In an emergency, a chemical companion to aid first responders

PDA software tool helps hazmat teams identify chemical spills

T.J. Becker
Research News and Publications

When dealing with hazardous materials — whether from a truck spill or a terrorist attack — information is critical. Before first responders can begin to aid victims and decontaminate a scene, they must determine what substances are present and understand the inherent risks to humans and the environment.

To help first responders and hazardous materials (hazmat) teams, researchers at the Georgia Tech Research Institute (GTRI) have developed the "Chemical Companion." This software tool, which operates on Windows-based personal digital assistants to help responders make decisions about everything from protective equipment and chemical reactivity to creating protective zones and providing appropriate medical aid.

"With some chemicals like Orthene, which is a fire-ant killer, administering oxygen to a victim would have a detrimental effect," noted Amy Cook, a chemist in GTRI’s Electro-Optical Systems Lab (EOSL).

First responders may be able to identify chemical agents from the shape of containers, shipping papers or signs posted at the hazmat scene. But if there are no solid clues, the Chemical Companion enables responders to identify an unknown chemical by entering details about the substance’s physical appearance, such as odor, color and state.

Another option for pinpointing unknown chemicals is to report medical symptoms displayed by victims. For example, twitching, constricted pupils, excessive sweating and confusion might indicate the presence of the nerve gas sarin.

The "Chemical Companion makes it easy for first responders to access information quickly from multiple paths," said Gisele Bennett, director of EOSL and co-principal investigator. "The system is also very robust and easy to update so we can continue to add more chemicals."

Although there are existing software tools for hazmat teams, these programs can be costly. In contrast, the Chemical Companion will be free to the military, law enforcement officials and fire departments.

Besides price, other hallmarks include greater depth of information on chemicals and more detailed medical advice. What’s more, the Chemical Companion features a calculator to help responders determine "stay times" — how long they can remain in a contaminated zone — to suppress the blaze.

Sponsored by the federal government’s Technical Support Working Group, the Chemical Companion helps first responders make decisions about everything from protective equipment and chemical reactivity to creating protective zones and providing appropriate medical aid.

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Permanent residence process moves to Human Resources

F ollowing an assessment of the Institute’s process for processing international faculty and staff with employment-related activities, the Office of Human Resources’ Foreign National Service Center (FNSC) has announced it will take over the petitioning process for permanent residency.

The petition process determines if an individual will be granted the right to live and work in the United States indefinitely. The Center, which already oversees management of the tax compliance program and the work visa application process, will be a “one-stop” shop for all employment-related foreign national processes.

“The growing number of foreign-born faculty and staff at Georgia Tech represents an important and valued population among our employees,” Provost Jean-Louis Bonnemaz said. “Providing them appropriate support for the petition process is essential and I’m pleased with the changes that will streamline and improve this service to them.”

OHR will offer brown bag and training sessions for employees and campus administrators in order for individuals to gain more information about the process and understand the roles of Georgia Tech, the employee, and campus departments.

“The ongoing goal of the FNSC is to provide convenient and expert service to our foreign national population,” said Chuck Donbaugh, assistant vice president of human resources.

Telecommunications research program boasts $100,000 competition

G eorgia Tech, Cingular Wireless and Siemens Communications are kicking off a new research program in wireless applications. This initiative brings the students and faculty of Georgia Tech an opportunity to gain early, first-hand access to the latest telecommunications application architecture. Researchers will be working on the IP Multimedia Subsystem (IMS) platform.

The IMS program is a joint effort of the Georgia Tech Research Network Operations Center (GT-RNOC) in the Office of Information Technology and the Georgia Electronic Design Center (GEDC). During the summer, Siemens will install the IMS technology platform in GEDC labs in the Technology Square Research Building. A technology demonstration showing examples of IMS applications is planned for October.

The competition, open to all Tech undergraduate students in any field of study, is an opportunity to compete for $100,000 in prizes while creating multimedia applications on an emerging telecommunications platform. Students will be able to sign up for a class in the College of Computing that provides them with specific training on IMS architecture and platform development.

The IMS Research Competition will kick off with a special event — April 25 at 6 p.m. — in the Technology Square Research Building. Georgia Tech students and faculty are invited to attend this event to learn more about the technology and get details on entering the competition. The competition is open to all Georgia Tech undergraduate students enrolled in any field of study.

Holly Mullin
Office of Information Technology

Telecommunications research program boasts $100,000 competition

Exploring a number of projects that deal with the BeltLine, College of Architecture Professor David Green has had several student urban design studios that have looked at specific sections of the BeltLine and the issues that face the neighborhoods in those locations. Professor John Peponis has studied the elements discussed in the studios and looked at how the scenarios impact the city and region as a whole. In addition, Tech’s Center for Quality Growth and Regional Development is currently doing a health assessment study on the BeltLine.

“The BeltLine is many things to many people,” said Allen. “Within the academic context of the design studios, Georgia Tech has a unique ability to use the BeltLine as a kind of laboratory for our students, faculty, and research to test components of the BeltLine project. We cannot plan or develop the BeltLine ourselves, but we can and should be a conduit to ensure that the ideas and issues of all the constituents of the complex project are discussed in an open and constructive manner.”

The morning session of the symposium will discuss the multiple views of the BeltLine project and urban regeneration. Speakers representing developers, parks and recreation, transportation and neighborhood advocates will all take part in the discussion.

The afternoon session will discuss strategies based upon academic study of the BeltLine, and concludes with a panel discussion among civic leaders, planners and architects, all of whom have a role in the project’s planning and development.

“My hope for the BeltLine is that it will truly create healthy, sustainable communities where people want to live and that it will accommodate thousands of anticipated new residents in the city of Atlanta and at the same time maintain a high quality-of-life for existing residents,” said Gravel. “I hope the BeltLine changes the way we think about Atlanta so that the city can truly transform into a progressive, livable region.”

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Hazmat equipment also presented a design challenge for GTRI researchers.

“When you’re in a hazmat suit, even simple tasks, like picking up a penny, can be very difficult,” said Benjamin Medlin, a GTRI software development specialist. “So you can imagine how difficult it might be to use personal digital assistants — which aren’t the easiest devices to use under normal conditions.”

To minimize the amount of typing required to use the Chemical Companion, the GTRI team incorporated lots of dropdown menus and automatic fill-ins in the software. The program also features large lettering and shading between columns to make numbers and words easier to read from under bulky hazmat masks.

Beta-testing for the Chemical Companion began in the fall of 2005 with a number of fire departments around the country. Researchers expect the Chemical Companion will be ready for distribution in the summer or fall of 2006.

Holly Mullin
Office of Information Technology
Last week’s Faculty/Staff Honors Luncheon offered an opportunity to recognize not only the award winners listed below, but also 166 members of the Tech community who marked their 10-year anniversary, and another 41 (listed at right) who reached the 25-year mark. The Whistle extends its congratulations to the honorees.

2006 Staff Tuition Reimbursement Assistance Program (STRAP) graduates
Curtis Davis, Housing
Melissa Postle, Security and Police Department
Patricia (Patt) Potter, Georgia Tech Savannah
Estella Richardson, Library and Information Center
Samuel Strickland, Chemistry and Biochemistry
Vikki Sutton, Georgia Tech Research Institute

Don Bratcher Human Relations Award
RoseMary Wells, administrative coordinator, Office of the Dean of Students

Administrative Service Award
Michelle Jay Powell, program manager, Sponsored Programs

Georgia Tech Chapter Sigma Xi Awards
Young Faculty Awards
Xiaoming Huo, assistant professor, Industrial and Systems Engineering
Marcus Weck, assistant professor, Chemistry and Biochemistry

Faculty Best Paper Awards
Hai-Ru Chang, senior research scientist, Earth and Atmospheric Sciences
Judith A. Curry, school chair, Earth and Atmospheric Sciences
Robert E. Speyer, professor, Materials Science and Engineering
Peter J. Webster, professor, Earth and Atmospheric Sciences

Sustained Research Award
Mark Hay, professor, Biology

Faculty Research Awards
Outstanding Doctoral Thesis Advisor
Mustafa H. Ammor, Regents’ professor, Computing
C. P. Wong, Regents’ professor, Materials Science and Engineering

Outstanding Achievement in Research Program Development
Robert M. Dickson, associate professor, Chemistry and Biochemistry

Outstanding Faculty Research Author
Robert E. Dickinson, professor, Earth and Atmospheric Sciences

Outstanding Faculty Leadership for the Development of Graduate Research Assistants
Suresh K. Sitaratnam, professor, Mechanical Engineering

ANAK Award
Douglas C. Allen, associate dean, College of Architecture

Outstanding Staff Performance Awards
Julie Blankenship, director of business services, Georgia Tech Research Institute
Rick Brown, systems support specialist, Information Technology
Robert Hodgins, academic advisor, Civil and Environmental Engineering
Cindy Jardin, recruiting manager, Career Services
Marc Plante, laboratory manager, Biology

CETL/BP Junior Faculty Teaching Excellence Award
Victor Bredveld, assistant professor, Chemical and Biomolecular Engineering
Joel Sokal, assistant professor, Industrial and Systems Engineering
Lena Ting, assistant professor, Biomedical Engineering
Marcus Weck, assistant professor, Chemistry and Biochemistry

Education Partnership Award — Faculty
Tom Collins, senior research engineer, Georgia Tech Research Institute
Jeff Davis, associate professor, Electrical and Computer Engineering

Education Partnership Award — Student
Satya Bhana, undergraduate, Computer Engineering
Simon Chen, undergraduate, Electrical Engineering
James Holland, graduate, Electrical and Computer Engineering
Eric Liu, undergraduate, Electrical Engineering
Michael Rivers, undergraduate, Computer Engineering

Academic Advisor Awards Committee
Outstanding Undergraduate Academic Advising — Staff
Patti Parker, academic advisor, Industrial and Systems Engineering
Outstanding Undergraduate Academic Advising — Faculty
Enid Steinbart, director of advising and assessment, Mathematics

Faculty Honors Committee Awards
Class of 1940 W. Roade Beard Outstanding Teacher Award
James O. Humblen, professor, Electrical and Computer Engineering

Class of 1940 W. Howard Ector Outstanding Teacher Award
William Alan Doolittle, assistant professor, Electrical and Computer Engineering
Charles David Shammari, associate professor, Chemistry and Biochemistry

Outstanding Service Award
J. David Frost, director of academic services, Georgia Tech Savannah

Outstanding Professional Education Award
Paul W. Mayne, professor, Civil and Environmental Engineering

Outstanding Undergraduate Research Mentor (Faculty) Award
Ashraf S. Saad, associate professor, Electrical and Computer Engineering

Class of 1934 Outstanding Innovation Use of Education Technology Award
Barbara Blackburn-Jansma, associate professor, Modern Languages

Class of 1934 Outstanding Interdisciplinary Activity Award
Stephen P. DeVerear, associate chair, Biomedical Engineering

Class of 1934 Distinguished Professor Award
Bryan G. Norton, professor, Public Policy

25-year anniversaries

Faiz A. Al-Khayyal
Industrial and Systems Engineering
Lillian V. Allen
Alumni Association
Earl L. Babbitt III
Civil and Environmental Engineering
Elizabeth R. Barton
Human Resources
Carmello Bell
Industrial and Systems Engineering
Lexton S. Berry
Housing
Julie A. Blankenship
Georgia Tech Research Institute
Charles E. Brown
Georgia Tech Research Institute
Raziya Chapman
Management
George Chimonas
Earth and Atmospheric Sciences
Sharon K. Crouch
Electrical and Computer Engineering
Eleanor Sanders Dixon
Health Services
Linda A. Gill
Grants and Contracts Accounting
Monson H. Hayes III
Library and Information Technology
James J. Hummel
Facilities
Paul W. Mayne
Civil and Environmental Engineering
Richard W. Holland
Library and Information Technology
James W. Larsen
Georgia Tech Research Institute
Jacob T. Leverett
Georgia Tech Research Institute
Douglas W. Martin
Georgia Tech Research Institute
John R. McIntyre
Management
Malinda Millard-Stafford
Applied Physiology
Thomas Morley
Mathematics
Nancy Pinion
Materials Science and Engineering
Nicholas A. Pomponio
Georgia Tech Research Institute
Hans B. Pütten
Electrical and Computer Engineering
Monica L. Rawland
Information Technology
Nellie Sanders
Facilities
J. Bradley Satterfield Jr.
Facilities
Carol A. Seif
Literature, Communication, and Culture
Steven M. Sharpe
Georgia Tech Research Institute
Jane-Allen Shope
Administration and Finance
Georgia L. Simon
Information Technology
Jacqueline E. Smith
Center for Advanced Communications Policy
Charles Citt Stuart
Library and Information Center
Christopher Summers
Materials Science and Engineering
Donald J. Swank Jr.
Georgia Tech Research Institute
Craig A. Tovey
Industrial and Systems Engineering
Pamela M. Trube
Military and Culture
Louis W. Zehner
Information Technology