

RESEARCH AND EDUCATION THEMES, TOPICS AND QUESTIONS



The transnational nature associated with border security and immigration requires innovations in technology-based tools and techniques used for border management, trade facilitation, targeting and enforcement. Border lines are where people and goods are processed through the exercise of immigration and customs authorities. Borders are also defined by the movements or flows of people and goods throughout the global community. DHS seeks research and development to determine the principal global transnational and national influences and factors that impact border, trade, security, and immigration activities. DHS is interested in how those influences might be countered through collaboration with other nations (i.e., Canada and Mexico) to achieve effective management of North America's borders. DHS must develop the appropriate doctrine and associated curricula to build the leadership elements and personnel infrastructure capable of executing its mission. Moreover, DHS seeks research to identify useful intelligence leads analytically, particularly given the volume of data collected to identify high risk subjects.

Theme Area 1: Border Security

DHS seeks innovative social science and economics research on policies that DHS might apply to border security and immigration challenges, and the impacts of those policies. DHS needs multi-disciplinary research to improve understanding of how technological change will affect policy and governance. DHS seeks innovative research to develop technologies that address border security knowledge gaps. DHS is interested in innovative technologies for surveillance, detection, and identification to improve situational awareness at and near the border, while maintaining sensitivity to privacy, effectiveness and affordability. DHS also is interested in research and development of technologies for detection, tracking, interdicting, and monitoring of high-risk or dangerous cargo, vehicles and passengers. Technologies should improve operational analysis and command, control and communications (C3), including the effectiveness and efficiency of sensor communication, and other platforms noted below. DHS is interested in research to help answer the questions below:

Topic 1a: Policies

- a. What influence would a policy requiring biometric technology have on immigration fraud?
- b. What challenges and opportunities do sovereignty, diplomacy, international law, and transnational actors present in securing international cooperation for interdiction and enforcement?
- c. In enhancing border security, what future challenges and opportunities are presented by sharing land borders with Canada and Mexico? What challenges and opportunities are presented by sharing air and sea borders with nearby Caribbean islands?
- d. How would a transnational criminal organization exploit a trusted traveler/trusted trade program?

- e. How might terrorist organizations targeting the U.S exploit transnational criminal organizations?

Topic 1b: Technologies

- a. What kinds of screening activities and programs are effective for maintaining the highest standards of integrity in the workforce?
- b. What new technologies and/or sensor systems can be developed and applied to improve the detection and tracking of vehicles, vessels, and persons along borders?
- c. What innovative power sources and systems might extend the life or increase the practicality of remote sensor systems?
- d. What innovative sensor systems and approaches are best suited to the special conditions presented in either a northern or southern border environment?
- e. How might satellite technology be utilized to conduct surveillance along the border?
- f. What innovative technologies can be modified or developed to detect and deter clandestine means of crossing borders, such as tunnels, ultra-light aircraft, etc.?
- g. What new or emerging technology advances in change detection and anomaly recognition can provide authorities the ability to anticipate or recognize threats in real time?
- h. What screening modalities can be developed that would be feasible, effective, and minimally disruptive at ports of entry?
- i. What portable biometric devices can be developed that have instant data retrieval and alerts and be viable and efficient options in operational environments?
- j. How can CBP improve security by increasing the effectiveness and efficiency of Non-Intrusive Inspection (NII) technology for detecting Weapons of Mass Destruction (WMD) threats when scanning cargo?
- k. What facial recognition technologies can be developed to review large-batch photo data systems?
- l. How might future improvements in optical character recognition (OCR) systems impact their use in the Intermodal Cargo Container (IMCC) transport environment?
- m. How would a transnational criminal organization defeat CBP non-intrusive inspection technology?
- n. What technological and human factors research will enable improved safety for operators while securing borders more effectively?

Topic 1c: Concept of operations

- a. What are suitable performance measures and metrics to evaluate the effectiveness of border security at the ports of entry that enable the appropriateness and statistical validity of each metric identified?
- b. How can CBP measure the deterrence value of scanning technology to prevent the smuggling of illegal goods or instruments of terror?
- c. How can CBP measure the security impact and economic impact of Non-Intrusive Inspection (NII) cargo inspections in comparison to physical inspections and assess the trade-offs involved, at the national, regional, and local level?
- d. What surveillance challenges and threats exist in the future and what should be the strategy to address them?
- e. What human factors issues are critical to increasing the operator's ability to recognize rare events and unusual threats?
- f. What is the optimal allocation of multiple layers of security, surveillance, interdiction, and enforcement?
- g. How can we effectively and efficiently improve the communication of information and analysis generated by surveillance and screening systems?
- h. What are the best ways of providing communications to border security personnel in remote, sparsely populated desert and forested regions, as well as in urban areas?
- i. What innovative methods can ensure that communications and command and control (C3) systems are fully interoperable and secure?
- j. How can CBP employ "rapid response" capabilities and infrastructure in cost effective ways and in what geographic locations would they be most effective?
- k. What existing or new approaches can CBP leverage to conduct surveillance over multiple domains such as land, air, and marine?
- l. What innovative interview techniques might complement border personnel's ability to assess the intent of border crossers?
- m. What innovative approaches can be taken to most effectively process trusted traveler applicants? Could automated kiosks be efficiently used to minimize the amount of time spent by CBP Officers in personal interviews with low-risk individuals?
- n. What innovative methodologies may be used to best identify travel patterns and behavioral characteristics of individual terrorists, illegitimate actors, and transnational criminal organizations?
- o. How might inspection processes be strengthened to increase the likelihood of detecting suspicious people and goods?

Topic 1d: Other impacts

- a. What can be learned from trafficking victims' oral histories to help identify major factors for how victims are drawn into labor trafficking, the sex trade and domestic servitude? Can this inform the way DHS focuses its operational and awareness activities to reach potential victims and build stronger cases?

- b. How can DHS identify the factors that enable criminal traffickers to draw people into trafficking situations? Specifically, how can DHS begin to identify and outreach to 'systemically vulnerable' populations that are underrepresented in current discussions and ways that would-be-traffickers exploit these populations?
- c. What are new sources of information and innovative methods and metrics to estimate the number and characteristics of human trafficking victims? Of criminal traffickers?
- d. What useful historical information and trends can be derived from immigration, terrorism and illegal activities to enhance border security activities? For example, what can be learned from previous attempts to combat smuggling, drug trafficking, and illegal immigration? How can the effectiveness of these efforts be measured?

Theme Area 2: Legitimate Trade and Travel

The vast majority of the flow of people and goods across the border is composed of lawful and compliant trade and travel. DHS seeks innovative multidisciplinary research to identify and interdict dangerous passengers and cargo from the legitimate mass. DHS seeks research in risk management to better measure and understand the balance of trade facilitation, the expedited movement of commerce, and security. DHS is interested in innovative ways to differentiate routinely between high- and low-risk subjects and expedite movement of the latter through the global system. DHS needs research to increase and improve the quality of the information it receives on incoming traffic to improve its validity. Moving legitimate travelers and cargo quickly through ports of entry, is essential. DHS desires technologies that do not adversely impact legitimate trade and flows of people. All new technologies must be analyzed for impacts on trade and travel. University research into "export control" topics is needed to address critical questions of balancing national security and export competitiveness. Through its export control authorities, the United States Government restricts the export of defense technologies, "dual-use" items, i.e., those having both civilian and military applications, nuclear materials and technology, and items that could proliferate weapons of mass destruction or the means of delivering them. Academic research can shed some light on these critical questions. DHS is interested in research to help answer the questions below:

Topic 2a: Policies

- a. What are the costs and benefits of registered traveler programs to ease the screening process?
- b. What policy or process opportunities could help streamline the flow of legitimate trade and travel?

- c. Are there ways of effectively pushing borders out to reduce risks associated with the movement of people and cargo reaching U.S. borders, and what are the effects of these processes on international trade and relations with border cities?

Topic 2b: Technologies

- a. What technologies will facilitate the movement of legitimate low-risk individuals across borders while making entrance difficult for terrorists and criminals?
- b. Do biometrics and mobile technologies offer opportunities to streamline processing of legitimate trade and travel?
- c. How can we measure, assess, and predict the impact of technology on the facilitation of legitimate trade and travel?
- d. Can technology substitute for or mitigate limitations induced by infrastructure (e.g., roads, port-of-entry lanes) or inadequate numbers of personnel?

Topic 2c: Concept of operations

- a. How do border security operations affect crossing times? How can we best measure and report wait times to most effectively communicate the impact of border security operations upon trade and travel?
- b. What are innovative approaches to automating wait time determination that would facilitate the development of an effective, low cost, and rapidly deployable solution?

Topic 2d: Export Control

- a. Can reforming U.S. export controls through consolidating multiple components of the export control regulatory and oversight functions into: 1. a single commodity list, 2. a single licensing agency, 3. a single IT system, and 4. a single primary export enforcement agency achieve increased efficiencies for the international trade community? If so, what would be the best approach to ensure this?
- b. How can the U.S. best consolidate export enforcement agency functions, e.g., consider the elements of the Export Control Reform Phase III merger? Will such approaches actually eliminate duplicative and inefficient programs and improve efficiencies for the trade and enforcement communities? How can such changes be measured empirically, and what baseline information should be collected now to evaluate these changes?
- c. How can DHS and other border and trade oversight agencies adapt operations and reallocate resources to optimize compliance with the new export requirements?

- d. How would proposed export control restrictions hamper or enhance the government's capabilities to prevent and deter exports of illegally-made controlled goods?
- e. What tools, technologies, analytical approaches or operational enhancements can be developed to improve the government's ability to accurately detect illegal or potentially illegal exports?
- f. How can DHS and other border enforcement agencies improve international agreements and utilize international organizations to improve enforcement and compliance capabilities?

Theme Area 3: Immigration

DHS seeks research in innovative and improved methods to provide accurate and useful information to its customers, promoting awareness and understanding of citizenship rights and responsibilities, and making adjudication decisions in a consistent and accurate manner that furthers the goals and integrity of our nation's immigration system. DHS is interested in research on the affects and impacts of immigration policies. DHS seeks research to better predict future immigration flows to and from the U.S. DHS seeks research and innovative methods to better understand the population dynamics of the immigrant population. DHS is interested in research to help answer the questions below:

Topic 3a: Policies

- a. How do current policies affect the behavior of illegal immigrants already in the U.S.?
 - b. What types of policies can be devised to promote citizenship and naturalization?
 - c. Which is more effective for providing U.S. security: an immigration policy calibrated to threats originating in specific nations or one that treats all nations similarly?
 - d. What effect have changes in U.S. immigration law and policy had on numbers of people applying for asylum, refugee status, visas, and citizenship?
 - e. How do legal changes in the admissibility of immigrants impact future flows of migrants?
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- a. What is the impact of detention and removal policies on illegal migrants and illegal migration flows? How effective are the current policies? What is the appropriate mix of detention and release to maximize deterrence of illegal immigration?
 - f. What are the effects of various U.S. immigration law, policies, and practices, particularly those pertaining to repatriation and due process, on enforcement operations and effectiveness?

- g. What changes in law, policy, and/or procedures in granting admittance to the Visa Waiver Program or approving non-immigrant visas are recommended in order to reduce the incidence of visa overstays and other immigration status violations?
- h. What can be learned from comparative studies of immigration systems and policies in comparable nations (such as Canada and the UK) and how do these policies affect national security and the effective administration of immigration?
- i. What types of policies can be devised to promote citizenship and naturalization?

Topic 3b: Concepts of Operations

- a. What is the deterrence value of posting advisories at all ports of entry explaining, in explicit detail, the consequences of violating the terms of a U.S. visa?
- b. How might DHS better educate non-immigrants on the current administrative consequences and negative impact on future U.S. immigration benefit applications they may face for overstaying their period of admission?
- c. Would an increase in resources (e.g. material, systems, manpower), help to better achieve effective and timely immigration law enforcement against visa overstays and other immigration status violations in the new environment?
- d. How effective is ICE immigration enforcement against visa overstays and other immigration status violations and what improvements should be made?
- e. What motivates individuals to commit immigration benefit fraud and how can adjudicators identify these motivations and induce applicants to admit to fraud?
- f. What future forms of biometric information have the most potential for accurate identification while being the least susceptible to defects, fraud, concealment, or manipulation?
- g. What are the most effective metrics to assess the numbers of illegal immigrants in the U.S.?
- h. How can we accurately predict the future magnitude of immigration flows to the U.S.? How do the following factors influence and/or accurately predict flows?
 - a. Which economic, political or social variables allow us to most accurately predict immigration?
 - b. What factors influence or potentially predict decisions by legal permanent residents (LPRs) to stay permanently in the U.S.?
 - c. How do demographic and psycho-social characteristics affect the likelihood to naturalize?
 - d. How do levels of political, civic, social, and economic integration among LPRs affect their naturalization decisions?
 - e. How do immigrants feel that they are perceived by the native-born community? How does the context of reception impact decisions to pursue citizenship?
- i. What drives the demand curve for immigration visas (by visa type)? How do supply factors (e.g., numerical limits/caps) impact visa selection or preference by applicants? How can we better predict future demand within both the family and employment visa categories?

- j. How can we exploit existing datasets (e.g. the New Immigrant Survey and Census data) to better understand the long-term consequences of being foreign-born and the long-term effects of migration on immigrants and receiving societies?
- k. What resource demands do immigrants place on public services?
- l. How do integration practices and feelings of belongingness differ across immigrant communities?
- m. How do numerical immigration limits and ceilings affect illegal migration and legal immigrant applications?
- n. How effective are apprehension activities, such as the Consequence Delivery System (CDS), in deterring illegal migration?
- o. Are there ways to gather biographical data and immigration histories of individuals post encounter and prior to processing?
- p. How might social networking evolve and be used to identify impending threats or shifts in criminal activity? How can social networking be leveraged for interior and border enforcement purposes?
- q. What would be innovative ways to restructure the intake of immigration benefit applications and adjudication processes to enhance efficiency and maximize production?
- r. What technologies can improve data collection on migrants that will allow officials to identify, track, and individuals while placing minimal data collection burdens on migrants themselves?

Topic 3c: Other Impacts

- a. What are the most feasible and appropriate measures of immigrant integration into U.S. society?
- b. How do class of admission, national origin and immigration status correlate with eventual integration and incorporation into American society? What are the health, education, and labor market consequences of being foreign-born?
- c. How do migrants settling in non-traditional areas of the country compare with those in traditional gateway communities? What unique challenges, or advantages, do migrants in non-traditional areas of the country have regarding civic participation compared with those in traditional gateway communities?
- d. How can we assess the impact of illegal immigrants working in the U.S. on the labor market?
- e. What are the demographics of the major immigrant groups in the United States by class of admission and how are they changing over time?
- f. What are the evolving characteristics and demographics of the unauthorized population in the U.S. (e.g., age, gender, country of origin, income, education, profession, family ties, internet access, English language proficiency, etc.) and how are these characteristics changing over time?
- g. How do key socio-economic variables, such as English language proficiency and Internet access and usage, compare among immigrants in the U.S.?

- h. How are U.S. cities changing as a result of authorized and unauthorized migration? Where has there been unexpected growth in immigrant populations and what are the factors that encouraged their geographic concentration and what is their demographic profile?
- i. What are the demographics of the major immigrant groups in the United States by class of admission and how are they changed changing over time?