

**Arctic Domain Awareness Center (ADAC)**  
A U.S. Department of Homeland Security  
Center of Excellence

**Request for Proposal (RFP) in Association with ADAC's Arctic-related  
Incidents of National Significance (Arctic IoNS) 2019 Workshops**

Seeking solutions to support the U.S. Coast Guard in managing a complex Arctic crisis

**Introduction and summary**

The Arctic Domain Awareness Center is a U.S. Department of Homeland Security (DHS), Center for Maritime Research (CMR), led by the University of Alaska Anchorage. ADAC seeks to develop and transition technology solutions, innovative products and educational programs to improve situational awareness and crisis response capabilities related to emerging maritime challenges posed by the dynamic Arctic environment. The ADAC research network is comprised of academic and industry teams focused on delivering solutions to problems faced by the United States Coast Guard (USCG) and other DHS mission operators across the Arctic maritime region.

ADAC announces a competitive search to address research challenges associated with multiple Arctic response capability gaps and shortfalls in science and technology discerned from a two part workshop conducted via "**Stressing the System...managing a complex Arctic Crisis**" Arctic-related Incidents of National Significance workshop, (Arctic-IoNS). These workshops were conducted at University of Alaska Fairbanks Northwest Campus, Nome Alaska on 18-19 April 2019 and at the University of Alaska Anchorage from 20-22 May 2019. These workshops were jointly led by the Arctic Domain Awareness Center and Sandia National Laboratories. The Nome Arctic IoNS 2019 workshop was chiefly focused in gaining Alaska Native and other rural Arctic Alaskan resident insights into specific concerns and needs associated with the workshop scenario. The Anchorage Arctic IoNS 2019 workshop was associated with examining shortfalls and gaps in science and technology oriented in conducting response to the workshop scenario, conducted via plenary scenarios, tabletop exercises and breakout group sessions.

These workshops considered a comprehensive array of challenges facing the U.S. Coast Guard and the associated responders serving in U.S. Coast Guard led "Unified

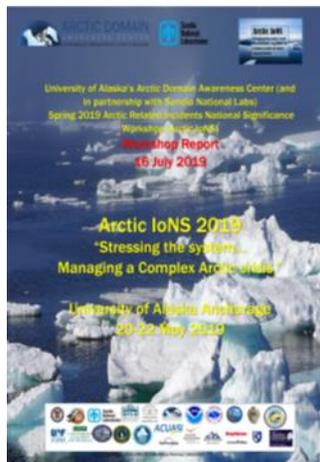


**ADAC respectfully notes that the USCG does not seek proposals to all the research tasks developed at the Anchorage Arctic IoNS 2019 workshop.** Accordingly, the below “Research Areas of Interest” specifically reflects where the USCG seeks to focus research proposals addressing Coast Guard mission needs in the planning and prosecution of Arctic crisis response operations.

ADAC principally seeks proposals that can smoothly transition from research to solutions and needed capability for USCG and other DHS Arctic maritime operators. Applicants should plan project duration at approximately 12-months, with a start date of January, 2020 unless specifically approved to start earlier. ADAC notes, all project outcomes and outputs are required to be completed not later than 30 June 2021.

## Arctic IoNS 2019 Research Areas of Interest

Teams responding to this RFP need to develop research projects in order to develop proposals to address one or more of the below research areas of interest. These research areas of interest are informed by the 18-19 April 2019 Nome Arctic IoNS 2019 report and correspond to the 20-22 May 2019 Anchorage Arctic IoNS workshop, **“Stressing the System...managing a complex Arctic crisis”** Rapporteur’s Report.



Specifically, the 20-22 May 2019 Anchorage Arctic IoNS workshop Rapporteur’s Report described associated tasks to address the range of shortfalls or gaps in research knowledge and/or existing capabilities in the management of several complex Arctic crisis situations, as identified by the select participants from the workshop.

The Arctic IoNS Rapporteurs Report organizes research tasks associated with these shortfalls or gaps into six distinct categories:

- Communicating with Vessel Master, Responders, and Remote Communities in the Arctic Technologies;
- Maritime Domain Awareness Technologies;
- Latent Detection Challenge Technologies;
- Adverse Weather Response;
- Predicting, Detecting, and Assessing Crisis Response Action Technologies;
- Technologies to Establish Communications with Remote Populations with Compromised Infrastructure.

The following are the specific research questions developed from the 20-22 May 2019 Anchorage Arctic IoNS Rapporteur's Report research questions and tasks. These questions attempt to prioritize and synthesize the large number of gaps and shortfalls identified at the workshop into scientific research questions that facilitate responses capable of advancing both the scientific merit of the proposed research as well as its relevancy to the Arctic response management community.

Accordingly, ADAC is seeking proposals *responding to these research questions* or knowledge gaps, to improve the science of Arctic response and crisis management through creating knowledge products, advancing decision support, or developing needed technology that results in improved capabilities in managing complex Arctic Crisis situations.

In order to be very clear, it is important to note, that while the Anchorage Arctic IoNS workshop developed a total of 6 categories and 32 potential research questions, the below 4 categories and 9 research questions have been selected by HQ USCG and coordinated with DHS S&T UP reflect the highest priority for additional research and should be the only questions in which researchers should respond. These research questions are aligned to categories of research to assist responding teams in developing proposals.

***Research area 1: Communicating with Vessel Master, Responders, and Remote Communities in the Arctic Technologies:***

1. What options are available and can be developed for more effective maritime (vessel-to-vessel, vessel-to-air, vessel-to-land, air-to-land) communications in the Alaska environment, including voice, data, video, and direction finding?
2. How can unmanned and remotely operated systems be utilized in remote locations to: (1) assist with facility inspections and oil tank leak detection, and/or (2) inspect and repair distant communications infrastructure?
3. How can we develop, optimize, and maintain a common operating picture to support decision making and maritime domain awareness? The solution should be available to responders; communities; and Federal, state, local, tribal, international, and private/industry elements.

***Research area 2: Maritime Domain Awareness Technologies:***

1. What technological solutions and best practices for bulk fuel containers/tanks can be developed or put into use to reduce the potential of oil spills and to predict risk from existing containers?

***Research area 3: Latent Detection Challenge Technologies:***

1. How do we accomplish rapid/ad-hoc, large area information collection for an event/response?

2. What are the cyber security vulnerabilities of detection and communication technologies that could impact Arctic operations? How can we best determine information is not compromised?
3. What sensors are capable of detecting chemicals and metals in the U.S. Arctic region, and how can those sensor capabilities be used for response decision making?

***Research area 4: Technologies to Establish Communications w/ Remote Populations w/ Compromised Infrastructure:***

1. What technical communication and policy approaches can be developed to both: (1) provide affordable and widespread hi-bandwidth capabilities in remote Alaskan locations, and (2) have flexible or minimal infrastructure needs?
2. Power systems are a critical component to supporting remote communications. What technologies could be developed to provide an affordable, Arctic-capable power storage capability to support communication sites?

## **Award Information**

### ***1. Funding Availability:***

ADAC anticipates approximately three to five projects in varying funding amounts may be awarded under this solicitation. In order to facilitate suitable alignment to the research questions and associated project length as described in this RFP, ADAC respectfully recommends proposals scoped between approximately \$200,000 to \$350,000 U.S. dollars. After evaluation, ADAC reserves the right to determine the number of projects funded. The exact amount of awarded funds to projects will be determined during the negotiations between the proposal applicants, ADAC and/or DHS at time of award. Publication of this notice does not obligate ADAC to award any specific project or to obligate funds. Following award selection under this RFP, ADAC has no obligation to provide additional funding in connection with the award.

Notwithstanding written assurances from the University of Alaska Anchorage (UAA), there is no obligation on the part of DHS or ADAC to cover Pre-Award costs unless approved by UAA, Office of Sponsored Programs (OSP) as part of the terms when executing a proposal award.

Final determination on project selection will depend on proposal merit in addressing research questions and customer relevancy. ADAC encourages applicants to carefully observe and diligently comply with each requirement of this RFP in submitting a response.

### ***2. Project/Award Period:***

Awards made under this RFP may have a maximum period of 12 months; awards may be shorter in duration. ADAC will not accept proposals requesting funding for a longer performance period than 12 months.

### **3. Type of Funding Instrument:**

Under this RFP, ADAC will fund projects via a Federal Demonstration Partnership (FDP) subaward agreement. ADAC is required to flow down all DHS - UAA Cooperative Agreement Terms and Conditions with all subawardees.

### **4. Allowable Costs:**

Funds awarded may not necessarily pay for all costs that the recipient might incur in the course of carrying out the project. ADAC determines allowable costs by reference to the Uniform Administrative Requirements, Cost Principles, and Audit Requirements at 2CFR200 and the DHS Standard Terms and Conditions for Centers of Excellence. Generally, allowable costs include salaries and supplies as long as these are “necessary and reasonable.” ADAC funds travel only when considered essential to project completion; travel to present findings at conferences for professional development will not be allowed.

### **5. Student Involvement:**

An important goal of ADAC is to foster the next generation of scientist and engineers devoted to the discovery, development and improvement of technologies and applications for Arctic MDA, response, and resilience. ADAC supports both undergraduate and graduate students’ direct involvement in ADAC led research projects through the ADAC Fellows program and encourages projects that include student participation. Project budgets may include support for undergraduate/graduate student research, including students seeking advanced graduate degrees. Postdoctoral research support (as student fellows) will not be available at this time. Any student involvement in an awarded project is subject to the agreement of the individual student to commit to the DHS terms and conditions of the student support.

## **Eligibility Applicants**

Awards can be made to accredited academic institutions of higher education, non-profit (U.S. non-profit, non-governmental organization must provide a copy of their Section 501(c)(3) or status determination letter received from the Internal Revenue Service), and industry institutions. All proposals must include an academic partnership, (*with the designated overall research lead of the project associated with a U.S. accredited academic institution of higher education*), and Industry and nonprofit collaboration with academic institutions is highly encouraged. ADAC also advises and encourages international applicants to consider joint proposals with a qualified U.S.-based entity,

conforming to this paragraph. Please note, research associated with ADAC does not allow for profit by any associated investigative entity.

## Proposal Format and Evaluation Criteria

While the intent of this RFP is to resource awards through terms and conditions associated with a cooperative, it may be determined that an award could be issued through a task-order contract.

Given the complexity of challenges posed by the research questions above, ADAC encourages, and even prefers proposals that incorporate multi-disciplinary expertise in methodological approaches.

ADAC invites applicants to submit a proposal organized to address the following:

**Title Page** (one-page limit) must contain the following:

1. Project Title;
2. Project Duration, with a start date no earlier than Jan 2020, (unless specifically approved to start earlier);
3. Applicant name;
4. Applicant address and phone number of the Principal Investigator or Contact for Institution/organization;
5. The theme(s) for which this proposals addresses.

**Technical Narrative** (11 point Franklin Gothic Book font, 10-page limit, including figures):

1. Introduction;
2. Research Question(s) being addressed;
3. Goal and Objectives;
4. Research Methodology;
5. Tasks;
6. Milestones;
7. Deliverables (Outputs);
8. Performance Metrics;
9. Stakeholder Engagement;
10. Transition Approach;
11. Impact/Benefit (Outcomes);
12. Programmatic Risks and Mitigation Plans;
13. References (References do not count towards the page limit).

**Compliance Assurances** (2-page limit):

1. Data Needs– if the applicant is not generating their own data, please outline the data you will acquire in this project and how you will obtain it (e.g., publicly available, available for purchase, federal data). If you are relying on federal data sources, please explain in detail how you plan to gain access to these, as their release is not a condition of the award.
2. Human Subjects Research (IRB) or Animal Welfare Research (IACUC)—if applicable.
3. ITAR/Export Controls– if applicable.

**Cost Information** (no page limit):

1. Detailed Budget showing itemized direct costs as well as indirect costs;
2. Budget Narrative/Justification.

**Biographical Sketch for the PI** (2-page limit)

## Submission Instructions

1. Proposals must be submitted in a single PDF (electronic format) to ADAC at the following email address: [uaa.adac@alaska.edu](mailto:uaa.adac@alaska.edu); with courtesy copy email to: [jtroe2@alaska.edu](mailto:jtroe2@alaska.edu) and [ematthews@alaska.edu](mailto:ematthews@alaska.edu).
2. If application via electronic submission to email is not feasible, delivery via postal mail or commercial mail to:  
Arctic Domain Awareness Center  
University of Alaska Anchorage  
3211 Providence Drive  
BOC3 Suite 120  
Anchorage, AK 99508
3. Deadline for receipt of the application (and validated by email response) is **5 PM Alaska Daylight Time, Monday, 7 October 2019**. ADAC will respectfully reject applications received after the deadline without further consideration.
4. Please note that ADAC may request additional reference information or supporting documentation (in any format) following submission.
5. Please closely review the **“Stressing the system...managing a complex Arctic Crisis” Anchorage Arctic IoNS Rapporteur’s Report dated 16 July, 2019, as previously described**. Please also review the preceding report **Arctic IoNS 2019 Alaska Native &**

Rural Arctic “Insights” Community Workshop, dated 11 July 2019, which informed the Anchorage Arctic IoNS workshop.

## Review/ Selection Process

An initial ADAC leadership review for any conflicts of interest which will disqualify an application. Reviewers from the academic and/or research community and DHS will evaluate the proposals.

Proposals receive Merit-based evaluation criteria to determine the award(s) based on scientific quality and relevance to DHS and USCG mission.

### **Scientific Quality Review**

ADAC will coordinate a Proposal Review Panel (PRP) of subject matter experts, similar to 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 ADAC or ADAC 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. Originality and/or Innovativeness (25%)**

- Is it original, e.g., does the proposed effort challenge and seek to shift current research or paradigms by utilizing novel theoretical concepts, inter-disciplinary approaches or methodologies?
- Is it innovative, e.g., is the proposal a novel refinement, improvement, or new application of theoretical concepts, inter-disciplinary approaches or methodologies proposed?
- 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/Methodology (25%)**

- Does the proposal establish research goals that are clear and based on sound theory?
- Does the proposal establish research methods clearly and appropriate for

testing the hypotheses?

- Are the data generation or collection approaches appropriate for the research methods?
- Is the approach or methodology technically sound, incorporating interdisciplinary expertise when appropriate, including a demonstrated understanding of the critical technology or engineering challenges required for achieving the project goals?

### **3. Influence and Cooperative Linkages (25%)**

- Does the application show partnerships or cooperative initiatives with other institutions or organizations?
- Does the application demonstrate a viable plan for developing substantial and continuing linkages with the Homeland Security Enterprise?

### **4. Qualifications of Personnel and Suitability of Facilities (15%)**

- Does the investigative team have the breadth of qualifications - credentials and experience - to conduct and complete the proposed research?
- Does the investigative team have prior experience in similar efforts?
- Does the investigative team clearly demonstrate an ability to deliver products that meet the proposed technical performance within their proposed budget and schedule?
- Are the facilities suitable for the proposed research?

### **5. Costs (10%)**

- Is the proposed research (and/or education) costs appropriate and reasonable?

## ***Relevancy Review***

In parallel to the Scientific Quality Review, Headquarters U.S. Coast Guard (in coordination with DHS &T University Programs) will conduct 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.

### **1. Mission Relevance (75%)**

- Does the proposed project address one or more of the research questions as

described within the RFP (as described in Section B).

- Does the proposed project reflect understanding and application of USCG's "Surveillance, Detection, Classification, Identification ("SDCI") methodology as the key aspect of Maritime Domain Awareness and the enabler to actual mission prosecution?
- Does the proposed project complement (and not duplicate) – existing research and development programs sponsored by DHS, USCG or others?
- Does the proposal sufficiently describe the potential research deliverables and users of the research?
- Does the proposal have a clear pathway to transition from research to acquisition according to DHS and/or USCG mission needs?

## 2. Communicating/Transitioning Results (25%)

- Does the applicant have a record of accomplishment of effectively communicating or successfully transitioning research results to appropriate stakeholders, specifically?
- Will the research team be able to deploy a technology and/or solution(s) transition the project effectively to the user community through either acquisition to USCG or other DHS maritime mission users, commercialization of the technology, open source distribution, or through other means?
- 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 DHS customers?

## Award Process

- ADAC Center leadership will notify Awardees.
- Subject to the availability of funds, review of proposals will occur during the months following the proposal due date given in this announcement and is expected to be completed no later than 20 December 2019. Awardees should expect project funding following work plan approval. Awarded researchers should not be expect to begin prior to work plan approval (which is anticipated to be approximately 6 January 2020). Please note that selection by ADAC to submit a work plan to DHS does not obligate ADAC or DHS to funding. The proposal packet under this RFP is merely phase 1 of the process for awarding funds.
- In no event will ADAC or DHS be responsible for proposal preparation costs. Publication of this announcement does not obligate ADAC or DHS to award any

specific project or to obligate any available funds. Recipients are subject to all U.S. federal laws, agency policies, regulations and procedures.

## Points of Contact

Should any applicant have questions or concerns regarding this request for proposal, please email ADAC team at [uaa.adac@alaska.edu](mailto:uaa.adac@alaska.edu) with courtesy copy email to: [jtroe2@alaska.edu](mailto:jtroe2@alaska.edu) and [ematthews@alaska.edu](mailto:ematthews@alaska.edu). Please note, ADAC will not respond to RFP questions after the close of the RFP period of solicitation.