototypes included a five-screen "Visualization Display," "E-Vest," and "MapSketch."

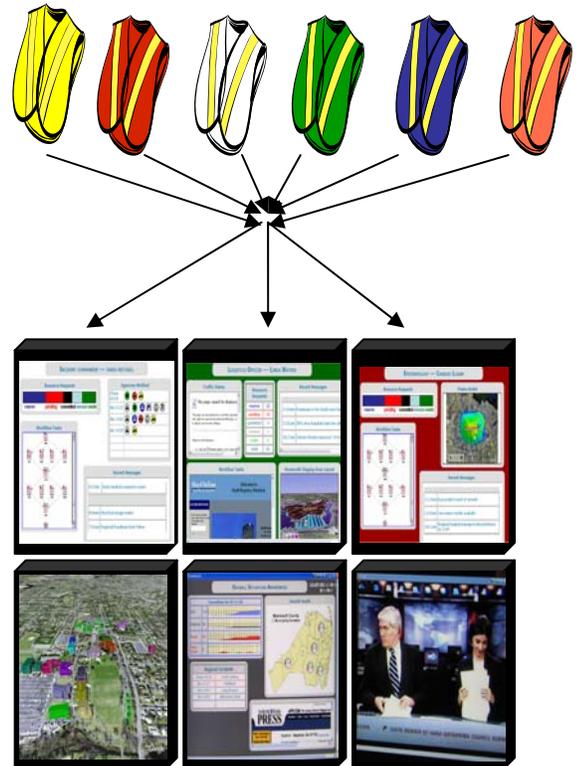
One such prototype, MapSketch, is a low-cost interactive tabletop display which is designed for use in an Emergency Operations Center (EOC). It combines the advantages, while eliminating the disadvantages, of both paper and digital maps. It facilitates the fast, effective, and efficient electronic transmission of rapidly changing information between different EOC's as well as from the EOC to the responders out in the field.

Another prototype created was E-Vest. The premise of E-Vest is the efficient display of role specific information, allowing the information to "follow" the individual in the EOC who needs it. As different commanders move about the EOC, the information they need appears on the video display screen nearest to them. The manner in which the information is displayed is customizable to each commander's wants/needs as well.

Finally, the visualization/video wall prototype focused on the gathering of pertinent data and forwarding it to the appropriate video displays. Much research was done in determining the type of data needed by each particular commander in an EOC and how it should be displayed. Scenarios for nor'easter, chemical spill and bioterror events were created for demonstration and training purposes wherein each phase/event of a scenario would present, and the information pertaining to it would be displayed on each screen.

Delivery of Mod P002 completes this first Department of Defense contract of the RRI. The first phase of this contract was successfully delivered in July, 2006, with five (5) deliverables, including both Global Solution Specifications (GSS) and Global Design Descriptions (GDD) for the following: Health Surveillance (HS); Incident Command System (ICS); Disease Diagnostic Tool (DDT); Human Asset Management System (HAMS); and a National Model for All Hazards Preparedness and Response.

## *Rapid Response Institute successfully delivers on Mod 2 Contract to ECBC, U.S. Army*



**E-VEST APPLICATION**

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## *RRI Research gains Recognition in Homeland Security Community . . .*

*By: Dr. Barbara T. Reagor, Director, RRI*

The research of the Rapid Response Institute is gaining industry-wide recognition. The RRI has established important ties to organizations developing and implementing all hazards preparedness and response initiatives for the State of New Jersey and FEMA Region II. We have worked with New Jersey State Police Office of Homeland Security and Preparedness, and we are currently an invited member of its newly formed Preparedness College.

The RRI supported Monmouth County and the State of New Jersey Office of Emergency Management and State Police for both the Haskell and Breeders' Cup events at Monmouth Park Race Track, utilizing our Joint Mobile Command and Training Center truck as a backup Emergency Operations Center.

We have supported the Monmouth County Office of Emergency Management and Department of Health for local, state, and federal exercises. We continue to meet with county and state agencies to identify potential research and technology transfer opportunities between the Department of Defense and the State of New Jersey. We have included Monmouth County in several of our proposals and have conducted software engineering research directly for them. We have GIS data sharing agreements in place with both Monmouth and Burlington Counties. We have also participated in major exercises with the Delaware State Police.

The faculty of the School of Science, Technology and Engineering are active partners with the University of Medicine and Dentistry of New Jersey, New Jersey Institute of Technology, Rutgers University and other higher education institutions and state government agencies in the New Jersey State Homeland Security Consortium. We are pursuing active partnerships as an alliance member of the PSU-EOC (Penn State Electro-Optics Center) and currently setting up partnerships with Drexel University and Communications-Electronics Research, Development and Engineering Center's (CERDEC) Applied Communication and Information Networking (ACIN) Program for Warfighter Support in Camden, New Jersey. We are an alliance member of the Congressional Hazards Caucus ([www.hazardscaucus.org](http://www.hazardscaucus.org)).

In November 2007, we presented our research to Mr. Chuck Fromer, Director of DTRA, Information Technology Directorate. The representatives from DTRA and ECBC expressed their desire to take our successful deliverables and our CWID '07 Trial (in which we demonstrated the ability to share information between classified military and unclassified civilian settings while preserving the source of classified information) to the next level. The proposed work in this project is consistent with the goals and directives of the NBC Battlefield Command and those of DTRA.

In May of 2008, two masters theses were successfully defended by Graduate Students Robert Monto and Matthew Vidovich, bringing the total supported by the RRI to seven. Robert Monto (with Professors Daniela Rosca and Jiacun Wang serving as advisors) presented his thesis entitled "Single Sign-On Implementation and Interoperability Interface to Inter-Organizational Workflows," which expands on the inter-organization workflow tool previously developed in the SE Department at MU by adding a security level that allows independent organizations to trust requests for services or information from outside sources. Matthew Vidovich (with Professor Jiacun Wang serving as advisor) presented his thesis entitled, "Web-based Resource-Constrained Workflow Enactment Tool Development," which presents a web-based enactment tool for workflows built using WIFA tool or resource-constrained WIFA tool. This web-based tool enhances the intuitiveness of existing stand-alone tools, which are good for workflow editing and verification, allowing normal end users to enact a workflow.

The RRI will continue in its quest to forge partnerships that will foster its growth in homeland security and preparedness research.

## *Alex Karpodinis of the Rapid Response Institute Receives Honorable Mention for 2008 MU Student Employee of the Year*

Our own Alex Karpodinis received Honorable Mention for 2008 MU Student Employee of the Year! The announcement came at the Student Employment of the Year Reception held on Friday, April 18, 2008, in the Club Dining Room in Magill Commons.

In her nomination of Alex, Dr. Reagor described him in part as follows: “. . .his personal attributes can be described by all as highly analytic, careful and patient, friendly and easy to get along with, and always polite, courteous, and prompt. He took a natural leadership role . . . It is not often that I can have an undergraduate student present technical research information to the Technical Managers of our program and wow them. Alex accomplished this feat.”

Provost Thomas Pearson announced the winners, and quoting from the submission made by Dr. Reagor, stated “Successful student research of this caliber enables the RRI to continue to compete and receive future research dollars and enables Monmouth University to truly be Where Leaders Look Forward.”

### **CONGRATULATIONS ALEX!**



Left to Right: Dr. Jay Wang, Dr. Barbara “Bobbie” Reagor, Alex Karpodinis and Dr. Allen Milewski at the 2008 Student Employee of the Year Reception

## ~Student Corner~

### **RRI Student Employee News . . .**

On behalf of the **Rapid Response Institute**, Director Barbara T. Reagor recognizes and applauds all of the student employees for their valuable contributions to the RRI since its inception in 2004. We thank our current students and all those who have worked with the RRI this past year:

**Undergraduate Students:** Doug Alpaugh; Anthony Imperiale; Alexander Karpodinis; Joseph Lilonsky; Stefanie Martin; Thomas Murphy; Regina Mushrock; and Mathew Weisfeld. **Graduate Student:** Lauren Landrigan. **High School Student:** Tanya Jargowksy

Each year since 2006, the RRI nominates one of its student employees for the Student of the Year Award. This year the Rapid Response Institute has nominated **Alex Karpodinis** (Undergraduate, Computer Science) for 2008 Student Employee of the Year—Congratulations Alex!!! Previous years’ nominees by the RRI included Mathew Weisfeld (2006) and Stefanie Martin (2007).

### **Quips and Quotes:**

When asked to share their thoughts on their experiences working with the **Rapid Response Institute**, the student employees had this to say:

- **Anthony Imperiale** (Undergraduate, Software Engineering): “My time at the Rapid Response Institute has helped me grow into a more professional and technically experienced individual.”
- **Regina Mushrock** (Undergraduate, Communications): “I find working at the trailer to be incredibly rewarding. It was an honor to be able to attend the FEMA meeting back in February and meet all of those whom I did, especially Sean Waters and Region II Director Steve Kempf. The experiences are definitely beyond explanation!”

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