




EKU

Dr. Pam Collins
&
Dr. Kay Scarborough
Eastern Kentucky University



HOMELAND SECURITY TECHNOLOGY



PRESENTATION OUTLINE

- I. Overview
- II. Technology Development
- III. Homeland Security Technology Examples
 - A. Secure Identification of People
 - B. Defending Against Explosives and Firearms
 - C. Cargo/Transportation Security
- IV. Conclusions

HOMELAND SECURITY TECHNOLOGY



OVERVIEW

- “Technology can provide tremendous added value in the quality of security across virtually every sector of the homeland.” – *Secretary Michael Chertoff, U.S. Department of Homeland Security*
- Awareness of Technology’s Limitations:
 - Cost / Economic Impact
 - Public Acceptance
 - Civil Liberties
 - Loss of Power



TECHNOLOGY DEVELOPMENT

- Government Support
 - Direct sponsorship or hosting of research
 - Transition from development to implementation
- Two government entities have responsibility for fostering technology through the efforts of the government and private sectors:
 - Defense Advanced Research Projects Agency (DARPA)
 - Homeland Security Advanced Research Projects Agency (HSARPA)

 HOMELAND SECURITY TECHNOLOGY	<p align="center">TECHNOLOGY DEVELOPMENT – Defense Advanced Research Projects Agency</p>
	<ul style="list-style-type: none"> • Mission • Accelerates technology transition from R&D to implementation • Significant Developments <div align="right">  </div>

 HOMELAND SECURITY TECHNOLOGY	<p align="center">TECHNOLOGY DEVELOPMENT – Homeland Security Advanced Research Projects Agency</p>
	<ul style="list-style-type: none"> • Mission • Smaller operation than its defense counterpart (DARPA) • HSARPA is much more “needs driven” than DARPA, with 90 percent of HSARPA funds going to identified DHS requirements. <div align="right">  </div>



TECHNOLOGY DEVELOPMENT – SAFETY ACT

- Support Anti-Terrorism by Fostering Effective Technologies Act of 2002 (SAFETY Act)
- Provides liability protection in the event of a terrorist attack for suitably qualified technologies and services that, for reasons of liability risk, would otherwise not be developed or made available.



TECHNOLOGY DEVELOPMENT – TechClearinghouse

- Section 313 of the Homeland Security Act of 2002 – “establishment of a Technology Clearinghouse to encourage technological innovation in facilitating the mission of the DHS.”
- An advanced web portal that provides emergency responders a resource for trusted information using advanced searching and document navigation tools.
- Currently under development by the Public Safety and Security Institute for Technology (PSITEC).

	<h2 style="text-align: center;">SECURE IDENTIFICATION OF PEOPLE – Electronic Passports</h2>
	<ul style="list-style-type: none"> • Passports that contain biometric data stored on a RFID chip. • Congress has mandated that all Visa Waiver Program (VWP) countries will use them, as will the U.S. • Pilot Test: <ul style="list-style-type: none"> – San Francisco International Airport, January 15 to April 15, 2006 - impact of e-passports on border-security operations was evaluated.

	<h2 style="text-align: center;">SECURE IDENTIFICATION OF PEOPLE – US-VISIT Program</h2>
	<ul style="list-style-type: none"> • Enhances the security of U.S. citizens and visitors, facilitates legitimate travel and trade, and protects the privacy of our visitors. • Fingerprint Validation (US VISIT Program) <ul style="list-style-type: none"> – All foreign entrants into the U.S. submit two index fingerprints upon entry, which are stored in a central database. – In the future, first time U.S. visitors will have to provide all ten fingerprints upon entry, which should increase reliability and reduce false matches. <div style="text-align: right;">  </div>



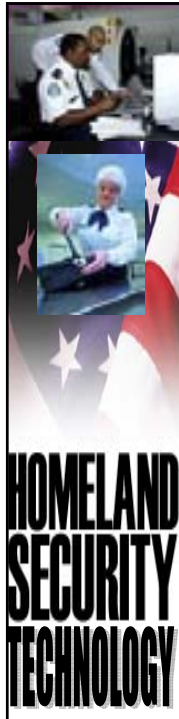
SECURE IDENTIFICATION OF PEOPLE – Credentialing

- National Incident Management System (NIMS)
- Credentialing entails attesting that individuals meet professional standards for the training, experience, and performance required for key incident management functions.
- Ensures that individuals are qualified to competently perform in the emergency responder position they are tasked to fill.



DEFENDING AGAINST EXPLOSIVES & FIREARMS – INTELLIGENT SURVEILLANCE

- Traditional Closed-Circuit Television (CCTV) systems use simple motion detection and rely heavily on humans to watch and interpret the video output resulting in a frequency of error.
- Intelligent video surveillance software monitors video, identifies potential anomalous / aberrant behavior, and alerts security personnel as the event is happening.
- Research indicates that there are approximately 12 companies marketing intelligent video surveillance systems at an average cost of \$5,000 per camera.



DEFENDING AGAINST EXPLOSIVES & FIREARMS – Explosive Detection System (EDS) & Explosive Trace Detection (ETD)

- Explosive Detection Systems
 - Use X-rays to produce a three dimensional image
 - An object of high density indicates that an explosive may be present and triggers further examination of the baggage.
 - False Positive Rate: More than 20%
 - Approximate cost per unit: More than \$1 Million
- Explosive Trace Detection
 - Require an operator to take a swab from a piece of luggage to pick up traces of any explosive.
 - The swab is then analyzed by ion mobility spectroscopy (IMS) to check for explosives.
 - False Positive Rate: Less than one percent
 - Approximate cost per unit: \$50,000



CARGO SECURITY

- Approximately 25,000 containers arrive and are off-loaded at U.S. Seaports every day.
- The U.S. currently inspects around 3 percent of the incoming sea cargo.
- Screening technologies must allow for swift and accurate inspections – with a low false alarm rate.



**HOMELAND
SECURITY
TECHNOLOGY**

CARGO SECURITY - RFID

- Radio Frequency Identification Devices
- Small, battery-powered units that store information from the sensors to which they are connected.
- The container inspector can access various Information, such as the unauthorized opening of a freight container's door, remotely through Bluetooth technology.
- HSARPA is currently working on "RFID Smart Boxes," which could monitor the integrity of the entire container, its previous movements, and the temperature and radiation levels inside.



**HOMELAND
SECURITY
TECHNOLOGY**

CARGO SECURITY - GPS

- Global Positioning System
- Allows tracking of a container in real time: its position, updated every thirty minutes, within ten meters.
- Battery or solar powered with an expected life span of around 10 years.





CONCLUSIONS

- Technology is not a panacea for all homeland security challenges.
- When used effectively, technology can act as a “force multiplier” for those responsible for the safeguarding of this nation.
- Government must work expeditiously to transition technologies from the research and development phase to emergency responder implementation.
- All technologies should undergo objective evaluation before they are utilized by emergency responders.



CONTACT INFORMATION

Dr. Pam Collins

*Professor , Loss Prevention and Safety
Executive Director, The Justice and Safety Center
Eastern Kentucky University
50 Stratton Building / 521 Lancaster Avenue
Richmond, KY 40475
Office: (859) 622-8106 / Fax: (859) 622-8038
E-mail: PamCollins57@aol.com*

Dr. Kay Scarborough

*Professor , Loss Prevention and Safety
Director – Special Programs, The Justice and Safety Center
Eastern Kentucky University
50 Stratton Building / 521 Lancaster Avenue
Richmond, KY 40475
Office: (859) 622-1464/ Fax: (859) 622-8038
E-mail: Kscarbocop@aol.com*