RIBBON CUTTING SHOWCASE

BTI Institute

Borders • Trade • Immigration

A Department of Homeland Security Center of Excellence

Monday, March 27, 2017

2 p.m.

University of Houston

Houston Room, Student Center South

4811 Calhoun Road • Houston, Texas 77204

About BTI

DHS Centers of Excellence

The Department of Homeland Security (DHS) Centers of Excellence bring together leading experts and researchers to conduct multidisciplinary research and education for homeland security solutions. The centers are sponsored by the DHS Science & Technology Directorate (S&T) Office of University Programs (OUP) and selected through a competitive selection process. Each center is led by a university in collaboration with partners from other institutions, agencies, laboratories, think tanks, and the private sector.

BTI Mission

The Borders, Trade, and Immigration Institute (BTI), led by the University of Houston, conducts research and provides education materials to enhance the nation's ability to secure our borders, facilitate legitimate trade and travel, and ensure the integrity of our immigration system. Through a multi-disciplinary team of national and international experts, BTI Institute delivers transformational technology-driven solutions, data-informed policies, workforce development opportunities for today's Homeland Security Enterprise, and trans-disciplinary education for the next generation of homeland security experts.

Agenda

Ribbon Cutting Ceremony
Dance Performance by Karen Stokes Dance
Master of Ceremonies
      Mary Ann Ottinger, Associate Vice Chancellor for
      Research for the UH System , Associate Vice President for
      Research for UH
Remarks by
      Renu Khator, President, University of Houston
      Dr. Ioannis Kakadiaris, Director, BTI
      Dr. Robert Griffin, Under Secretary (Acting) for DHS
          Science and Technology Directorate
      Dr. Matthew Clark, Director of the Office of University
          Programs, DHS Science and Technology Directorate
      Cynthia F. Whittenberg, Deputy Executive Assistant
          Commissioner, Office of Trade, U.S. Customs and
          Border Protection
      Andrew Scharnweber, Associate Chief , U.S. Border
          Patrol, U.S. Customs and Border Protection
      Louis Guthrie, Chief, Alabama-Coushatta Tribal Police
          Department
      Joe Frank Martinez, Sheriff of Val Verde County and
          Chairman of the Southwest Border States Sheriffs
          Coalition
      Bradley L. Etter, Chief Intelligence Officer, Immigration
          and Customs Enforcement
Cutting of the ribbon

Ribbon Cutting Showcase
Demonstrations and Exhibits
Reception

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Welcome to the Borders, Trade, and Immigration Institute's Ribbon Cutting Ceremony and Showcase!

Our Institute's mission is to conduct research, develop innovative solutions, and provide educational materials to enhance the nation's ability to secure our borders, facilitate legitimate trade and travel, and ensure the integrity of our immigration system. Our vision is to strengthen homeland security, social, and economic development as a world leader in research and education for transnational flows.

Transnational flows (movements) are the unifying theme to the BTI Institute's areas of study. We seek to facilitate and secure transnational flows: flows of people, goods, data, and financial capital.

We partner the Nation's finest researchers with experienced subject matter experts to develop innovative solutions to those strategic and operational issues impacting Homeland Security. As a Center of Excellence, we work closely with the homeland security community to develop customer-driven, innovative tools and technologies to solve real-world challenges. COE partners include academic institutions, industry, national laboratories, DHS operational components, S&T divisions, other federal agencies, state, local, tribal and territorial homeland security agencies, and first responders.

In short – we solve problems.

While today signals the official beginning of the BTI Institute, the Department of Homeland Security's new Center of Excellence for Borders, Trade, and Immigration - our work has already begun.

Please take the time to browse our exhibits, talk with our researchers, and learn more regarding our current projects and projected initiatives. Take this opportunity to discuss our potential and understand our role and value as a partner and resource to federal, state, tribal, territorial and local agencies, non-profit organizations, and private sector corporations.

Thank you for joining us today. We appreciate your presence.

Ioannis A. Kakadiaris, Ph.D.

Director, BTI
Hugh Roy and Lillie Cranz Cullen
Distinguished University Professor of Computer Science

DHS Program Manager
Theophilos Gemelas
Office of University Programs
Department of Homeland Security

University of Houston - Liaison
Mary Ann Ottinger, Ph.D.
Associate Vice Chancellor for Research, UH System
Associate Vice President for Research, University of Houston

Director
Ioannis A. Kakadiaris, Ph.D.
Hugh Roy and Lillie Cranz Cullen Distinguished University Professor of Computer Science

Executive Director
Ioannis Konstantinidis Ph.D.

Executive Director, Strategic Partnerships
Kevin Clement

Lead for Strategic Partnerships
Larry Shi, Ph.D.
Associate Professor, Computer Science

Lead for Communication
Lan Ni, Ph.D.
Associate Professor Communications

Thrust Lead for Transnational Flows of People (Policy)
Luis Torres, Ph.D.
Associate Professor
Associate Dean of Research and Strategic Partnerships
Graduate College of Social Work

Thrust Lead for Transnational Flows of People (Technology)
Ioannis Pavlidis, Ph.D.
Eckhard-Pfeiffer Professor of Computer Science

Thrust Lead for Transnational Flows of Goods
Shishir Shah, Ph.D.
Professor of Computer Science

Thrust Lead for Education and Workforce Development
Maria Burns
Visiting Assistant Professor, Information and Logistics Technology

Program Director, Education and Workforce Development
Tiffany Roosa

Program Director, Operations
Rachel Brownlie

BTI Proposal Supporters

Letters of Support

BTI offers heartfelt thanks to the organizations that provided letters of support for the BTI proposal.

Alabama-Coushatta Tribe

Child Trends Hispanic Institute

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Odfjell USA (Houston), Inc.

RightShip

Roltek, Inc.

State Office of Risk Management

SUNY Canton

Texas Association of Regional Councils

Texas Department of Public Safety

Texas Rangers

University of Houston

University of Texas at Austin, School of Social Work

West Gulf Maritime Association

BTI Partners

Academic Partners

Middlebury Institute of International Studies, CA

Rutgers University, NJ

Texas A&M International University, TX

Texas A&M Transportation Institute, TX

University of Arizona, AZ

University of Houston, TX

University of Minnesota, MN

University of North Carolina - Charlotte, NC

The University of Texas at El Paso, TX

West Virginia University, WV

Industry Partners

Voir Dire International, LLC, TX

Transnational Flows of People

BTI addresses real-world challenges as they relate to the transnational movements of people across borders. These challenges have defined our three themes of funded projects: Monitoring, Facilitation, and Organized Crime.

Transnational Flows of Goods

BTI research in the broad area of trade is divided in three themes: Ports of the Future, Trade Compliance, and Connecting Goods to People.

Homeland Security Enterprise Education and Workforce

Development

The center currently provides project-based STEM learning and a symposium series focusing on Department of Homeland Security topics.

Karen Stokes Dance
Dance Performance: Excerpted from "DEEP: Seaspace" project.
Choreography & film: Karen Stokes
Original Music: Brad Sayles
Performers: Brittany Bass, Vi Dieu, Jerrica Mark, & Bryan Peck
Note: This performance is a special re-mix excerpt created in honor of BTI.

Karen Stokes Dance (KSD) is a non-profit dance company that presents original contemporary dance performance and educational programming under the direction of Karen Stokes. KSD has an emphasis on the vitality of Houston and fosters the development of Houston as an international center for contemporary dance.

Karen Stokes has been choreographing original dance theater since 1988. Stokes is also actively involved in creating dance film projects, some of which are available online at www.karenstokesdance.org. Her recent project "DEEP: Seaspace" investigated Houston from the lens of sea (Houston Ship Channel) and Space (NASA).   Stokes is a professor in the School of Theatre & Dance at the University of Houston, where she directs the Dance Program.

Photo by Lynn Lane, courtesy Karen Stokes Dance

Mary Ann Ottinger

Associate Vice President for Research for UH

Mary Ann Ottinger responsibilities primarily include overseeing the Office of Research Development, and enhancing extramural funding by working with our outstanding faculty and staff. She also assists the Vice President for Research and Technology Transfer in managing centers and institutes.

Ottinger has a distinguished academic record at the University of Maryland, College Park. She has spent over 10 years in administration, both at the University of Maryland and at the Agriculture Research Service of the U.S. Department of Agriculture. From 2008 to 2011, she served as the Associate Vice President for Research at UMD, College Park, where she oversaw research compliance. She also has served as a Program Officer at the National Science Foundation and as Interim Associate Dean of the Graduate School at UMD, College Park.

Ottinger has a Ph.D. in Zoology, with specialization in behavioral neuro-endocrinology and environmental toxicology. She was a tenured professor in the Department of Animal and Avian Sciences at the University of Maryland, where she now holds the title of Emeritus Professor. Ottinger has also been elected as a Fellow of the American Association for the Advancement of Science.

Renu Khator,

President, University of Houston

Renu Khator is Chancellor of the University of Houston System and President of the University of Houston. She oversees a four-university organization that serves nearly 71,000 students, has an annual budget that exceeds $1.7 billion and generates almost $6 billion-plus impact on the Greater Houston area's economy each year.

Designated as a Tier One public research university by the Carnegie Foundation, UH has been named one of the Princeton Review's 50 "Colleges That Create Futures." U.S. News & World Report has ranked UH seventh among universities that graduate students with the least amount of debt. And bestcolleges.com has ranked UH among the nation's top 40 universities producing the most Fortune 500 CEOs.

Khator, who was born in Uttar Pradesh, India, completed her graduate studies at Purdue University, earning master's and doctorate degrees in political science. A noted scholar in the field of global environmental policy, she has authored several books and articles on this subject. The UH System's first woman Chancellor and the first Indian immigrant to head a comprehensive research university in the United States, she assumed her post in January 2008.

Robert Griffin
Under Secretary (Acting) for
DHS Science and Technology Directorate

Dr. Robert Griffin assumed the role of Under Secretary (Acting) for Science and Technology at the U.S. Department of Homeland Security (DHS) on January 20, 2017. He had previously served as the Deputy Under Secretary for Science and Technology since May 12, 2014. Prior to that, he was the Director of the Science and Technology Directorate's First Responders Group. He is a member of the Federal Senior Executive Service and the recipient of the 2016 Presidential Rank Award, Distinguished.

Griffin came to DHS after a 20 year career in local government as a senior leader and first responder. He served as the Director of Environmental Services for Arlington County, Virginia, where he managed a diverse portfolio of core governmental functions, including roads and engineering, transportation, facilities construction and maintenance, fleet management, capital planning and construction, and a nationally recognized energy and environmental sustainability program.

Appointed as the first Director of the Arlington County Office of Emergency Management, in Arlington, Virginia, Griffin developed a cross-functional department consisting of emergency management, law enforcement, fire/rescue, public health, and emergency communications personnel. In this capacity, he managed the integration of the county's emergency management and emergency communications functions into a single department. Programs of note include construction of a state-of-the-art emergency communications and data analysis center; an integrated public notification system, including outdoor warning systems and enhanced sheltering capabilities for people and pets; and a nationally recognized citizen outreach effort. While in Arlington, he organized and led relief efforts to Florida (2004), New Orleans (2005), and numerous regional and intra-state deployments.

Prior to his time in Arlington, Griffin served as the Assistant County Administrator and Chief of Fire and Rescue in Loudoun County, Virginia, where he directed the county's fire, rescue, bomb squad, emergency communications, and emergency management functions. In 2001, he led the Loudoun County Emergency Operations Center's response to the September 11-attack on the Pentagon, as well as the anthrax attack on the Dulles Postal Facility. He was also formerly the Executive Administrator of Tyngsborough, Massachusetts, and Town Administrator of Townsend, Massachusetts. He is a certified fire fighter and fire officer.

Griffin earned a Doctor of Philosophy degree in public administration/public affairs from Virginia Tech; as well as a master's degree in public administration and a bachelor's degree in political science from the University of Massachusetts, Amherst. His dissertation was a study of the characteristics of coordination in the homeland security network.

He is on the faculty of Georgetown University's Public Policy Institute where he teaches graduate level courses in state and local governance.

Matthew Clark
Director
Office of University Programs
Science and Technology Directorate
Department of Homeland Security

Dr. Matthew Clark is Director of the Office of University Programs (OUP) in the Department of Homeland Security's Science and Technology Directorate (S&T). With approximately $40 million annual budget, Dr. Clark has developed one of the Federal government's most effective and responsive research and education programs, which includes the DHS Centers of Excellence, the DHS Career Development program, and the Minority Serving Institutions' Scientific Leadership program. The COE program has produced measurable benefits in lives saved and property losses avoided that exceed its costs. The Office of University Programs is developing the long-term fundamental research, technologies and permanent scientific and engineering workforce needed to protect the U.S. from the effects of terrorism and natural disasters. Dr. Clark was formerly Chief of Research for OUP. Prior to that, he created an economics and decision sciences research program at the U.S. Environmental Protection Agency's (EPA) Office of Research and Development, and was an economist for EPA's Office of Water. Dr. Clark also worked for state and local government agencies and as a consulting economist on environmental and energy issues for public and private sector clients.

Cynthia F. Whittenburg
Deputy Executive Assistant Commissioner
Office of Trade
U.S. Customs and Border Protection

Cynthia Whittenburg was appointed Deputy Executive Assistant Commissioner, Office of Trade, in June 2016, charged with overseeing one of the most important aspects of U.S. Customs and Border Protection's (CBP) complex mission: facilitating lawful trade while protecting our supply chain to support our nation's economic growth and security. Prior to her appointment, Ms. Whittenburg served as Executive Director, Trade Policy and Programs within CBP, since 2013. As Executive Director, Ms. Whittenburg led a highly diverse staff in pursuing transformative trade policies that promote economic security and growth for America's businesses, along with ensuring that only safe and legitimate products enter into U.S. commerce. She drove key enforcement strategies over priority trade areas including antidumping and countervailing duties, intellectual property rights, import safety, textiles, and trade agreements.

Ms. Whittenburg's civil service career began with the U.S. Customs Service at the Port of New Orleans as an import specialist 28 years ago. Since that time, her experiences include serving as a Course Developer/Instructor at the CBP Field Operations Academy – Federal Law Enforcement Training Center; National Account Manager; Branch Chief of Entry, Summary and Drawback; Division Director, Trade Facilitation and Administration; and Director ACE Business Transformation. Her executive experience with the Department of Homeland Security also includes two six-month temporary assignments: Acting Executive Director, Budget Office, CBP; and Acting Deputy Federal Security Director, Dallas Forth/Worth Airport, Transportation Security Administration.

Ms. Whittenburg was "twice the citizen" in that she served in a parallel career with the U.S. Army Reserve and Army National Guard over the course of 24 years rising through the noncommissioned ranks and later becoming a commissioned officer.

Ms. Whittenburg is a graduate of Dillard University with a Bachelor's Degree in Computer Science/Business and has earned a Master's Degree in Public Administration from Georgia Southern University. Additionally, she graduated from the Department of Homeland Security Senior Executive Service Candidate Development Program in 2013 and recently completed the Senior Managers in Government course at Harvard Kennedy School of Government.

Andrew K. Scharnweber
Associate Chief
U.S. Border Patrol
U.S. Customs and Border Protection

Andrew K. Scharnweber is an Associate Chief with the Law Enforcement Operations Directorate at U.S. Border Patrol Headquarters in Washington, DC. He leads the Liaison Division responsible for providing support to internal and external stakeholders. He previously held a command position with the Operational Requirements Management Division responsible for validating operational requirements through test, evaluation, and user feedback.

Associate Chief Scharnweber entered on duty with the U.S. Border Patrol in 1996 as a member of Class 312. His first duty assignment as a Border Patrol Agent was at the Tucson Station. He promoted to Supervisory Border Patrol Agent in 2001. In December 2003, he transferred to the Fulton Station (since moved and renamed the Oswego Station). From December 2004 to October 2007, Associate Chief Scharnweber served as an Assistant Chief in the Law Enforcement Operations Directorate at U.S. Border Patrol Headquarters in Washington, DC. During that time, he also served as the CBP representative at the DHS Office of Legislative Affairs. Associate Chief Scharnweber returned to the field as the Patrol Agent in Charge of the Erie Station (Buffalo Sector) in October 2007. Associate Chief Scharnweber was promoted to his current position in November 2012.

Associate Chief Scharnweber earned a Bachelor of Arts degree in Economics from the State University of New York at Buffalo. He earned a Master's degree in Strategic Studies from the U.S. Army War College. He has also successfully completed the CBP Command Leadership Institute course of study. Associate Chief Scharnweber and his wife Stephanie have four children and reside in Alexandria, VA.

Louis Guthrie
Chief, Alabama-Coushatta
Tribal Police Department

Chief Guthrie was born and raised in Humble, Texas. He has been married to Cheryl Lynne Guthrie since 1993 and has a fat Basset Hound named Sarge as his only dependent. He has 26 years in law enforcement as a Texas Peace Officer in patrol, investigations, and narcotics and special crimes and has attained the ranks of Commander, Director, Major, and Chief Deputy prior to being named Chief of Police of the Alabama-Coushatta Tribal Police Department. Chief Guthrie holds a master peace officer license as well as a bachelor's degree in criminal justice administration and is currently working on his master's degree in psychology. During his career, Chief Guthrie was awarded the National Sheriff's Association Medal of Merit as well as the 100 Club "Officer of the Year" and the HCDO "Officer of the Year".

Jose Francisco (Joe Frank) Martinez
Sheriff, Val Verde County Texas

Sheriff Joe Frank Martinez is an experienced career law enforcement professional with forty years of law enforcement experience with the Del Rio Police Department, the Texas Department of Public Safety, and the Sheriff's Office of Val Verde County.

A recognized national leader in law enforcement circles, Sheriff Martinez is the Chairman of the Southwest Border Sheriff's Coalition and the immediate past Chairman of the Texas Border Sheriff's Coalition and current member of the Board of Directors for the Sheriffs Association of Texas. He was elected Sheriff of Val Verde County, Texas in November 2008 and has since been re-elected to that position two times.

Sheriff Martinez possesses an in-depth knowledge of criminal threats and law enforcement operations in the U.S.-Mexico Border Regions. As a law enforcement officer in the Texas Department of Public Safety, Sheriff Martinez spent eleven years as a Sergeant Investigator with the Narcotics service, where he supervised and conducted criminal investigations into narcotics smuggling, organized crime related to narcotics trafficking, money laundering, and organized gang investigations. Earlier, he had worked in Commercial Vehicle Enforcement for ten years as a License and Weight Trooper, a capacity in which he conducted vehicle inspections and enforced Federal Motor Carrier Vehicle Regulations as they pertain to commercial motor vehicles. Sheriff Martinez was also assigned to the Highway Patrol Service for approximately four years.

Prior to his retirement from the Texas Department of Public Safety, Sheriff Martinez worked for the Del Rio Police Department, assigned to the Detective Division where he conducted investigations of such felony offenses as Capital Murder, Murder, Theft, Burglary, and Unauthorized use of a Motor Vehicle.

Sheriff Martinez holds a Masters Police Officers License and earned an Associate's Degree in Applied Science in Criminal Justice from Southwest Texas Junior College.
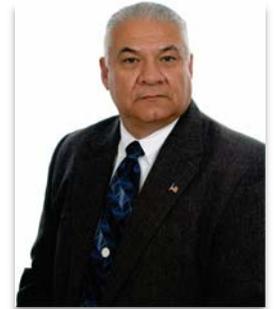
Speaker

Bradley L. Etter
Chief Intelligence Officer
Homeland Security Investigations

Chief Intelligence Officer Brad Etter is responsible for the program planning and direction of Homeland Security Investigations law enforcement intelligence efforts in the Southeast Texas corridor, including a majority of the Texas Gulf Coast.

Mr. Etter began his career in law enforcement in Douglas, Arizona with the U.S. Immigration and Naturalization Service in 1998. He served as an Immigration Inspector for several years before taking the position of Intelligence Research Specialist.

He held various positions within DOJ and later DHS both domestic and foreign to include working as an Intelligence Research Specialist with the U.S. Customs and Border Protection in Liverpool, England. From Liverpool, Mr. Etter transferred to Washington D.C. with U.S. Immigration and Customs Enforcement. While in D.C. Mr. Etter held several supervisory positons. In 2009, he was promoted to the position of Deputy Assistant Director for the Analysis Division. As the Deputy Assistant Director Mr. Etter led various analytic groups which focused on the development of strategic and tactical intelligence in support of the ICE mission. In 2011, he was promoted to Chief Intelligence Officer in HSI Houston. Since 2011 Mr. Etter held various temporary positions with the Homeland Security Investigations Office of Intelligence to include a recent tour as the Executive Deputy Assistant Director.

Mr. Etter is a graduate of Franklin & Marshall College and holds a BS in Government/History.

Exhibits List

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2	Uncovering Human Smuggling Patterns from Guatemala to the U.S.	Gary Hale

Transnational Flows of People (Technology)

|		
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4	A Systematic Process for Vulnerability Assessment of Biometric Systems at Borders	Bojan Cukic
5	Modeling Methodology and Simulation of Port-of-Entry Systems	Benjamin Melamed
6	Developing a Concept of Operations for an Innovative System for Measuring Wait Times at Land Ports of Entry	Juan Villa
7	Image and Video Person Identification in an Operational Environment: Phase I	Ioannis A. Kakadiaris

Transnational Flows of Goods

8	Participatory Operational Assessment (POA): Evaluating and Predicting the operational effectiveness of Cargo Security Processes at Ports of Entry	Maria Burns
9	GPS/GNSS and Communication Authentication Standards for RECONS	Demoz Gebre-Egziabher
10	Leveraging U.S. Export Control Reform: New Challenges and Opportunities for U.S. Government Efforts to Counter WMD Proliferation through Enforcement of Export Controls	Robert Shaw

HSE Education and Workforce Development

11	Security Technologies Kitchen	Shishir Shah
12	Homeland Security Symposium Series	Victor Manjarrez

STAGE

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2-Hale
3-Bourlai
4-Cukic
5-Melamed
6-Villa

12-Manjarrez
11-Shah
10-Shaw
9-Gebre
8-Burns
7-Kakadiaris

Cookies & Coffee
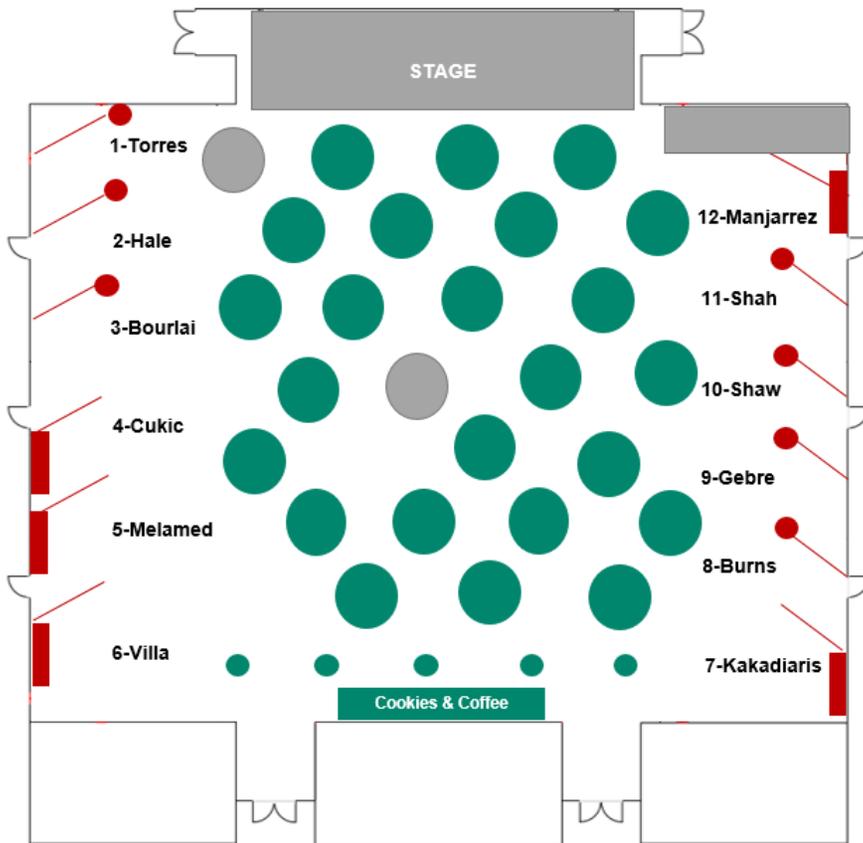
Immigration Workshop

The goal of the immigration workshop is to identify knowledge and capability gaps regarding deterrence of unauthorized immigration and the processing of individuals apprehended attempting to cross the border without authorization. This workshop also explored the best ways to approach unauthorized immigrants already living in the U.S. and the best practices to assist immigrants in general to integrate into the fabric of U.S. society and avoid radicalization. Consisting of a survey of the current research, a two-day workshop stage and a comprehensive reporting stage, this workshop sought to develop questions that need to be addressed in immigration.

Transnational Flows of People (Policy)
Booth location: 1

Luis Torres, Ph.D.

Associate Professor
Associate Dean of Research and Strategic Partnerships
Graduate College of Social Work
University of Houston

Uncovering Human Smuggling Patterns from Guatemala to the U.S.

This project addresses the gap of knowledge ("the unknowns") in specific human smuggling routes, patterns, and the numbers of human migrants moving north from Central America through Mexico. Project Findings (number of migrants in the flow, or "unknowns") are compared with DHS detention data (the number of arrests of "the knowns") to assess the number of successful entrants ("The Successful") into the U.S. This knowledge will provide DHS a better ability to manage resources at the U.S. southern border. The project utilizes Geographic Information Systems (GIS) to plot, map and analyze critical nodes in the transportation or human smuggling "supply chain" and to develop estimated numbers of migrants in the stream. The GIS database establishes a framework that allows for visualization of the data and more efficient decision making.

Transnational Flows of People (Policy)
Booth location: 2

Gary J. Hale

Owner, CEO
Voir Dire International, LLC

Unconstrained Face Recognition using Cell Phone Devices: Faces in the Wild

A new cell phone face database is necessary for studying the problem of unconstrained face recognition. Information collection for the database centers on obtaining facial data generated by volunteer project participants with an ideal total of 200 successfully scanned. This project involves matching the probe face images captured at variable distances by different portable devices (such as cell phones), against the good-quality face images (e.g., mug shots) acquired within rigorously controlled conditions (indoors, with fixed standoff distance between the subject and the camera, cooperative subjects, controlled illumination) using the same cell phones. The database is collecting facial data with different phones under different conditions in order to improve facial recognition technology.

Transnational Flows of People (Technology)
Booth location: 3

Thirmimachos Bourlai, Ph.D.

Assistant Professor
Lane Department of Computer Science and Electrical Engineering,
West Virginia University

Dimitris Metaxas, Ph.D.

Distinguished Professor and Chair
Department of Computer Science,
Rutgers University

A Systematic Process for Vulnerability Assessment of Biometric Systems at Borders

Biometric identification constitutes a critically important technology in traveler, immigration and refugee management. This role makes biometrics the prime target for identity theft, spoofing and vulnerability exploitation. The science behind biometric system attack vector analysis is emerging, but not nearly as fast as the general level of security threats. Nevertheless, the threats specific to the systems deployed or considered for deployment by the Department of Homeland Security differ from generic biometric application due to the motivation and consequences of identity misrepresentations. Therefore, this project analyzes the feasibility of presentation attacks behind identity misrepresentation at US borders and creates a classification of attack methods and vectors based on their complexity, cost, feasibility, risks and consequences. The classification will then be cross-compared with the state of the art in biometric system security flow analysis. Observed gaps will create the research agenda leading towards practical vulnerability assessment methods and countermeasures, both managerial and technical. Project results should enable identification of biometric presentation attack risks and severities, leading towards a well-defined defense strategy.

Transnational Flows of People (Technology)
Booth location: 4

Bojan Cukic, Ph.D.

Professor and Chair
Department of Computer Science,
University of North Carolina - Charlotte

Modeling Methodology and Simulation of Port-of-Entry Systems

Excessive delays at ports-of-entry (POEs) not only inconvenience passengers but also disrupt supply chains downstream for the POE, causing severe economic damage. Accordingly, CBP is tasked with facilitating vehicular and pedestrian traffic so as to minimize crossing times without compromising security inspections. The team is developing a modeling methodology and a suite of detailed simulation models of POEs for performance metrics and for studies of hypothetical "what-if" scenarios. This project supports future planning of POE evolution (typically expansion and handling traffic surges) and studies in detail hypothetical POE "what-if" issues such as disasters, attacks or disruptions. The project creates 3D and 2D simulation models layered over a realistic geographic map with animated traffic that support ease of use and which are readily understood by users and observers. Each proposed simulation model will serve as a decision support system (DSS) that analyzes data and presents it such that POEs can optimize their choices and configurations.

Transnational Flows of People (Technology)
Booth location: 5

Benjamin Melamed, Ph.D.

Distinguished Professor
Rutgers Business School - Newark and New Brunswick
Department of Supply Chain Management and Marketing
Sciences (SCMMS)
Rutgers University

Developing a Concept of Operations for an Innovative System for Measuring Wait Times at Land Ports of Entry

Border wait times at land ports of entry represent an important measurement of port performance, trade, and regional competitiveness. A reliable and systematic method of measuring border wait times is needed in order to make better construction, planning, and operations decisions at land ports of entry (POEs). As technologies become more pervasive and more functional, there is a need to enhance the systems to take advantage of emerging technologies. A Concept of Operations (ConOps) document developed under this project systematically captures the current and future needs of Customs and Border Protection (CBP) and other stakeholders at the ports in order to develop a high-level system design. The project identifies technologies that have implementation potential through a technical and market assessment, with the selected technologies undergoing preliminary testing at TTI's Proving Ground Research Facility Riverside Campus. The selected technologies and enhancements based on the ConOps will be further tested and deployed in subsequent phases at land POEs to demonstrate system functionality.

Transnational Flows of People (Technology)
Booth location: 6

Image and Video Person Identification in an Operational Environment: Phase I

This project aims to develop accurate, robust and efficient 3D-aided face recognition algorithms from image and/or video for verification or identification in adverse outdoor conditions. Initial focus concentrated on the developing requirements for the software architecture of the face recognition system. After performing a comprehensive review of available datasets for face recognition, the project team curated two datasets for training and testing of algorithms suitable to work with images acquired by trail cameras. The project next sought to evaluate algorithms for landmark detection (input to pose estimation algorithm) and developed a new pose estimation algorithm based on deep learning. Next, the project team evaluated a variety of face recognition algorithms moving towards determining baseline estimates of performance. Investigation on the impact of global vs. local methods for face recognition and the effects of using multiple images also went into effect as part of the project.

Transnational Flows of People (Technology)
Booth location: 7

Juan Villa

Program Manager, TTI Research Scientist
Texas A&M Transportation Institute

Ioannis A. Kakadiaris, Ph.D.

Hugh Roy and Lillie Cranz Cullen
Distinguished University Professor of Computer Science
University of Houston

Participatory Operational Assessment (POA): Evaluating and Predicting the operational effectiveness of Cargo Security Processes at Ports of Entry

This research addresses the goals of the DHS to measure, assess, and predict the impact of security and cargo flow processes, in order to facilitate secure and legitimate trade and travel. A robust Risk Assessment (RA) and Participatory Operational Assessment (POA) methodology is created by the project to help improve processing times and operational efficiency of inbound containerized cargoes in U.S. Ports of Entry (POEs), while the land border of Laredo, Texas will serve as testbed. A wealth of land-borders related data is analyzed to examine the impact and relation among different productivity factors. The project seeks to satisfy the compelling need to intensify the security risk management and cargo screening processes for cargoes and passengers, at U.S. land borders, POEs and overseas. It specifically addresses the mission of U.S. Customs and Border Protection to scan 100% of inbound containerized cargoes and screen all passengers and cargoes in the 328 sea, land and air ports of entry within the nation. The first year's deliverables applied to seaport containers, whereas the second year's deliverables will apply to land border containers transported by land, i.e. via trucks and rail.

Transnational Flows of Goods

Booth location: 8

Maria Burns

Visiting Assistant Professor
Information and Logistics Technology
University of Houston

GPS/GNSS and Communication Authentication Standards for Reusable Electronic Conveyance Devices

In this project, the requirements for GPS and other positioning and timing systems will be used as part of the development of Reusable Electronic Conveyance Security Devices (RECONS). RECONS are systems used to ensure that shipments arriving at ports of entry (POEs) have not been tampered with in any way during transit. RECONS will enhance the efficiency of CBP's processing of cargo shipments at POEs as well as at Central Examination Stations (CES). They accomplish this, in part, by tracking the position history of the shipment to prevent or detect unauthorized openings or detours of shipments prior to its arrival at a POE. The requirements for GPS and other positioning technologies used in RECONS will take into account notional CONOPS for expedited inspections at POEs and will identify the minimum performance requirements that need to be met by RECONS technology. The project will conduct a survey to characterize the state-of-art in the area and identify changes required (if any) to satisfy the RECONS performance requirements. These will be used to generate a conceptual design of a RECONS device that satisfies identified performance metrics.

Transnational Flows of Goods

Booth location: 9

Demoz Gebre-Egziabher, Ph.D.

Associate Professor
Director of Graduate Studies,
Director of the Minnesota Space Grant Consortium
University of Minnesota

Leveraging U.S. Export Control Reform: New Challenges and Opportunities for U.S. Government Efforts to Counter WMD Proliferation through Enforcement of Export Controls

This project examines the impact of the ongoing Export Control Reform Initiative (ECRI) on U.S. Government efforts to enforce export controls in support of countering the proliferation of weapons of mass destruction. With ECRI now in the second of three phases of implementation and realization of the third and final Phase uncertain, the project examines the reforms rolled out so far and evaluates their impact on DHS Homeland Security Investigations (HSI) and other USG stakeholders tasked with export enforcement. The project aims to fully illuminate the role of counter-proliferation export enforcement in the current and future context of Export Control Reform and how DHS HIS and other key stakeholders can most effectively utilize Export Control Reform, wholly or partially, to achieve counter-proliferation objectives while still facilitating legitimate trade and travel.

Transnational Flows of Goods
Booth location: 10

Security Technologies Kitchen (STK)

The Security Technologies Kitchen (STK) is an educational initiative that directly aligns with the DHS's mission of producing a new generation of HS experts by informing current STEM students of the critical mission of the DHS and engaging them in real-world problems that have a direct and obvious impact on our nation's security. Specifically, CBP has a need to develop a pipeline of STEM educated professionals who are aware of, and knowledgeable in, the challenges and technologies relevant to land border security, maritime border security, POE security, and first responder technologies. Improved awareness of the challenges facing CBP and other HSE, coupled with training and exposure to technologies that can be used to facilitate solutions, will help encourage STEM students to consider career options that can serve the mission of CBP and other HSE. This project serves as an educational initiative that directly aligns to meet this need. Specifically, this project will provide resources and educate students in security technologies relevant to biometrics, facilitating legalized trade, cargo screening, situational awareness, and technologies for first responders.

HSE Education and Workforce Development
Booth location: 11

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Exhibits

Homeland Security Symposium Series

The Homeland Security Symposium Series addresses educational and supplemental training needs identified by DHS and other homeland security enterprise stakeholders. The University of Texas at El Paso (UTEP) has developed a symposium series on topical issues related to border security and legitimate trade and travel. The nature of the project allows that other topical themes may emerge during the performance period, as stakeholder dictate. The symposium series utilizes subject matter experts contracted by UTEP, including the possibility of other COEs, DHS officials, and partner universities faculty. The aim of this program is to assist in maturing and strengthening the homeland security enterprise.

HSE Education and Workforce Development
Booth location: 12

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The University of Texas at El Paso

Acknowledgements

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