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July 19, 2006

FACT SHEET: Security-related research at Rutgers, The State University of New Jersey

In the aftermath of the Sept. 11, 2001, terrorist attacks, Rutgers has emerged as a worldwide leader in academic research concerning terrorism prevention and homeland security. Dozens of Rutgers faculty are analyzing a wide range of issues, including bioterrorism, port security and law enforcement. Much of this research is coordinated through two comprehensive initiatives at Rutgers:

- **DIMACS (Center for Discrete Mathematics and Theoretical Computer Science) Programs in Homeland Security** – DIMACS, based at Rutgers' Busch campus in Piscataway, was founded in 1989 with a prestigious National Science Foundation "science and technology center" grant. It is a partnership of Rutgers and Princeton universities, AT&T Labs, Bell Labs, NEC Laboratories America and Telecordia Technologies, with partner organizations Avaya Labs, HP Labs, IBM Research, Microsoft Research and the Stevens Institute of Technology. In addition to organizing numerous homeland security projects, DIMACS is home to the Rutgers University Homeland Security Research Initiative (RUHSRI), which coordinates homeland security research across Rutgers academic departments and research centers, and takes a visible leadership role statewide and nationally. Contact: Director Fred S. Roberts at froberts@dimacs.rutgers.edu.
- **Rutgers Center for the Study of Public Security (RCSPS)** – This center, based at Rutgers-Newark, is a collaboration of the Rutgers School of Criminal Justice (SCJ), the Center for Global Change and Governance, the Rutgers School of Law-Newark and the Rutgers College of Nursing. Its centerpiece program explores risk assessment and organizational changes in safety and security in business, health and law enforcement, and the impact of these changes on risk mitigation. The center's main objective is to study the origins and spread of terrorism and ways in which democratic societies can effectively stop terrorism and cope with its consequences. Contact: SCJ Dean Leslie W. Kennedy at kennedy@andromeda.rutgers.edu.

Information Security

Center for Information Management, Integration and Connectivity (CIMIC) – This Rutgers-Newark center explores, develops and conducts research on a wide range of security-related issues – including electronic commerce and digital libraries, which manage large amounts of complex data.

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Center for Advanced Information Processing (CAIP)/Warning and Indicator Systems Engineering (WISE) Lab – Researchers are developing systems to detect dirty bombs and plastic explosives, as well as voice and facial recognition systems. The lab also is developing a project called “SPIDER” – Spatial Presence and Immersive Dynamic Environment in Real Time. It proposes an alternative to deploying soldiers on foot in urban environments through the use of remote sensors that would allow troops to patrol the streets from a safe location.

Center for Interdisciplinary Studies, Information Privacy and Security – Rutgers’ School of Communication, Information and Library Studies in New Brunswick is establishing this center. Its objectives will include researching trade-offs between privacy and security.

“Special Focus” on Communication Security and Information Privacy – This DIMACS initiative explores new vulnerabilities and threats to modern society’s communications systems. Of special relevance are efforts to preserve individual privacy, maintain the confidentiality of health data and secure the sharing of information.

Workplace Security

The Occupational Training and Education Consortium (OTEC), part of the Labor Extension Program in the School of Management and Labor Relations based at the Livingston campus, is active in several programs aimed at improving workplace security. OTEC has worked with chemical manufacturing plants and labor unions to strengthen site security at chemical plants in New Jersey and around the nation. With the U.S. Department of Labor and the Occupational Safety and Health Administration, OTEC works with unions and petrochemical port facilities to disseminate new security regulations; improve communication among industry representatives and federal, state and local agencies; and increase labor-management cooperation in security planning. OTEC initiatives include:

- Participation in upcoming workshops for transportation workers with the New Jersey AFL-CIO. An OTEC staff member has been certified in “Highway Watch,” an anti-terror training program for the transportation industry, which will be included in the workshops.
- Development of an emergency response and preparedness training program for low-wage manufacturing and warehouse workers who are generally vulnerable during emergency situations due to limited training, high levels of mobility and language barriers.

Bioterrorism

Nursing Center for Bioterrorism and Emerging Infectious Diseases Preparedness – This center in the College of Nursing serves as a primary source of education, information and research initiatives for nurses, nurse practitioners and other nursing personnel on medical practices related to biological, chemical and nuclear terrorism as well as emerging infectious diseases.

Food Policy Institute – This Cook College institute supports public and private decision-makers who shape policies concerning the nation's food system. The institute recently conducted a nationwide survey of about 1,000 respondents to determine consumers' perceptions about the possibility of agriculture-related terrorism and how their food purchasing habits might change as a result of their perceptions of this risk. Institute members also have published papers and made presentations on bioterrorism and agriculture.

Working Group on Modeling Social Responses to Bioterrorism – The working group, which includes representatives from mathematics and sociology, has been challenging traditional assumptions in planning responses to bioterrorism and disease. Issues include risk communication, measurement of social disruptions and economic impacts.

End-to-End Early Warning Decision Support System for Drinking Water Safety and Security – The objective of this early warning system, developed by CIMIC, is to detect the introduction of chemical, biological or radiological contaminants into source water and distribution systems.

Working Group on Adverse Event/Disease Reporting, Surveillance and Analysis – This DIMACS working group, which includes representatives of statistics, computer science and the Environmental and Occupational Health Sciences Institute (EOHHSI), addresses the challenges surrounding disease surveillance by compiling information from a wide range of resources – including prescription data, over-the-counter drug sales, 911 emergency calls and ambulance dispatch data.

Bioterrorism Sensor Location – This DIMACS project, involving faculty from operations research, statistics, computer science, industrial and systems engineering, and EOHHSI, examines the deployment of sensors to provide quick and accurate warnings about possible bioterrorist attacks.

Predicting Disease Outbreaks from Remote Sensing and Media Data – The goal of the project, run by DIMACS and involving statistics and the WISE Lab at CAIP, is to predict the probability of disease-related social unrest in an area based on remotely measured indications similar to those used in forecasting infectious disease outbreaks.

Law Enforcement/First Responders

Police Institute – Part of the School of Criminal Justice at Rutgers-Newark, the institute has developed security preparedness training seminars for homeland security planners and is developing a graduate program in intelligence analysis and a conference on critical infrastructure.

Interconnected Municipal Information for Homeland Security – Intended for use by first responders, this CIMIC-developed system will bring 490,000 residents in 14 northern New Jersey municipalities online to share and update information to facilitate planning for homeland security as well as sustainable development.

Incident Management System – Another CIMIC initiative, the primary goal of this system is to effectively expedite the deployment of first responders on the state and local levels to emergency incidents that may pose an immediate security threat.

Port/Cargo Security

Center for Supply Chain Management – The center, part of the Rutgers Business School-Newark and New Brunswick, has hosted workshops for business and academic professionals as well as import specialists on the security of the supply chain within the nation's ports.

Institute of Marine and Coastal Sciences – Rutgers' Coastal Observation Lab (R.U. COOL), in partnership with CODAR Ocean Sensors and Applied Mathematics Inc., is developing new vessel-tracking capabilities. R.U. COOL seeks to modify an existing high-frequency radar network for New Jersey that provides real-time surface current maps for researchers' scientific studies. Other beneficiaries include the U.S. Coast Guard for search and rescue and the NOAA Hazmat Response Center for Oil Spills.

Port-of-Entry Inspection Algorithms – DIMACS is studying ways to intercept illicit nuclear materials and weapons that might be destined for the United States through the maritime system.

Secure Agency Interoperation for Effective Data Mining in Border Control and Homeland Security Operations – This CIMIC initiative aims to enable decision-makers to use data from different agencies, ports and customs divisions to target inbound cargo.

Border Protection

School of Communication, Information and Library Studies – Associate Professor of Communication Mark G. Frank studies nonverbal communication, with a focus on understanding the complexities of facial expressions and deception in real-world settings. He analyzes the factors that affect people's abilities to decode deception and is working with several security-related organizations on identifying liars and truth-tellers in interview situations as well as checkpoint screenings.

Center for Global Change and Governance – Based at Rutgers-Newark, the center’s research program on border control and migration is examining the relationship between the information revolution and international migration. The goal is to gain a better understanding of long-term security challenges of border control and homeland security.

Transportation

Alan M. Voorhees Transportation Center/National Transit Institute (NTI) – A unit of the Voorhees Center, NTI develops specialized security training for the nation’s transportation and transit industries and has delivered the program to more than 45,000 employees at 650 transit commuter agencies, Amtrak and the freight railroads. Funded by the Federal Transit Administration and approved by the U.S. Department of Homeland Security, the NTI training was used for the 2004 Democratic and Republican National Conventions, and the 2004 Summer Olympic Games in Athens. The course has been adapted for use by state highway departments.

Center for Advanced Infrastructure and Transportation (CAIT) – CAIT is developing software that will provide the first system for integrated modeling and simulation of emergency response to natural and man-made disasters. It will enable users to plan against a range of events in situations where evacuations or displacement of people is necessary, in locations as varied as a single hospital wing or a school to a four-square block radius around government buildings or an entire transportation hub.



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