CROSS-BORDER THREAT SCREENING AND SUPPLY CHAIN DEFENSE

A Department of Homeland Security Center of Excellence

2025-2026 CBTS Research Request for Proposals

Issue Date

November 15, 2024

Proposal Due Date

January 7, 2025, 10:00 PM (Central Time)

Proposal Submission Address

CBTS@ag.tamu.edu

RFP Q&A Session

December 5, 2024, Noon- 2:00 PM (Central Time)

Join the RFP Q&A Session

RFP Notice

This request for information does not commit CBTS or the government to contract for any supply or service. Responders are solely responsible for any preparation, information or administrative costs incurred in response to this RFP.

CBTS

The Cross-Border Threat Screening and Supply Chain Defense (CBTS) funds research and education projects. Our goal is to support the development of innovative technologies and capacities to detect and respond to biological threats moving through global supply chains. CBTS Overarching Working Premise: Borders of the Future.

Research Supporting the Inception of a Border Laboratory

For over two decades, the DHS Homeland Security Enterprise (HSE) have realized the value in expanding U.S. Government's presence and awareness beyond the physical borders and domestic port infrastructures of the United States, for the sake of balancing supply chain and transportation security with facilitated travel and trade. Expanded cooperation and collaborations among customs and security services of partner countries are keys to improving both screening and scanning of people and cargo. In this 21st Century, with global digitization of industries and systems of trade, machine generated, or machine associated data is increasingly the currency of markets and facilitation of these markets (trade facilitation).

The areas presented in this RFP aim to foster research in the following areas:1) Determining how to provide greater visibility into firms' foreign supply chains; 2) Assessing the development of more sophisticated, AI-enabled automated targeting apparatus that can identify potential trade issues or risks using supply chain data; 3) Examining novel tools that support comprehensive non-intrusive inspection of cargo; and 4) Analyzing trade-offs in the creation of trusted networks and the promise to deliver greater security, reliability, and resilience.

RFP Research Thematic Areas

(**TA-1**): **Supply Chain Explorations**
Supply chain Explorations has been a broad strategic theme area for CBTS, appropriately intersecting with contributions from the Detection/Device Science and Intelligent Data Systems theme areas. Where the other two areas support specific scientific or systems research, the Supply Chain Explorations theme area aims to address research questions in the context of first understanding how selected supply chains operate, recognizing the forces that influence their function, and the factors that affect their capacity to adjust to shifting market conditions and changes in trade or customs policies. Supply chain resilience can be viewed as a balance of government policy and incentives and related business decisions within firms and actions of trade partners.

(**TA-2**): **Intelligent Data Systems**
This CBTS theme area encompasses the use of tools and methods to analyze and transform data into information from which valuable insight may be drawn. These approaches include the use of artificial intelligence and machine learning tools that can assist in making sense of massive datasets. Their application can help decision makers develop a better understanding of collected information for decision support. As we have seen, knowledge is power, and data is market or global power, which leads to a constant inclination on the part of businesses, governments, trade partners, and others to sequester and prevent the open sharing of data. This can lead to a sometimes-artificial scarcity of data, which puts further emphasis on the need to hone intelligent system development for purpose.

(**TA-3**): **Detection/Device Science**
Research in this theme area explores several avenues, including work towards developing advanced surveillance and detection systems, improving border management processes, enhancing communication and coordination among various agencies involved in border security, and addressing the vulnerabilities associated with the movement of goods and people across borders. By aligning research efforts with the DHS mission and the realities of modern border dynamics, universities and research institutions can play a vital role in advancing both security and efficiency at border crossings.

CBTS RFP Topics of Interest

This RFP advances the CBTS Border Laboratory research areas of interest and supports our standard research themes by focusing on "Threat & Vulnerability Detection" and "Port Capacity" issues.

Threat & Vulnerability Detection

Threats exist in myriad forms. This call focuses on supply chains and border-related threats that exist discreetly at point(s) in time and place as well as more general vulnerabilities of critical cross-border supply systems.

Topics of Interest

1) (**TA-2, TA-3)** How can telemetry data on cargo movements and relevant meta parameters be communicated/transmitted to and utilized by CBP to augment early screening capabilities and further ensure trusted trade? *Use cases, review of historically and recently implemented systems, system design concepts, partnerships with a trade, and technical demonstrations are welcome approaches.*
2) (**TA-2**) How can AI be implemented to assist in screening and 'pre-screening' of supply chains, whether relating to passage of goods across a border or continuous assurance of supply chain integrity? What are the requirements for developing and maintaining such AI-based systems?
3) (**TA-2**) Given the sequestration of supply chain associated data, largely for competitive advantage, what privacy preserving techniques might be employed to increase select visibility for common advantage (public/private advantage, trade facilitation, demonstration of compliance) in a supply chain system (multiparity computation, homomorphic encryption, zero-knowledge proofs, differential privacy, trusted execution environments, federated learning, or other (combo)?
4) (**TA-1, TA-3**) African Swine Fever presents a new planning and preparedness paradigm for high consequence animal diseases in the United States as it continues to encroach on U.S. borders after global spread. What novel laboratory methods and/or disease/vector characterization may increase DHS,' partner government agencies, and the U.S. swine production industry's preparedness for this disease? What disease/vector/pathways and characterization, border screening, countermeasures, remediation, or other methods could increase prevention, preparedness and resiliency in the U.S. federal, state, or swine industry with respect to ASF? **to avoid duplicative efforts, please gauge novelty in your proposed approach against existing past and present work in these areas, at https://portal.nifa.usda.gov/enterprise-search/ **
5) (**TA-2, TA-3)** Describe design of a multi-modal system for detection of a pest or biological threat at the border, in which data or information collected locally for detection or

identification is immediately augmented or fused with pre-arrival data to illuminate sources or pathways of potentially affected or infected cargo.

Port Capacity

More than 360 ports across the U.S. contribute to the country's economic growth and employment. These ports vary in size, operational capacity, intermodal connectivity, and ownership. Ports also vary in stages of modernization, automation, electrification, operational technology adoption and implement changes according to different business cases and areas of expertise or specialization. These changes have potential to affect operational capacity.

Topics of Interest

1) (**TA-3**) Describe the primary IT/OT technologies and associated data protocols and standards that are being implemented in ports in current modernization efforts and explain sources of friction or uncertainty with respect to data access, ownership, or control- comparatively and on a national or subnational basis.
2) (**TA-1**) What novel or alternative energy provision capabilities are being implemented or considered by ports, whether for on-port application or provisioning of fuel for conveyance? What timelines are typically considered for a given infrastructure change, and what impacts are anticipated on point-to-point conveyance beyond a port, whether domestic or abroad? What are the business cases for making these changes?
3) (**TA-3**) What innovative technologies might both speed the detection of biological threats and the flow of trade- consider onsite or remote implementation/review? How can such findings and associated data be aggregated and federated for future reference and machine learning?

Proposal Format and Submission Deadline Requirements

Deadline and Submission Information

Submit proposals no later than January 7, 2025, at 10:00 PM (Central Time). Submit proposals via email to CBTS at CBTS@ag.tamu.edu in PDF format. Direct all questions regarding this RFP to the main CBTS email address at CBTS@ag.tamu.edu.

The proposals must meet specific content, formatting, deadlines, and page limit requirements. All proposals must be single-spaced, use an 11-point or greater font, use 1-inch margins, and include page numbers. CBTS will reject proposals that do not address project requirements, or do not follow formatting, and page limit requirements. Proposals arriving after the submission deadline will not receive funding consideration.

Proposal Format (12-page maximum)

1. Proposal coversheet (1-page)
   a) List lead personnel with contact information.
   b) Identify the Threat & Vulnerability Detection" and "Port Capacity" issues to be addressed.
   c) Provide a title and an abstract with expected objectives, expected outcomes, and value proposition.

2. Proposal body (10-pages)

   a) Briefly describe the issue (half a page maximum)

b) Describe the methodology and include supporting citations.
c) Describe data requirements and the availability of data to accomplish the research.
d) Identify major project deliverables and expected timeline for the deliverables.
e) Describe expected risks to the project's success – including access to equipment and data.
f) Describe the role of students and facilities on the project.

3. Budget with brief narrative by category (1-page) (max. $250,000/per year for up to two years)

a) Salaries and benefits
b) Data and related contracts
c) Equipment
d) Travel
e) Indirect costs (negotiated rate)

4. Attach PI and Co-PI bio-sketches (3-page maximum per person) in a separate appendix. The bio-sketch appendix does not count against the proposal's 12-page limit. Bio-sketches should highlight experience and relevant publications related to the proposed work.

Scientific Merit Reviews

CBTS and DHS reviewers will assess the merits of each proposal. CBTS will screen potential reviewers for conflicts of interest prior to the initiation of reviews. Reviewers will evaluate proposals based on the following criteria and apply the weighting factors as indicated to determine their overall ranking of each proposal.

1. **Scientific Merit, Methods, and Risks (70%)**
   a) Does the proposal outline a path to meet the research objectives and deliverables within an appropriate timeline?
   b) Does the proposal use appropriate approaches/methodologies, specify the data required, and highlight significant risks associated with the proposed approaches or data availability?
   c) Has the team defined metrics and milestones appropriate for the stated goals?

2. **Qualification of Personnel (15%)**
   a) Does the team have the qualifications to conduct and complete the proposed work?
   b) Does the team demonstrate the ability to deliver products that meet the proposed objectives and deliverables within their proposed budget and schedule?

3. **Budget and Schedule (10%)**
   a) Are the anticipated costs reasonable based on the one-page budget?

4. **Facilities and Equipment (5%)**
   a) Do the necessary facilities and information systems exist and are they adequate to achieve proposed research objectives?

Conversion of Proposals into Project Work Plans and Budgets

If CBTS selects a proposal for funding, CBTS will ask the authors to prepare a project work plan and detailed budget justification. CBTS will share workplan and budget requirements with the authors. As needed, CBTS may seek additional scientific merit reviews for workplans.

Funding and Agreement Terms and Conditions

If funding is available, CBTS will fund up to six projects through cooperative agreements with CBTS. Successful projects may be **funded up to $250,000 per year** (including indirect charges) per project (2-year maximum period of performance). All awardees and sub-awardees must meet all current DHS – TAMU Cooperative Agreement Terms and Conditions.

Data Considerations

Prior to initiating work on any research project researchers will need to provide a plan for acquiring and securing the data they need. Please consider your data needs as you develop your proposal.

Researchers and their institutions need to agree that they intend to produce publicly releasable results. Projects funded under this RFP may use non-DHS, third-party, public, and synthetic or simulated data. However, classified data, controlled unclassified information (CUI), or sensitive but unclassified (SBU) data **may not be used**. As with any project, data collected from human subjects may be used only after the appropriate IRB and DHS Compliance offices complete their reviews. Please consider adding an additional eight to ten weeks of funded activities at the start of the project to accommodate completion of compliance requirements.

Proposals that advance to the workplan stage must submit a formal data management plan that describes the acquisition, processing, storage, protection, and disposition of data prior to final approval.

Questions

If you have any questions, please send them to **cbts@ag.tamu.edu**.