OVERVIEW

Mission and Activities
The BTI Institute
- Conducts and transitions research
- Develops innovative technological solutions, and
- Provides trans-disciplinary education

Research: Customer Discovery
- Fully understand knowledge gaps
- Develop research solutions to challenges faced by DHS customers and key stakeholders

Education: Develop Innovative Curricula
- Help train the next generation of homeland security experts
- Provide educational opportunities for career advancement
DHS Programs Visited

- CBP Office of Trade (ACE, COEE, IPR, Forced Labor)
- CBP Office of Field Operations (Biometrics, APTL, APP, CCS, C-TPAT)
- USBP Strategic Planning and Analysis Directorate
- CBP Office of Human Resources Management (Human Capital Analytics & Accountability, Workforce Resiliency)
- Office of Citizenship (CAIS)
- CBP Office of Training and Development
Partial list of Meetings

- Oct 23, 2018  Executive Director James Byram and colleagues
- Oct 24, 2018  Branch Chief Stenzel and colleagues
- Oct 25, 2018  Executive Assistant Commissioner Brenda Smith and DEAC Cynthia Whittenburg
- Nov 8, 2018   Director David McGurk and colleagues (teleconference)
- Nov 14, 2018  Executive Director John Leonard
- Nov 14, 2018  Executive Director Deborah Augustin
- Nov 14, 2018  Assistant Chief Melissa Herrera and Officer Ed Fowler
- Nov 15, 2018  Executive Director Colleen Manaher’s Office (XD Manaher was not present)
- Nov 15, 2018  Executive Director Larry Fluty and Director Patricia Hawes-Coleman
- May 1, 2019   Deputy Chief Michael R. Jones (CAIS)
- May 2, 2019   Director Manuel Garza, Jr. and colleagues
- May 2, 2019   Director Johanna Estes and Attorney Thomas Kendrick
- May 2, 2019   Program Analyst Benjamin Wojtasik
- May 2, 2019   Deputy Assistant Commissioner Paul Baker
- May 2, 2019   Director Patricia Hawes-Coleman
Some Topics of Relevance to DHS

- **Trade Facilitation & Enforcement:** Enforcement, deterrence, seizures: strategies to optimize process
- **Return on Investment**
- **Forced Labor:** DNA, Blockchain
- **Big Data Analytics**
- **Cognitive Analytics**
- **Single Window 2.0:** Data efficiency, modeling FDA
- **Futurist Studies:** Port of the future; drones; biometrics
- **3D Printing:** Impact on manufacturing, licensing, regulation
- **Antidumping/Countervailing Duty**
- **Import Safety**
- **Quantitation of Crude Oil & Natural Gas production by country**
- **Free Trade Agreements**
  - 15 bi-lateral agreements
  - US/Mexico/Canada Trade Agreements
- **De Minimis** threshold
- **Narcotics:** Drug Harm Index
- **CBP Task Force Resiliency**
- **National Threat Analysis**
- **Intellectual Property Rights**
- **Tariffs:** aluminum/steel current priority
- **Chemical signature** of Petroleum, Natural Gas, and Minerals
- **Cross-Functional Workforce Training**
Developed 22 new white papers

- 4 declined by RC
- 4 declined by DHS
- 6 white papers progressed to Work Plans
- 14 projects currently under review by DHS
## Summary of Projects Developed

<table>
<thead>
<tr>
<th>Project Description</th>
<th>DHS Entity</th>
<th>Champion or POC</th>
<th>Initiation Date</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser-Based Fiber Optic Intrusion Detection Technology, Dave Iffergan, BEI Security</td>
<td>Acquisition</td>
<td>Borkowski</td>
<td>11 June 2019</td>
<td>White Paper</td>
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<td>Industrial Policy Strategies in Mexico for Slowing Migration, Adam Rose, CREATE</td>
<td>Policy</td>
<td>Huston/Cole</td>
<td>14 May 2019</td>
<td>White Paper</td>
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<tr>
<td>Digital and Social Surveillance Net, Tim Mackey, UC San Diego</td>
<td>ICE/HSI</td>
<td>Etter/Teed Herrera</td>
<td>22 April 2019</td>
<td>White Paper</td>
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<td>DNA Assays for Determining Honey Origins, Richard Willson, U Houston</td>
<td>LSS</td>
<td>Fluty/Coleman</td>
<td>02 April 2019</td>
<td>Work Plan</td>
</tr>
<tr>
<td>A Retrospective Study on the US Economic Effect of Raising De minimus, Christine McDaniel, Trade Partnerships, LLC</td>
<td>Trade/EAC</td>
<td>Whittenburg</td>
<td>02 April 2019</td>
<td>Work Plan</td>
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<tr>
<td>Preparatory Education Opportunities for US Citizenship Exams, Michelle Belco, U Houston</td>
<td>USCIS</td>
<td>McHale</td>
<td>01 April 2019</td>
<td>Declined</td>
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## Summary of Projects Developed Cont’d

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<th>Initiation Date</th>
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<tbody>
<tr>
<td>The US Drug Harm Index, Kristina Acri, Colorado College</td>
<td>Trade</td>
<td>Leonard</td>
<td>28 March 2019</td>
<td>Declined</td>
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<tr>
<td>Investigation of Cryptocurrency Network for Combatting Illicit Trade, Aziz Mohaisen, U Central Florida</td>
<td>ICE/HSI</td>
<td>Giangregorio</td>
<td>19 March 2019</td>
<td>Declined</td>
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<tr>
<td>Promoting Integration of Immigrants Through Language Learning, Ferenc Bunta, U Houston</td>
<td>USCIS</td>
<td>McHale</td>
<td>27 February 2019</td>
<td>Work Plan</td>
</tr>
<tr>
<td>Validating Deterrence Models for Trade Enforcement, George Thompson, ANSER, Inc.</td>
<td>Trade</td>
<td>Whittenburg</td>
<td>20 February 2019</td>
<td>White Paper</td>
</tr>
<tr>
<td>Forensic Characterization of Imported Crudes, Ramanan Krishnamoorti, U Houston</td>
<td>Pet NG CEE</td>
<td>McGurk</td>
<td>20 February 2019</td>
<td>Declined</td>
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<tr>
<td>Fingerprinting Source of Steel and Aluminum Imports, Thomas Monecke, CO School of Mines</td>
<td>LSS</td>
<td>Fluty/Coleman</td>
<td>15 February 2019</td>
<td>White Paper</td>
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<tr>
<td>Future of the Border, Andy Hines, U Houston</td>
<td>Trade</td>
<td>Whittenburg</td>
<td>28 January 2019</td>
<td>Work Plan</td>
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</table>
New RFP 2019

- Invited proposals that address research questions related to the Conference on Prosperity and Security in Central America.
- Focus on development and employment creation in Northern Triangle Countries
- Special emphasis on
  - e-commerce
  - private-sector investment
  - employment opportunities as alternatives to emigration
  - best practices or productive policies
  - immigration policies
  - infrastructure for productive investment
- Seven proposals currently under review by DHS
Active Projects

- Six ongoing projects funded by OUP from previous RFP
- Total Direct and Indirect Cost: $1.08 M
BTI Institute Portfolio: 35 Projects

- Pending, 14, 40%
- DHS declined, 4, 11%
- RC declined, 4, 12%
- RFP-19, 7, 20%
- Funded, 6, 17%
Funded Research Projects

Transforming Trade and Ensuring Global Supply Chain Security with Blockchain and Smart Contracts

Weidong “Larry” Shi, Ph.D., University of Houston
Eleftherios Iakovou, Ph.D., Texas A&M University

Leverage new technologies around blockchain to improve the mission of CBP in facilitating global trade and ensuring compliance with trade law and regulations.

DHS Champion: Vincent Annunziato, Director, Business Transformation & Innovation, CBP

Exploring Homeland Security Applications for Unmanned Autonomous Systems at Maritime Ports

Benjamin Rohrbaugh, David Hansell, and Brian Henderson, Lantern UAS LLC

Systems based on UAS technology have the potential to contribute to several aspects of port security with minimal impact on current port operations.

DHS Champion: Namdoo Moon, Ph.D., Program Manager, CWMD

Validating Deterrence Models for Scanning Technologies

George Thompson, ANSER

Enabling policymakers to make decisions about scanning technologies, screening rates, and other deployment issues with full understanding of the deterrence impacts.

DHS Champion: Namdoo Moon, Ph.D., Program Manager, CWMD
Funded Research Projects

EDGE: The ‘Eye in the Woods’ Image-based Human Detection and Recognition System
Ioannis Kakadiaris, Ph.D., University of Houston

Successful detection and recognition of person-of-interest and data-driven accurate insight to the whereabouts and activity patterns of human crossers.

DHS Champion: Arun Vemury, Director, Biometric and Identity Technology Center

Venezuela and Nicaragua: Regional Migration Crisis in the Making
Andrew Selee, Ph.D. and Randy Capps, Ph.D., Migration Policy Institute

Examine the current and potential impact of migration, assess current regional responses, and suggest steps that the U.S. government can take to prevent a broader hemispheric crisis.

DHS Champion: David Cloe, Director, Latin America and Caribbean Affairs, Office of Strategy, Policy and Plans

Border Management, Trade, and Transport Security Course Curriculum Development
Anthony Ambler, Ph.D., University of Houston

Establish a pathway for post-secondary graduates to pursue a career with the Homeland Security Enterprise. Provide DHS personnel educational opportunities for career advancement.

DHS Champion: Paul Baker, Ph.D., Deputy Assistant Commissioner, CBP Office of Training and Development