The Cross-Border Threat Screening and Supply Chain Defense, a Department of Homeland Security Science and Technology Center of Excellence,
Request for White Papers on Domestic Impacts of African Swine Fever

THIS IS A REQUEST FOR WHITE PAPERS (RFWP) ONLY. This RFWP 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, 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 RFWP; all costs associated with responding to this RFWP will be solely at the interested party's expense.

Deadline and Submission Information

White papers must be received by **10/14/21, 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 RFWP, whether technical or procedural in nature, must be directed to the main CBTS email address at CBTS@ag.tamu.edu .

CBTS 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 and to develop processes and/or 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 meet the criteria for publication 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 that their project will meet the following *Proof of Concept* criteria:

Proof of Concept: The stage of development at which 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.

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Description of Issue:

African Swine Fever Virus (ASFv) is a highly contagious animal disease. An outbreak of ASFv in the U.S. could cause significant harm to the U.S. agricultural sector and the U.S. economy. The authors of a recent working paper from the Center for Agricultural and Rural Development at Iowa State University found that the direct and indirect impacts of an outbreak could cost as much as $50 billion over a two-year period[1]. The study's findings are based on the impacts ASFv would have on crop and animal revenues, related industries, and on employment within affected industries. If ASFv were confirmed in the United States, response strategies for controlling and stopping the spread of the outbreak would likely be far-reaching. This call seeks white papers designed to address one or multiple areas within of the following four (4) critical research gaps that could improve prevention, mitigation and response strategies.

White Paper Project Areas of Interest:

1) Introduction pathways, spread, impact, containment
    a. Develop, or enhance existing ASFv pathway analyses and/or models to illustrate quantify and qualitatively characterize potential introduction pathways. Single and multi-locus disease introductions should be used as initial conditions for a series of epidemiologic model iterations. Pathways for introduction of ASFv should consider:
        i. Imported feed components (ingredients, active pharmaceutical ingredients, or supplements) or feedstuffs (haylage, processed grain, unprocessed grains, etc.);
        ii. Contaminated fomites (non-living objects) such as shoes, clothes vehicles, equipment, cargo containers, crates, carriers, or other imported non-consumable products;
        iii. Unintentional introduction via international passenger travel, or intentional/smuggling of known risk materials via international passenger, cargo, or mail routes. Consideration should be given to documented and undocumented maritime, air, or land border arrivals;
        iv. International garbage and potential inappropriate use for swill/garbage feeding. Consideration should be given to proximity, density, and location of known swine garbage feeding operations, in addition to backyard premise near international landfills;
        v. Importation of contaminated pork and pork products from non-ASFv endemic regions that may source precursor ingredients from ASFv endemic regions directly or through third-country routing;

[1] "Impacts of African Swine Fever in Iowa and the United States" by M. Carriquiry, A. Elobeid, D. Swenson, and D. Hayes, Working Paper 20-WP 600, March 2020.

b. Model ASFv disease progression within the United States based on point of entry and route of entry, with consideration given to animal population dynamics (wildlife, backyard swine, and commercial swine) and disease control interventions. Models should assess multiple points of entry (unintentional, intentional, or natural), known hubs for commodity importation, and defined domestic transit pathways.
c. Recommend multi-level mitigation strategies with associated critical action thresholds (e.g.- intercepting and curtailing spread over critical population(s), geographies, and time) that might be employed by the animal health community to contain and eradicate an ASFv epidemic; with considerations given to:
    i. Cross-walking with potential quarantine measures implemented by respective lead federal agencies.
    ii. Assessment of FLSTT/industry containment practices or protocols:
        1. Incident Command System (ICS) and National Incident Management System (NIMS)
            a. Networking & communication (consider steady state & surge outbreak states)
                i. Federal government to local response
                ii. Intelligence Community
                iii. National Operation Centers, Fusion Centers, Emergency Operations Centers, State Emergency Management Centers
                iv. International Communications, AUSCANUKUS, North American Plan for Animal and Pandemic Influenza (NAPAPI), Consequence Management Group (Canada, CFIA, PS), etc.
            b. Containment/Quarantine
                i. USDA APHIS VS/PPQ and DHS Ag Specialists
                    1. Border, States, and Ports
d. Recommendations to reduce spread and facilitate containment with considerations given to ability to spread via fomites, feed, animals, and pests, in addition to ability to persist in the environment for extended periods (particularly within organic debris)

2) Readiness Inventory- state, industry, laboratory, and federal
Propose methodology and execution of:
    a. Federal and State Risk Assessments
        i. 50 state assessment, including tribal territories, and U.S. Territories.
        ii. U.S.-Mexico Border assessment

iii. Ports of Entry Assessment (cargo, international mail, passengers, etc.)
iv. International Trade Assessment

b. Interview state and federal animal health authorities
    i. Entertain multiple resource commitment scenarios (personnel, funding, equipment), allowing for resources divided amongst daily operations, ASFv response, and additional threat response(s) [wildfire, flood, hurricane, additional animal diseases, limitations imposed by pandemic) and mitigation efforts
    ii. Determine preparedness connections/planning with state and federal wildlife authorities
c. Interview state and federal "other response" authorities
    i. Determine preparedness connections/planning with state and federal wildlife authorities.
d. Interview DoD (Guard), policies (quarantine), Fire Service, Construction Service, other Emergency Management State Official, etc. that may be used for local outbreaks, containment, and/or quarantine.
e. Document adoption/implementation of Secure Pork Supply Plan, APHIS PREP ASFv Plan, etc.
    i. Steady State to Surge Capacity Plans
    ii. Early warning detection
    iii. Emergency Management (EM) Plans (FSLTT / private industry)
        1. Lead Agency Roles and Responsibility Plans
            a. Network (POCs)
            b. Communication
        2. Local EM Plans
f. Document individual and National Animal Health Laboratory Network (NAHLN) system laboratory capabilities
    i. Assay availability
    ii. Anticipated throughput
    iii. Sustainable operations over time and differing regional disease outbreak severity
g. Roles & Responsibilities of the National Bio/Ag Laboratory System
    i. Kansas State – National Bio and Agro-defense Facility – NABF
    ii. Iowa – NVSL – National Veterinary Services Lab
    iii. Iowa – DVL – Diagnostic Virology Lab
    iv. NY – FADDL – Foreign Animal Disease Diagnostic Laboratory
h. Capture potential plans for euthanasia, slaughter and disposal of diseased or suspect animals (wild and domestic).
    i. 3Ds: Carcass Disinfection, Decontamination and Disposal
        1. U.S. – Mexico Border
        2. Federal Agency States' Plans (USDA & DOI leads)

3. States EM 3D plans

i. Create readiness map(s), representing a composite of the readiness inventory

j. Capture exercise and training plans from all FSLTT and private industry stakeholders

i. Steady State to Outbreak Surge Capacity exercise training plans

1. Epidemiology to containment
2. National Laboratory System

3) Feral swine, additional wildlife, competent tick reservoir, and regional vulnerability

a. Model potential disease spread and/or containment/mitigation strategies for feral swine population

i. Consider multiple scenarios over diverse geography, differing proximity to commercial swine industry, backyard operations, and varying feral swine population densities

ii. Suggest containment and mitigation strategies over multiple time scales

iii. Model local and multi-state spread

1. After market feed lot distribution

b. Competent vector

i. The establishment of the virus in *Ornithodoros ticks* of which there are five known species in the United States, with three species in the western and midwestern regions of the US, primarily in mountainous areas, and two additional species found in the arid regions of the southern United States.

1. Consider lesson learned from prior eradication efforts that ticks may have hindered (e.g., Spain/Portugal where complete eradication of ASFv took 30 years[2]

ii. The natural movement of wildlife, particularly feral swine which may be infected beyond the boundaries of the U.S. or its territories (e.g., Mexico, Canada, islands closer to Puerto Rico or the U.S. Virgin Islands).

iii. Pest vectors such as ticks belonging to the Ornithodoros genus, which are globally distributed and proven to facilitate the transmission of the disease; there are five known species in the United States. Consideration should be given to commercial and passenger trade or travel channels, including plants, and assess the potential for introduction via ticks on migratory birds arriving

[2] "African Swine Fever: Lessons to Learn from Past Eradication Experiences. A Systematic Review" by DM Luisa, MM Luisa, I Simona, T Paolo, C Paolo, F Francesco, Frontiers in Veterinary Science, 10.3389/fvets.2020.00296, 09 June 2020.

from the Caribbean or other major flyways associated with ASFv endemic regions.

4) Outbreak Economics and Supply Chains
    a. Assessment and identification of depopulation options and the secondary cascading impacts (e.g., economic, supply chain disruptions, outputs/inputs from interdependent sectors, etc.) that would manifest during and after an ASFv outbreak with and without considerations given to regionalization.
    b. Assessment of outbreak effects on feed and supplement supply distribution with and without considerations given to regionalization.
        i. Consider persistence for long periods in uncooked pork products, or other non-traditional feed which may be given to pigs in food scraps (pig swill), and its ability to become established domestic backyard farms, and wild or feral suids.
        ii. Model worst-case scenario, and how that could work in terms of swine and feed industry readiness and trade policies. Specifically, if ASFV were to become endemic, could the swine and feed industries still operate in a manner that would allow for free trade (say by having all swine isolated within facilities, testing feed rigorously, etc.)?
    c. Assessment of historically available data on a regional or per country basis, for consideration of direct and secondary effects- economic, market, animal health, impacts on food, industries affected, trade flows and status (domestic and international trade), public vs private costs incurred and expenditures, regulatory changes and burden- potentiated by the introduction and epidemic state of ASFv in a country
    d. Assessment of resiliency, or the capability to recover

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 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
    b) Include bio-sketches (2-page maximum per person) for each major contributor (list expected percent FTE on project) that highlight experience, relevant employment and relevant publications [these bio-

sketches should be attached in an appendix and do not count against the White Paper page limit]

2. White paper body (5-pages)

a. Identify the project's goals with respect to specific goals and requirements.

b. Identify the specific project areas of interest to be addressed in the research.

c. Identify methods and data that will be applied to achieve the goals and requirements.

d. Identify expected impacts, outcomes, and milestones for a two-year project.

e. Describe procedures for assessing the success of the project using the SMART framework - specific, measurable, achievable, realistic, and timely.

f. Describe experience working with commercial interests to deliver and transfer applications.

g. Describe experience planning and executing projects of similar scope, subject matter focus, and complexity; and identify subject matter experts that will support this activity, in addition to how they will be utilized.

h. Describe how students will be included in the project.

3. Budget with brief narrative by category (1-page) (max. $250,000/year including indirects)

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 Paper 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.

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 DHS Program Manager and reviewed for relevance to the DHS mission and objectives, which includes transition of the work. White papers 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 one or more White Paper Review Panels (WPRP) composed of subject matter experts, along the lines used by the National Science Foundation to review the scientific merit of submitted white papers. These WPRP's will be coordinated and aligned as to preclude any potential conflicts of interest in addressing white papers submitted by CBTS- affiliated researchers. Reviewers will be asked to rate how the white paper 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 clearly focus on a specific topic listed in the "White Paper Project Areas of Interest" section?

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 an appropriate timeline?

    i. Does the white paper propose a series of deliverables throughout the life of the project?

d. Are graduate education and workforce development aspects included in this white paper?

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 identify the data necessary to meet the project's proposed analysis?

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 possible end-user tools?

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:

DHS S&T University Programs will coordinate a Relevancy Review of white papers conforming to the criteria as outlined in this funded solicitation. Reviewers will be asked to rate how the white paper 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 Project Areas of Interest?

• 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 white paper sufficiently describe the potential research outcomes and users of the research?

• Does the white paper 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 in the general field of interest, to appropriate stakeholders, specifically?

• Does the white paper 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?

Possible Conversion of White Paper Ideas into Complete Project Work Plans

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. Work plans will be evaluated for scientific merit by CBTS and may include additional conducted peer reviews and evaluation for mission relevance by DHS.

Funding

If funding is available, 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 $1.0 million per year. 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). All awardees and sub-awardees are required to meet DHS – TAMU Cooperative Agreement Terms and Conditions.

Questions

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