

Biological Risks – Operational Decision Support - CBTS – CBP/APTL
Requests for Proposals/ White Papers
1-22-2021

THIS IS A REQUEST FOR WHITE PAPERS (RFP) ONLY. This RFP is issued solely for information and planning purposes to accomplish market research and to identify institutions and businesses capable of performing the services described in this request. It does not constitute a Request for Proposals (RFP) or a promise to issue an RFP in the future. However, if funding becomes available, high quality projects selected by DHS will be funded through the cooperative agreement with CBTS. This request for information does not commit the Cross-Border Threat Screening a Supply Chain Defense DHS Center of Excellence (CBTS) or the Government to contract for any supply or service whatsoever. Responders are advised that they are solely responsible for any preparation, information or administrative costs incurred in response to this RFP; all costs associated with responding to this RFP will be solely at the interested party's expense.

Deadline and Submission Information

White papers must be received by Wednesday, March 10, 2021, 11:59 PM (Central U.S. Time). White papers must be submitted to CBTS at cbts@ag.tamu.edu in PDF format. All questions regarding this RFP, whether technical or procedural in nature, must be directed to Chris Scarmardo at c.scarmardo@ag.tamu.edu.

CBTS Vision

The CBTS vision is to be the premier research center for the development of solutions, protocols and capabilities to support DHS operations to detect, assess, and respond to known and unknown threats and hazards that could adversely impact the nation's supply chain infrastructure as it relates to people, agriculture, and economy.

Mission

The CBTS mission is to enhance cross border screening and supply chain defense against known and unknown threats through cutting edge research, education, and innovative applications of emerging technologies.

Goals

The CBTS goals are to work in collaboration with DHS to develop public research projects that may support mission relevant solutions, expand the literature on Artificial Intelligence, develop processes and enhance capabilities to support operations designed to counter threats and secure our Nation without compromising commercial enterprise. The proposed projects must draw on open source or research generated data and yield publicly verifiable outcomes that will be published in peer-reviewed outlets.

Stages of Development

CBTS funds a range of research and development projects with the intent of promoting the development of projects through the Final Design and Launch stage. For this request researchers should focus on demonstrating their project will meet the following Proof of Concept criteria:

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Proof of Concept: The stage of development where key technical challenges are initially addressed. Activities may include verifying product requirements and implementing and testing approaches to those capability requirements. A technology transfer plan is typically developed that outlines efforts to understand commercialization needs.

Description of Issue

Approximately 6,919 known exotic plant pests and diseases, and 1,500 pathogenic animal diseases threaten the U.S. agriculture. Moreover, seventy-five (75) percent of animal diseases are transmissible to humans. All these threats could potentially infect/contaminate the exchange points in the supply chain and lead to product shortfalls, trade restrictions, price spikes and systemic negative effects in the economy and global health. The agriculture and food supply chain is an infrastructure and organizational backbone that includes complex production, processing, and dense transportation network with millions of distribution points providing food, medicine, and other products to U.S. costumers. With a multitude of animal and plant pathogenic organisms emerging and re-emerging worldwide, characterizing and visualizing accidental/intentional introduction of these threats; and, prioritizing the risk from these threats through trade and travel are imperative.

White Paper Goals

- 1) Development of an automated data-mining algorithm that captures country-specific real-time/near real-time geospatial outbreaks of pests and diseases with nexus to animal, plant, and public health.
- 2) Use non-confidential open source and signal intelligence information (*e.g.*, scientific literatures, news media bulletins and reports, social media and blogs, country-specific reports, international organizations' alerts and report, etc.).
- 3) Demonstrate the capability to translate foreign languages; disambiguate and authenticate all data feed; and encrypt information in a highly secure format for data interchange.
- 4) Couple data mining algorithm with an intuitive analytical tool that contextualizes this information with a country's animal/plant health infrastructure, biosecurity measures, post-harvest technology, product quality screening, trade and travel entries into the USA, etc., that provides country-risk assessment and risk prioritization anytime and anywhere.
- 5) Outline deep learning and artificial intelligence routines that allow tracking of pest and disease outbreaks and assess their impacts on transportation routes that could affect a supply chain and apply insights through data modeling to help anticipate and identify triggers indicating market movements and investment outcomes.
- 6) Demonstrate a capacity to expand the tool to include additional data (*e.g.*, genetic databases) and employ computational genomics methods to better contextualize, characterize, and visualize the emerging biothreat.
- 7) Describe how students will participate in the project development.

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White Paper Format and Submission Deadline Requirements

The White paper should meet specific content, formatting, deadlines, and page limit requirements. White papers that do not address the project requirements, that do not follow formatting, or page limit requirements will be rejected. White papers arriving after the submission deadline (**March 10, 2021**) will not receive funding consideration.

White Paper Format (7-pages maximum)

1. White paper Cover Sheet (1-page)
 - a. List all key personnel with contact information.

2. White paper body (5-pages)
 - a. Identify the project's goals with respect to specific goals and requirements.
 - i. Identify the specific goals (1-6) will be addressed.
 - b. Identify methods and data that will be applied to achieve the goals and requirements.
 - c. Identify expected outcomes and milestones for a two-year project.
 - d. Describe procedures for assessing the success of the project using the SMART framework - specific, measurable, achievable, realistic, and timely.
 - e. **Describe experience working with commercial interests to deliver and transfer applications.**
 - f. **Describe experience working on related projects and access to subject matter experts.**
 - g. Describe how students will be included in the project.

3. Budget with brief narrative by category (1-page) (max. \$250,000/year)
 - a. Salaries and benefits
 - b. Data and related contracts
 - c. Equipment
 - d. Travel
 - e. Indirect costs

Formatting Requirements

All White Papers must

1. Be single-spaced
2. Use an 11-point font
3. Use 1-inch margins
4. Include page numbers

White Papers Reviews

CBTS and DHS reviews of White Papers will use the following questions and weighted scoring to assess the merits of the proposed work. Each of the four review elements will be rated on a scale from 1 to 5 (where 5 is the best/highest ranking). The weighting of each element is noted next to the scale.

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Relevance and Ranking of White Papers

White Papers that successfully meet the requirements of the scientific review process will be submitted by CBTS to the Department of Homeland Security (DHS) Program Manager and reviewed for relevance to the DHS mission and objectives, which includes transition of the work. Proposals identified as relevant will be ranked by DHS. Please note that CBTS may request additional reference information or supporting documentation (in any format) following submission.

Scientific Quality Review:

CBTS will coordinate a Proposal Review Panel (PRP) of subject matter experts, like the format used by National Science Foundation to review the scientific merit of submitted proposals. This PRP will be coordinated and aligned as to preclude any potential conflicts of interest in addressing proposals submitted by CBTS- affiliated researchers. The panel will meet via convened teleconference/electronic conferencing with an assigned date and timeframe approximately 4 weeks following the close of solicitation period. Reviewers will be asked to rate how the proposal addresses the following criteria, posed as questions. Reviewers will rate applications using numerical ratings of 1 to 5 (poor to excellent) and apply the percentage weighting factor as indicated for an overall rating.

1. **Scientific Merit and Originality/Innovation (Scale 1–5) (35%)**
 - a. Does the White Paper provide a comprehensive scope to address the need?
 - b. Does the project use appropriate theoretical concepts, technologies, or methodologies, or improve upon existing methods? To what extent do the proposed activities suggest and explore creative, original, or potentially transformative or innovative concepts?
 - c. Does the White Paper outline a path to meet the project goals within a short timeline?
 - d. Are graduate education and workforce development aspects included in this proposal?
 - e. Does this research have the potential to generate influential publications in the scientific community or lead to new discoveries or areas of investigation?

2. **Proposed Approach/Methods and Risks (Scale 1–5) (35%)**
 - a. Does the White Paper provide a clear description of the analytical and computational methods that is supported by evidence or sound theory?
 - b. Are the methods appropriate and complete to address the need?
 - c. Has the team defined metrics or targets appropriate for the stated goals?
 - d. Are data generation/collection, integration and analytics approaches appropriate?
 - e. Does the project collect all the necessary data to meet the project's threat and risk assessments goal related to animal, plant, and public health?
 - f. Does the White Paper show partnerships or cooperative initiatives with other institutions or organizations?
 - g. Does the White Paper demonstrate a viable plan for potentially developing substantial and continuing linkages with the Homeland Security Enterprise?
 - h. Does the White Paper provide an appropriate platform and clear path to transitioning software for end-user acquisition?

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3. Qualification of Personnel (Scale 1–5) (15%)

- a. Does the team have the breadth of qualifications to conduct and complete the proposed work?
- b. Does the team have prior expertise in similar areas?
- c. Does the investigative team clearly demonstrate an ability to deliver products that meet the proposed technical performance within their proposed budget and schedule?

4. Facilities and Equipment (Scale 1-5) (5%)

- a. Are the facilities and computer equipment adequate to achieve proposed research?

5. Budget and Schedule (Scale 1–5) (10%)

- a. Are the costs appropriate and reasonable? Is the budget proportional to the work being performed and the resources used?
- b. Does the team demonstrate an ability to deliver products within the proposed budget and on schedule?

Relevancy Review:

Following the Scientific Quality Review, DHS S&T University Programs will coordinate a Relevancy Review of proposals conforming to the criteria as outlined in this funded solicitation. Reviewers will be asked to rate how the proposal addresses the following criteria, posed as questions. Reviewers will rate applications using numerical ratings of 1 to 5 (poor to excellent) and apply the percentage-weighting factor as indicated for an overall rating.

Mission Relevance (75%)

- Does the proposed project address one or more of the first six research questions as described within the **White Paper Goals** section?
- Does the proposed project complement (and not duplicate) – existing research and development programs, particularly those sponsored by DHS, U.S. Customs and Border Protection or other federal agencies?
- Does the proposal sufficiently describe the potential research outcomes and users of the research?
- Does the proposal demonstrate consideration of a pathway to transition from research to acquisition according to DHS mission needs and demonstrate an expectation to publish results in peer reviewed outlets that will contribute to the relevant academic literature?

Communicating/Transitioning Results (25%)

- Does the applicant have a record of accomplishment of effectively communicating or successfully transitioning research results to appropriate stakeholders, specifically?
- Does the proposal demonstrate the implementation of an appropriate knowledge transfer process (i.e., models from case studies to other areas, patents, etc.) from academic to government end-users and other public customers?

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Possible Conversion of White Paper Ideas into Complete Project Proposals

If DHS is interested in considering a project based on a selected White Paper, CBTS will contact the authors to request a complete project workplan. The elements and requirements of the complete workplan will be shared with the authors when the request is made by CBTS. Proposals will be evaluated for scientific merit using a CBTS conducted peer review process and evaluated for mission relevance by DHS.

Funding

If funding is available, high quality projects selected by DHS will be funded through the cooperative agreement with CBTS. DHS may allocate up to \$250,000 per year (two year maximum) for each selected research project, with a total budget for all projects of \$1.5 million. CBTS is responsible for administering funding to all projects within its portfolio. For those proposals that are pursued further, sub-recipients will need to submit a detailed workplan and subsequently approved, and agree to the terms and conditions of the cooperative agreement between DHS and Texas A&M University (TAMU). CBTS is required to flow down all DHS – TAMU Cooperative Agreement Terms and Conditions with all sub-awardees.

Questions

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