

April 6, 2020

**AMENDED NOTICE OF FUNDING OPPORTUNITY (NOFO) FOR NIST Public Safety Innovation Accelerator Program – First Responder 3D Indoor Tracking Prize (PSIAP-FR3D)**

NIST is issuing this amendment (Amendment 3) to extend the Full Application deadline; to make changes associated with that new deadline; and to update hyperlinks in previous notices that have become inoperative.

Because of the revisions, the submission deadline has been extended to Thursday, August 20, 2020.

#	New Page	Section	What does the revision do?	How does the new paragraph now read?
1	3, 24, 25	Executive Summary and IV.5.	Extends the application due date as a result of the submission instruction revisions and shows Grants.gov closures.	Applications must be received at Grants.gov no later than 11:59 p.m. Eastern Time, Thursday, August 20, 2020.  Grants.gov system closures are updated.
2	3, 31	Executive Summary and V.4.	Revises the dates for review, selection, award processing and earliest award start dates.	NIST expects to complete its review, selection of successful applicants, and award processing by September 2020. NIST expects the earliest start date for awards under this NOFO to be November 2020.
3	11, 12, 13, 16,19	IV.2.a, IV.3.a.(1); IV.3.a.(5); IV.3.a.(8); IV.3.a.(11).	Updates hyperlinks that have become dead.	<a href="#">Instructions SF424 (R&amp;R) Application for Federal Assistance;</a> <a href="#">Instructions SF424 (R&amp;R) Application for Federal Assistance;</a> <a href="#">Instructions R&amp;R Other Project Information;</a> <a href="#">Instructions R&amp;R Budget (Total Fed + Non-Fed) Budget;</a> <a href="https://www.nist.gov/system/files/documents/2018/06/19/final_p_5700.pdf">https://www.nist.gov/system/files/documents/2018/06/19/final_p_5700.pdf;</a>

#	New Page	Section	What does the revision do?	How does the new paragraph now read?
				<a href="https://www.nist.gov/system/files/documents/2019/11/08/final_o_5701_ver_2.pdf">https://www.nist.gov/system/files/documents/2019/11/08/final_o_5701_ver_2.pdf</a> .
4	32	VI.2.d.	Updates the Funding Availability and Limitation of Liability section.	Funding for the program listed in this NOFO is contingent upon the availability of appropriations. NIST or the Department of Commerce will not be responsible for application preparation costs, including but not limited to if this program fails to receive funding or is cancelled because of agency priorities. Publication of this NOFO does not oblige NIST or the Department of Commerce to award any specific project or to obligate any available funds.

**NOTICE OF FUNDING OPPORTUNITY (NOFO)**  
**NIST Public Safety Innovation Accelerator Program – First Responder 3D Indoor Tracking Prize**

**EXECUTIVE SUMMARY**

- **Federal Agency Name:** National Institute of Standards and Technology (NIST), United States Department of Commerce (DoC)
- **Funding Opportunity Title:** NIST Public Safety Innovation Accelerator Program - First Responder 3D Indoor Tracking Prize (PSIAP-FR3D) Amended
- **Announcement Type:** Amendment
- **Funding Opportunity Number:** 2020-NIST-PSIAP-FR3D-01
- **Assistance Listings (CFDA Numbers):** 11.609, Measurement and Engineering Research and Standards
- **Dates:** Pre-Applications must be received at [Grants.gov](https://www.grants.gov) no later than 11:59 p.m. Eastern Time, Monday, December 15, 2019. Full Applications must be received at [grants.gov](https://www.grants.gov) no later than 11:59 p.m. Eastern Time, Thursday, August 20, 2020. Applications received after this deadline will not be reviewed or considered. Paper applications will not be accepted.

**Applicants should be aware, and factor in their application submission planning, that the Grants.gov system is expected to be closed for routine maintenance at the following times:**

From 12:01 Eastern Time Saturday	To 6:00 a.m. Eastern Time Monday
April 18, 2020	April 20, 2020
May 16, 2020	May 18, 2020
June 20, 2020	June 22, 2020
July 18, 2020	July 20, 2020
August 15, 2020	August 17, 2020

Applications cannot be submitted when Grants.gov is closed.

NIST expects to complete its review, selection of successful applicants, and award processing by September 2020. NIST expects the earliest start date for awards under this NOFO to be November 2020.

- **Application Submission Address:** Applications must be submitted using Grants.gov.

- **Funding Opportunity Description:** The NIST Public Safety Innovation Accelerator Program is seeking applicants with expertise in prize competitions to collaborate with technical experts from NIST, industry/academia, and public safety to serve as Prize Administrator in developing and implementing the First Responder 3D Indoor Tracking (FR3D) Prize. The FR3D Prize competition aims to achieve game-changing performance of sensors and systems for localization and tracking of first responders operating indoors in a variety of building environments without any benefit of pre-deployed dedicated infrastructure. The PSIAP seeks to attract experts and innovators from industry and academia to focus on this difficult challenge by offering a monetary prize purse and unique opportunities for live testing and evaluation. Administration of the FR3D Prize will include all aspects of prize development, project management, and execution.
- **Anticipated Amounts:** In FY2020, NIST anticipates funding a single award up to \$4,000,000 per year with a project period of performance of 2 years. Total funding for this program is anticipated to be approximately \$8,000,000. This total includes funds for both competition administration and the prize awards for competitors.
- **Funding Instrument:** Cooperative Agreement
- **Eligibility:** This NOFO is open to U.S. institutions of higher education, non-profit organizations, and for-profit organizations. NIST will not be accepting proposals from foreign entities. Please note that individuals and unincorporated sole proprietors are not considered “non-Federal entities” and are not eligible to apply under this NOFO. Although Federal entities are not eligible to receive funding under this NOFO, they may participate as unfunded collaborators.
- **Cost Sharing Requirements:** Non-federal cost share is not required for awards issued pursuant to this NOFO. However, voluntary committed cost-share (e.g., in-kind contributions from partners) may be included in project budgets and will be considered as part of the selection factors in Section V.2.b.(3).(c) of this NOFO.
- **Public Website, Frequently Asked Questions (FAQs) and Webinar:** NIST has a public website (<https://www.nist.gov/ctl/pscr/psiap-first-responder-3d-indoor-tracking>) that provides a “Frequently Asked Questions” page and other information pertaining to this Funding Opportunity. Any amendments to this NOFO will be announced through Grants.gov.

NIST will host a webinar on October 24, 2019 to provide general information regarding this NOFO, offer general guidance on preparing applications, and answer questions. There is no cost to attend the webinar, but participants must [register in advance](#). Participation in the webinar is not required and will not be considered in the application review and selection process.

General questions about this opportunity including eligibility requirements, the review and selection process, and the general characteristics of a competitive application may be addressed during the webinar or by e-mail to [pscr@nist.gov](mailto:pscr@nist.gov) with 'FR3D' in the subject line.

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### **FULL ANNOUNCEMENT TEXT**

#### **I. Program Description**

The statutory authority for the NIST Public Safety Innovation Accelerator Program (PSIAP) is 15 U.S.C. § 3706 and 47 U.S.C. § 1443. This competition also incorporates NIST's prize competition authority under the America COMPETES Reauthorization Act of 2010, 15 U.S.C. § 3719, as amended ("America COMPETES Act").

The mission of the NIST Public Safety Communications Research (PSCR) Division is to research, develop, and test technologies to improve first responder communications and operations. PSCR created the PSIAP to stimulate external research and development (R&D) activities addressing critical technology gaps identified by stakeholders and to build a public-safety-focused R&D ecosystem with long-lasting impact.

One of the critical technology gaps identified early on by public safety stakeholders was the inability to locate and track first responders while operating indoors. Every year, firefighters die, are seriously injured, or have a 'near-miss' because they become lost, separated, or difficult to locate inside buildings or houses. Every day, law enforcement officers enter buildings, often alone, with their precise whereabouts unknown. Both disciplines rely on a mix of training, intuition, and communication to get them in and out of buildings safely, but the ability to locate and track first responders operating indoors under difficult conditions remains a 'Holy Grail' for the public safety community.

To address this gap, the PSIAP is seeking to enter into a cooperative agreement with an organization possessing expertise in prize competitions to collaborate with technical experts from NIST, industry/academia, and public safety to serve as Prize Administrator

(PA) and be responsible for developing and implementing the First Responder 3D Indoor Tracking (FR3D) Prize. The FR3D Prize aims to achieve game-changing performance of sensors and systems for localization and tracking of first responders operating indoors in a variety of building environments without any benefit of pre-deployed dedicated infrastructure. The PSIAP seeks to attract experts and innovators from industry and academia to focus on this difficult challenge by offering a monetary prize purse and unique opportunities for live testing and evaluation. Administration of the FR3D Prize will include all aspects of prize development, project management, and execution.

## **A. Background and Objectives**

The intricately related fields of indoor mapping, localization, and navigation are all experiencing rapid growth as industries like retail, health care, entertainment, logistics, and manufacturing, along with giant technology companies and network operators, seek to understand where people and inventory are at any moment to deliver optimized location-based services. Though people spend an average of 87% of their time indoors, an indoor equivalent to the ubiquitous Global Positioning System (GPS) has yet to emerge. In the meantime, proprietary solutions based on a variety of technologies are emerging in a race to inventory the indoor world and capture market share, resulting in a fractured market.

Even with this growth, a solution that meets the challenging requirements of first responders has yet to arise. First responders need indoor positioning systems that are extremely accurate; 'infrastructure-free', i.e. not dependent on pre-deployed infrastructure (e.g., Wi-Fi access points or Bluetooth beacons) or surveys (e.g. RF or geomagnetic fingerprinting); can be readily integrated into daily operations; and will work in any type of building, while having the ability to withstand the harsh environments found in fires and other public safety incidents. Given the constraints of typical public safety budgets, these solutions must also be affordable. Unfortunately, these requirements are far beyond those of current commercial applications.

To initially address this gap, the PSIAP made eight financial assistance awards in 2017 for research and development focused on the first responder use case<sup>1</sup>. Through these awards and additional technology scouting a few trends have been identified: 1) inertial-based systems are attracting significantly more attention, largely driven by their pairing with visual sensors for new use cases in augmented and virtual reality, and autonomous systems; 2) while the inertial sensors themselves are improving, new approaches to sensor processing, largely fueled by machine learning, are advancing much faster; 3) map-matching techniques optimized for indoor localization (as opposed to GPS-based road navigation) when combined with inertial and other sensors offer a potential 2-10X improvement; and 4) to be successful for

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<sup>1</sup> For more information on these awards, see <https://www.nist.gov/ctl/pscr/psiap-2017-location-based-services>.

public safety applications, systems will need to employ a multi-sensor fusion approach and be highly optimized to take advantage of first responder behavior, equipment, and operations.

Left on its own, it is possible that industry could eventually produce adequate solutions in 15 – 20 years. However, the PSIAP believes that it can rapidly accelerate this timeline through a prize competition that will incentivize, captivate, and challenge the field to pivot towards developing indoor positioning solutions built for first responders. **The ultimate goal for the FR3D Prize is to demonstrate indoor localization and tracking of first responders within 1-meter accuracy in a variety of buildings without any pre-deployed infrastructure.** This level of performance, though ambitious, is the requirement given to PSCR by the first responder community and will be considered, along with current state of the art, when establishing thresholds for prize awards.

From the PSIAP’s perspective, a successful FR3D competition would also: a) result in game-changing performance of indoor localization and tracking capabilities for first responders; b) benchmark performance of best-in-class sensors and algorithms and identify the most promising technologies for future investment; c) create valuable datasets to enable follow-on research; and d) increase the visibility of the problem to attract additional investment for top performers to further develop and scale their technology for widespread use.

## **B. Prize Competition**

The PA will, in collaboration with NIST, develop and implement a prize competition that considers the trends identified through PSCR’s initial research activities and meets the objectives described above. While there are many ways to structure the competition, PSCR believes that a prize competition design based on the ‘build prototypes and launch pilots’<sup>2</sup> model will be the most effective. Other organizations have run prize challenges related to indoor localization in the past and are typically held in conjunction with technical conferences. These competitions<sup>3</sup> are well-run but tend to be more ‘academic’ in nature and offer small prize payouts, e.g. \$1,000. Beyond offering a prize purse several orders of magnitude larger, the FR3D Prize will be unique from these challenges in several other respects, including a focus on: 1) infrastructure-free approaches; 2) realistic first responder movements and scenarios; 3) and novel sensor suites and algorithms that are optimized for first responder equipment, behavior, and operations.

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<sup>2</sup> The craft of incentive prize design: lessons from the public sector. Deloitte University Press. <https://www2.deloitte.com/insights/us/en/topics/social-impact/the-craft-of-incentive-prize-design.html>

<sup>3</sup> Examples include the International Conference on Indoor Positioning and Indoor Navigation (IPIN) and the Microsoft Indoor Localization Competition held in conjunction with the International Conference on Information Processing in Sensor Networks (IPSN).

The PA will plan and execute live events where active first responders, equipped with the appropriate hardware, will go through different operational scenarios to test an individual competitor's solution. Note that because PSCR expects many competitors to employ 'cooperative localization' techniques, i.e. jointly estimating the position of each user based on data from other users, each scenario will require multiple first responders performing a coordinated scenario at the same time. All test events shall take place in facilities and locations to be arranged for by the PA. Based on PSCR's research, we believe these facilities should be representative of (at a minimum): 1) a three-story detached home with a full basement completely below-grade; 2) a large commercial/industrial facility; and 3) a large two or three story high-school. The reasoning behind these facilities is that the first two are typical structures where firefighter fatalities and near-misses have occurred due to the lack of an indoor tracking capability, while the third is a high priority for law enforcement responding to active shooter incidents. Effects, props, and actors may be used to heighten the sense of reality during the testing, however their effects on the test methodology should be well understood. In addition, the PA will handle all the logistics planning and management to accommodate all the competitors, event participants, media, and invited guests from government and industry.

In order to study the potential impact that possession of building maps could have on indoor tracking of first responders during an operation, the PA will need to obtain both 2D floorplans and 3D point clouds of each event facility for use by competitors. Applicants are strongly encouraged to consider a test design that will enable the comparison of performance achieved with and without these maps.

Given the unique opportunity that the FR3D events will present to collect valuable data, applicants are strongly encouraged to consider a test design that will enable or require raw data from each individual sensor and solution to be recorded. This data could be used for future research or possibly as inputs to a second 'track' in the competition focused exclusively on identifying the best algorithms that can take advantage of the raw sensor data. The applicant must specifically address how these, or any other datasets created during the competition will be collected, organized, and disseminated to the research community in the Data Management Plan (see Section IV.3.a.11).

PSCR expects the PA to regularly collaborate with subject matter experts from industry, academia, and public safety throughout all phases of the competition. The PA will be responsible for this collaboration, however PSCR may facilitate making connections to key public safety stakeholders who have been actively involved in various efforts related to this topic.

The PA, in collaboration with NIST, will develop competition criteria during the prize design phase. It is PSCR's intent to rely on the PA's expertise to partly or completely develop these criteria to ensure a successful outcome from the competition.

Competition criteria are the criteria against which applicants and competitors will be evaluated at various stages to ensure that winners' solutions will meet the objectives of the FR3D Prize. Competition criteria may be both performance-based and market-based, and examples include accuracy, latency, availability, continuity, size, weight, power, cost, prior performance, potential improvement, feasibility, and potential for scaling the technology. The PA must consult ISO/IEC 18305:2016 Test and Evaluation of Localization and Tracking Systems when developing performance-based criteria.

PSCR expects that budgeted costs for prize administration, i.e. total cost to execute the competition excluding the prize awards, should not exceed 30% of the total of this financial assistance award; however, this is not a strict requirement. Applicants should be sure to justify the balance of administrative vs. award costs in the budget narrative.

The PA, in collaboration with NIST, will determine the distribution and amount of prize awards. PSCR anticipates that the awards will be structured in a way that encourages competitors to continue developing their solutions as they advance through multiple phases for a chance to compete for a grand prize. In addition, the PSIAP anticipates the PA will successfully pursue supplementary financial/resource support and non-monetary incentives to attract high-quality competitors. Examples of non-monetary incentives could include mentorship, collaboration, and exposure to potential investors.

The PA will be responsible for administering the monetary awards to competitors. If any budgeted funding is not needed or used, or no competition participant is eligible for grand prize award(s) (e.g., no competitor exceeds a performance metric threshold(s) during the final test and evaluation stage), the unused funds will not be considered reimbursable costs and will be de-obligated from this financial assistance award and returned to NIST.

The PA, in collaboration with NIST, will develop the competition rules. The PA will publish the rules and will be responsible for any updates to the rules. The PA will secure, coordinate, and compensate (if applicable) the judging panels for evaluation; the PA may propose using NIST personnel to participate in the judging panels where appropriate. If necessary, NIST will facilitate invitations for key public safety stakeholders who have been actively involved in various efforts related to this topic to participate as judges.

The PA will determine the schedule and serve as project manager of the entire competition and all associated tasks. The PA will develop a marketing and outreach plan to attract competitors and create exposure for the event.

The PA will provide the necessary qualified personnel, facilities planning, on-site coordination and logistics, supplementary equipment and supplies, services, subcontractors, and related administrative and information technology to support the implementation of the competition stages.

The PA will be responsible for ensuring that all aspects of the competition are conducted in accordance with the prize authority established in the America COMPETES Act.

The PA will be required to attend the annual Public Safety Broadband Stakeholder Meetings held each year during the term of the award to meet with stakeholders and present key plans, results, and outcomes to date.

## **II. Federal Award Information**

### **1. Funding Instrument**

The funding instruments used in this program will be a cooperative agreement. The nature of NIST's "substantial involvement" will generally include collaboration with the recipient in developing and executing the approved scope of work, in accordance with 2 CFR § 200.24.

### **2. Multi-Year Funding Policy**

When an application for a multi-year award is approved, funding will usually be provided for only the first year of the project. If a project is selected for funding, NIST has no obligation to provide any additional funding in connection with that award. Continuation of an award to increase funding or extend the period of performance is at the sole discretion of NIST. Continued funding will be contingent upon satisfactory performance, continued relevance to the mission and priorities of the Public Safety Communications Research Division, and the availability of funds. Under this NOFO, NIST may elect to fully fund awards or to fund awards in accordance with the Multi-Year Funding Policy.

### **3. Funding Availability**

In FY2020, NIST anticipates funding a single award up to \$4,000,000 per year with a project period of performance of 2 years. Total funding for this program is anticipated to be approximately \$8,000,000. This total includes funds for both competition administration and the prize awards for competitors.

## **III. Eligibility Information**

### **1. Eligible Applicants**

This NOFO is open to U.S. institutions of higher education, non-profit organizations, and for-profit organizations. NIST will not be accepting proposals

from foreign entities. Please note that individuals and unincorporated sole proprietors are not considered “non-Federal entities” and are not eligible to apply under this NOFO. Although Federal entities are not eligible to receive funding under this NOFO, they may participate as unfunded collaborators.

## **2. Cost Sharing or Matching**

Non-federal cost share is not required for awards issued pursuant to this NOFO. However, voluntary committed cost-share (e.g., in-kind contributions from partners) may be included in project budgets and will be considered as part of the selection factors in Section V.2.b.(3)(c) of this NOFO.

## **IV. Application and Submission Information**

### **1. Address to Request Application Package**

The application package is available at [grants.gov](https://grants.gov) under Funding Opportunity Number 2020-NIST-PSIAP-FR3D-01.

### **2. Content and Form of Pre-Application Submission – Pre-Application Package**

#### **a. SF-424 (R&R), Application for Federal Assistance**

The SF-424 (R&R) must be signed by an authorized representative of the applicant organization.

For SF-424 (R&R), Items 5, 14, and 19, use the Zip Code + 4 format (##### - ####) when addresses are called for.

For SF-424 (R&R), Item 17, the list of certifications and assurances is contained in the SF-424B (item b.(3) below).

SF-424 (R&R), Item 18. If the SF-LLL, Disclosure of Lobbying Activities form (item b.(6) below) is applicable, attach it to field 18.

SF-424 (R&R), Item 20. Attach the Pre-Application Narrative to this item.

Instructions for filling in the SF-424 (R&R) can be found in the 2020-NIST-PSIAP-FR3D-01 Application Instructions document found on Grants.gov, as well as at [Instructions SF424 \(R&R\) Application for Federal Assistance](#).

#### **b. Pre-Application Narrative**

A word-processed document of no more than five (5) pages including graphs, charts, or other data. The Pre-Application Narrative should describe the proposed project and degree of alignment with the goals of this NOFO. Enough information should be provided to address the Pre-Application evaluation

criteria (see Section V.1.b. of this NOFO). Applicants are required to describe succinctly:

- (1) The proposed approach to developing and implementing the prize competition to meet the goals of this NOFO;
- (2) The key shortcomings, limitations, and challenges associated with the proposed approach;
- (3) The potential impact that the proposed project would have on indoor localization for first responders, as well as stimulating additional R&D and market investment; and
- (4) The qualifications, experience, and capabilities of the applicant as it applies to executing prize competitions or technology demonstrations similar in magnitude, complexity, and risk.

### **3. Content and Form of Full Application Submission**

#### **a. Required Forms and Documents**

##### **(1) SF-424 Research & Related (R&R), Application for Federal Assistance**

The SF-424 (R&R) must be signed by an authorized representative of the applicant organization.

For SF-424 (R&R), Items 5, 14, and 19, use the Zip Code + 4 format (#####-####) when addresses are called for.

For SF-424 (R&R), Item 17, the list of certifications and assurances is contained in the SF-424B (item 3 below).

SF-424 (R&R), Item 18. If the SF-LLL, Disclosure of Lobbying Activities form (item (6) below) is applicable, attach it to field 18.

Instructions for filling in the SF-424 (R&R) can be found in the 2020-NIST-PSIAP-FR3D-01 Application Instructions document found on Grants.gov, as well as at [Instructions SF424 \(R&R\) Application for Federal Assistance](#).

##### **(2) Research & Related Budget (Total Fed + Non-Fed)**

The budget should reflect anticipated expenses for the full term of the project, considering all potential cost increases, including cost of living adjustments.

The budget should be detailed in these categories:

- A. Senior/Key Person;
- B. Other Personnel;

- C. Equipment Description;
- D. Travel;
- E. Participant/Trainee Support Costs;
- F. Other Direct Costs;
- G. Direct Costs (automatically generated);
- H. Indirect Costs;
- I. Total Direct and Indirect Costs (automatically generated);
- J. Fee (not relevant to this competition);
- K. Total Costs and Fee (automatically generated);
- L. Budget Narrative and Justification document (item (8) below) should be attached to field L.

A separate detailed R&R Budget must be completed for each budget period during the proposed award (e.g. annual basis). To add additional budget periods (e.g. year 2), click “Add Period” embedded at the end of the form. Instructions for completing the Research & Related Budget (Total Fed + Non-Fed) form can be found in the 2020-NIST-PSIAP-FR3D-01 Application Instructions document on Grants.gov.

**(3) SF-424B, Assurances – Non-Construction Programs**

The SF-424B is required for all applicants that have not updated their System for Award Management (SAM.gov) entity registration since February 2, 2019 to include the Federal financial assistance certifications and representations (certs and reps). If an applicant has updated their SAM.gov entity registration since February 2, 2019 to include the certifications and representations, then the SF-424B is not required.

**(4) CD-511, Certification Regarding Lobbying**

Enter “2020-NIST-PSIAP-FR3D-01” in the Award Number field. Enter the title of the application, or an abbreviation of that title, in the Project Name field.

**(5) Research and Related Other Project Information**

Answer the highlighted questions and use this form to attach the Project Narrative (item (7) below), the Indirect Cost Rate Agreement (item (9) below), and the Data Management Plan (item (11) below). Instructions for completing the Research and Related Other Project Information can be found in the 2020-NIST-PSIAP-FR3D-01 Application Instructions document on Grants.gov, as well as at [Instructions R&R Other Project Information](#). Please note that the Project Summary/Abstract field (line #7), which has a place to attach an optional Project Summary/Abstract, is not relevant to this competition. However, to avoid getting a validation error in grants.gov, applicants will be required to attach a blank page to this field. Applicants are not required to write or provide a Project Summary/Abstract, but they will be

required to attach a blank form for the submission or else the application will be rejected by grants.gov.

**(6) SF-LLL, Disclosure of Lobbying Activities (if applicable)**

**(7) Project Narrative**

The Project Narrative is a document that is responsive to the program description (see Section I. of this NOFO) and the evaluation criteria (see Section V.2.b. of this NOFO). Any material provided beyond the specified page limits (see Section IV.3.c.(4) of this NOFO) will be redacted and not provided to the reviewers. The page limits include all tables, charts, graphs, figures, maps, photos, graphics, and citations. Resumes and CVs do not count toward page limits. Applicants should consider the weighting of each of the evaluation criteria (see Section V.2.b. of this NOFO) when preparing the Project Narrative. The Project Narrative must contain the following three sections:

**(a) Cover page**

The cover page must include:

- (i) The name, address, and contact information of the applicant institution, partner organizations, and the principal investigator;
- (ii) The project title; and
- (iii) Any statements regarding confidentiality.

**(b) Table of contents**

**(c) Project Description**

This is a detailed description of the proposed prize competition and potential impacts. This section should include a detailed description of the:

- (i) Approach to developing and implementing the prize competition to meet the goals of this NOFO. This description should include details related to competition design and rules, competition criteria and performance metrics, monetary awards, marketing and outreach, event management, information sharing and management, and close-out.
- (ii) Approach to collaborating with NIST and subject matter experts from both industry/academia and public safety to develop and implement the prize competition to meet the goals of this NOFO.
- (iii) Expected outcomes and short-term impacts of the prize competition.
- (iv) Expected long-term impacts beyond the prize competition to include stimulating additional R&D and market investment.

This section will be evaluated in accordance with the Technical Merit evaluation criteria (see Section V.2.b.(1).(a) of this NOFO).

**(d) Project Execution**

This is a detailed description of the plan to execute the prize competition. Applicants should note that all information regarding costs are to be addressed in the Budget Narrative (see Section IV.3.a.(8) of this NOFO). This section should include:

- (i) A summary of the overall approach to executing the prize competition and how the schedule, deliverables, milestones, and risk management will maximize the applicant's chances of achieving the goals of this NOFO.
- (ii) A detailed project schedule (Gantt chart of similar) for the entire prize competition.
- (iii) A deliverable summary table identifying all deliverables, a description of each, and due dates.
- (iv) A milestone summary table identifying all milestones, a description of each, due dates, and clear, measurable criteria to verify milestone completion.
- (v) A risk management table identifying major risks and key performance indicators during each phase of the prize competition, and their corresponding mitigation strategies.

This section will be evaluated in accordance with the Project Execution evaluation criteria: (see Section V.2.b.(1).(b) of this NOFO).

**(e) Qualifications**

This is a detailed description of the applicant's relevant qualifications and experience for successfully designing and implementing the proposed prize competition. This section should include:

- (i) Qualifications of the individuals, teams, and organizations that will be executing or supporting the proposed prize competition relative to the program goals, including access to the equipment, facilities, and resources necessary to accomplish the proposed objectives.
- (ii) Demonstrated success executing prize competitions or technology demonstrations similar in scope and magnitude to the proposed project, including any examples of working with a diverse cross-section of experts from across academia, industry, and the public sector to create a clear and concise plan that achieved high-reaching goals.

This section will be evaluated in accordance with the Qualifications evaluation criteria (see Section V.2.b.(1).(c) of this NOFO).

### **(8) Budget Narrative and Justification**

There is no set format for the Budget Narrative and Justification; however, further explanation must be provided for the specific cost categories and line items identified in the [Instructions R&R Budget \(Total Fed + Non-Fed\) Budget](#), as well as any other information you deem necessary for NIST's consideration. The Budget Justification or Budget Narrative must be attached to the Research & Related Budget (Total Fed + Non-Fed).

The written justification should include the necessity and the basis for the cost. Proposed funding levels must be consistent with the project scope, and only allowable costs should be included in the budget. Applicants should use the Budget Narrative and Justification section to clearly indicate the cost effectiveness and value of the proposal in terms of meeting the goals of this NOFO. Information on cost allowability is available in the [Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards at 2 C.F.R. Part 200](#), which will apply to awards in this program.

This section will be evaluated in accordance with the Project Execution evaluation criteria (see Section V.2.b.(1).(b) of this NOFO).

Information needed for each category is as follows:

#### **(a) Senior/Key Person**

At a minimum, the budget justification should include the following: name, job title, commitment of effort on the proposed project in terms of average number of hours per week or percentage of time, salary rate, total direct charges on the proposed project, description of the role of the individual on the proposed project and the work to be performed. Resumes or CVs may be included for Senior/Key Persons.

Fringe benefits should be identified separately from salaries and wages and based on rates determined by organizational policy. The items included in the fringe benefit rate (e.g. health insurance, parking, etc.) should not be charged under another cost category.

#### **(b) Other Personnel**

Data is requested at the project role level, and not at the individual level for Other Personnel. The budget justification should include the following: job title, commitment of effort on the proposed project in terms of average number of hours per week or percentage of time, salary rate, total direct

charges on the proposed project, description the role of the position on the proposed project and the work to be performed. Resumes or CVs may be included for Other Personnel.

Fringe benefits should be identified separately from salaries and wages and based on rates determined by organizational policy. The items included in the fringe benefit rate (e.g. health insurance, parking, etc.) should not be charged under another cost category.

**(c) Equipment Description**

Equipment is defined as an item of property that has an acquisition cost of \$5,000 or more (unless the organization has established lower levels) and an expected service life of more than one year. The budget justification should list each piece of equipment, the cost, and a description of how it will be used and why it is necessary to the successful completion of the proposed project. Please note that any general use equipment (computers, etc.) charged directly to the award should be allocated to the award according to expected usage on the project. Applicants should provide at least two (2) quotes, if available, for equipment costing \$25,000 or more. If two (2) quotes are not available, please provide a statement as to why two (2) quotes are not available. Any items that do not meet the threshold for equipment can be included under the Other Direct Costs section, in the Research & Related Budget (Total Fed + Non-Fed) form (see Section IV.3.a.(2)).

**(d) Travel**

For all travel costs, required by the recipient to complete the project, including attendance at any relevant conferences, the budget justification for travel should include the following: destination; names or number of people traveling; dates and/or duration; mode of transportation, lodging and subsistence rates; and description of how the travel is directly related to the proposed project. For travel that is yet to be determined, please provide best estimates based on prior experience. If a destination is not known, an approximate amount may be used with the assumptions given for the location of the meeting.

As described in the Program Description (see Section I. of this NOFO), the PA will be required to attend the PSCR Public Safety Broadband Stakeholder Meetings (PSBSM) to meet with stakeholders and present key plans, results, and outcomes of their work to date. The PSBSM are held each summer in the continental United States and are typically three days in length. The dates and locations of the PSBSM for 2020 – 2022 have not been determined at this time. Applicants should factor in the cost for attending this event in their budget narrative and SF-424A form.

**(e) Participant/Trainee Support Costs**

Participant support costs are stipends, subsistence allowances, travel, and registration fees paid to or on behalf of participants or trainees, who are not employees of your organization, for conferences or training projects. The budget justification should indicate the names or number of participants or trainees, a description and calculation of costs per person, a description and date of the event, and a description of why the cost is necessary for the successful completion of the proposed project.

**(f) Other Direct Costs**

For costs that do not easily fit into the other cost categories, please list the cost, and the breakdown of the total costs by quantity or unit of cost. Include the necessity of the cost for the completion of the proposed project. Only allowable costs can be charged to the award.

Each subaward or contractual cost should be treated as a separate item in the Other Direct Costs category. Describe the services to be provided and the necessity of the subaward or contract to the successful performance of the proposed project. Contracts are for obtaining goods and services. Subawardees perform part of the project scope of work. For each subaward, applicants must provide budget detail justifying the cost of the work performed on the project.

Prize awards to be given to the competition winners are considered Other Direct Costs. Please provide amount of each proposed prize and justification of the amounts being proposed in this section.

**(g) Indirect Costs**

Commonly referred to as Facilities & Administrative Costs, Indirect Costs are defined as costs incurred by the applicant organization that cannot otherwise be directly assigned or attributed to a specific project. For more details, see Section IV.3.a.(9) of this NOFO.

**(9) Indirect Cost Rate Agreement**

If indirect costs are included in the proposed budget, provide a copy of the approved negotiated agreement if this rate was negotiated with a cognizant Federal audit agency. If the rate was not established by a cognizant Federal audit agency, provide a statement to this effect. If the successful applicant includes indirect costs in the budget and has not established an indirect cost rate with a cognizant Federal audit agency, the applicant will be required to obtain such a rate in accordance with the [Department of Commerce Financial Assistance Standard Terms and Conditions dated April 30, 2019](#).

Alternatively, in accordance with 2 C.F.R. § 200.414(f), applicants that have never received a negotiated indirect cost rate may elect to charge indirect costs to an award pursuant to a de minimis rate of 10 percent of modified total direct costs (MTDC), in which case a negotiated indirect cost rate agreement is not required. Applicants proposing a 10 percent de minimis rate pursuant to 2 C.F.R. § 200.414(f) should note this election as part of the budget portion of the application.

#### **(10) Letters of Commitment**

Letters of Commitment must be submitted by all funded and unfunded entities that will have an active role in executing the activities outlined in the Project Narrative. Letters of Commitment must address the level of participation, qualifications of the personnel who will be actively involved, and how successful completion of this project would positively impact their profession or community. Letters of Commitment must also specify any voluntary committed cost-share, including the specific services and/or products to be used in the project. Letters of Commitment must be signed by an individual with authority to legally bind the organization to its commitment.

Letters of Commitment will be evaluated in accordance with the Qualifications evaluation criteria (see Section V.2.b.(1).(c) of this NOFO). Letters of commitment do not count against the specified page limits.

#### **(11) Data Management Plan**

Consistent with NIST Policy 5700.00<sup>4</sup>, *Managing Public Access to Results of Federally Funded Research*, and NIST Order 5701.00<sup>5</sup>, *Managing Public Access to Results of Federally Funded Research*, applicants must include a Data Management Plan (DMP).

The DMP is a supplementary document of not more than four pages that must include, at a minimum, a summary of proposed activities that are expected to generate data, a summary of the types of data expected to be generated by the identified activities, a plan for storage and maintenance of the data expected to be generated by the identified activities, and a plan describing whether and how data generated by the identified activities will be reviewed and made available to the public. As long as the DMP meets these NIST requirements, it may take the form specified by the applicant's institution or some other entity (e.g., the National Science Foundation<sup>6</sup> or the National Institutes of Health<sup>7</sup>).

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<sup>4</sup> [https://www.nist.gov/system/files/documents/2018/06/19/final\\_p\\_5700.pdf](https://www.nist.gov/system/files/documents/2018/06/19/final_p_5700.pdf)

<sup>5</sup> [https://www.nist.gov/system/files/documents/2019/11/08/final\\_o\\_5701\\_ver\\_2.pdf](https://www.nist.gov/system/files/documents/2019/11/08/final_o_5701_ver_2.pdf)

<sup>6</sup> <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>

<sup>7</sup> [http://grants.nih.gov/grants/policy/data\\_sharing/data\\_sharing\\_guidance.htm](http://grants.nih.gov/grants/policy/data_sharing/data_sharing_guidance.htm)

All applications for activities that will generate scientific data using NIST funding are required to adhere to a DMP or explain why data sharing and/or preservation are not within the scope of the project.

For the purposes of the DMP, NIST adopted the definition of “research data” at [2 C.F.R. § 200.315\(e\)\(3\)](#).

Reasonable costs for data preservation and access may be included in the application.

This section will be evaluated in accordance with the Project Execution evaluation criteria (see Section V.2.b.(1).(b) of this NOFO).

### **(12) Subaward Budget Form**

The Research & Related Subaward Budget Attachment Form is required if sub-recipients and contractors are included in the application budget.

Instructions for completing subaward budget forms are available by visiting the [R&R Family Section](#) of the Grants.gov [Forms Repository](#) and scrolling down to the R & R Subaward Budget Attachment(s) Form and selecting “Instructions.”

### **(13) Current and Pending Support Form**

Any application that includes investigators, researchers, and key personnel must identify all sources of current and potential funding, including this proposal. Any current project support (e.g. Federal, state, local, public or private foundations, etc.) must be listed on this form. The proposed project and all other projects or activities requiring a portion of time of the Principal Investigator (PI), co-PI, and key personnel must be included, even if no salary support is received. The total award amount for the entire award period covered, including indirect costs, must be shown as well as the number of person-months per year to be devoted to the project, regardless of the source of support. Similar information must be provided for all proposals already submitted or that are being submitted concurrently to other potential funders.

Applicants must complete the Current and Pending Support Form, using multiple forms as necessary to account for all activity for each individual identified in the PI, co-PI and key personnel roles. A separate form should be used for each identified individual.

Applicants must download the [Current and Pending Support Form](#) from the NIST website. Reference the guidance provided as it contains information to assist with accurately completing the form.

**b. Attachment of Required Documents**

Items IV.3.a.(1) through IV.3.a.(5) above are part of the standard application package in Grants.gov and can be completed through the download application process.

Item IV.3.a.(6), the SF-LLL, Disclosure of Lobbying Activities form, is an optional application form which is part of the standard application package in Grants.gov. If item IV.3.a.(6), the SF-LLL, Disclosure of Lobbying Activities form is applicable to this proposal, attach it to field 18 of the SF-424 (R&R), Application for Federal Assistance.

Item IV.3.a.(7), the Project Narrative, should be attached to field 8 (Project Narrative) of the Research and Related Other Project Information form by clicking on "Add Attachment".

Item IV.3.a.(8), the Budget Narrative and Justification, should be attached to field L (Budget Justification) of the Research and Related Budget (Total Fed + Total Non-Fed) form by clicking on "Add Attachment".

Items IV.3.a.(9), the Indirect Cost Rate Agreement; IV.3.a.(10), Letters of Commitment; and IV.3.a.(11), the Data Management Plan, must be completed and attached by clicking on "Add Attachments" found in item 12 (Other Attachments) of the Research and Related Other Project Information form.

Item IV.3.a.(12), the Subaward Budget Form(s), if applicable to the submission, should be attached to the Research & Related Subaward Budget (Total Fed + Non-Fed) Attachment(s) Form in the application package.

Item IV.3.a.(13), the Current and Pending Support Form, multiple forms as necessary to account for all activity for each individual identified in the PI, co-PI and key personnel roles. A separate form should be used for each identified individual.

Following these directions will create zip files which permit transmittal of the documents electronically via Grants.gov.

Applicants should carefully follow specific Grants.gov instructions at [www.grants.gov](http://www.grants.gov) to ensure the attachments will be accepted by the Grants.gov system. A receipt from Grants.gov indicates only that an application was transferred to a system. It does not provide details concerning whether all attachments (or how many attachments) transferred successfully. Applicants using Grants.gov will receive a series of e-mail messages over a period of up to

two business days before learning whether a Federal agency's electronic system has received its application.

Applicants are strongly advised to use Grants.gov's "Download Submitted Forms and Applications" option to check that their application's required attachments were contained in their submission.

After submitting the application, check the status of your application here: [check application status](#).

If any, or all, of the required attachments are absent from the submission, follow the attachment directions found above, resubmit the application, and check again for the presence of the required attachments.

If the directions found at [the Grants.gov help page](#) are not effective, please contact the Grants.gov Help Desk immediately. If calling from within the United States or from a U.S. territory, please call 800-518-4726. If calling from a place outside the United States or a U.S. territory, please call 606-545-5035. E-mails should be addressed to [support@grants.gov](mailto:support@grants.gov). Assistance from the Grants.gov Help Desk will be available around the clock every day, with the exception of Federal holidays. Help Desk service will resume at 7:00 a.m. Eastern Time the day after Federal holidays.

Applicants can track their submission in the Grants.gov system by following the procedures at the Grants.gov site (<http://go.usa.gov/cjamz>). It can take up to two business days for an application to fully move through the Grants.gov system to NIST.

NIST uses the Tracking Numbers assigned by Grants.gov and does not issue Agency Tracking Numbers.

### **c. Application Format**

#### **(1) Paper, E-mail and facsimile (fax) submissions**

Will not be accepted.

#### **(2) Font**

Easy to read font (12-point minimum). Smaller type may be used in figures, margins, and tables, but must be clearly legible.

#### **(3) Figures, Graphs, Images, and Pictures**

Should be of a size that is easily readable or viewable, may be in any orientation, and will count towards the page limits detailed below.

#### **(4) Page Limits**

Page limits for the Pre-application Narrative and Project Narrative are specified in the tables below. Unless otherwise specified, page limits do not apply to other required documents submitted in response to this NOFO, however these documents, e.g. resumes, must not contain any supplemental information directly supporting the pre-application and project narratives.

##### **(a) Pre-Applications**

<b>Section</b>	<b>Page Limit</b>	<b>Required or Optional</b>
Pre-Application Narrative (including any graphs, charts, or other data)	5	Required

##### **(b) Full Application**

<b>Section</b>	<b>Page Limit</b>	<b>Required or Optional</b>
Cover Page	1	Required
Table of Contents	1	Required
Project Description	15	Required
Project Execution	5	Required
Qualifications	5	Required

#### **(5) Page layout**

The Project Narrative must be in portrait orientation.

#### **(6) Page size**

21.6 centimeters by 27.9 centimeters (8 ½ inches by 11 inches).

#### **(7) Application Language**

All documents must be in English, including but not limited to the initial application, any additional documents submitted in response to a NIST request, all reports, and any correspondence with NIST.

#### **d. Application Replacement Pages**

Applicants may not submit replacement pages and/or missing documents once an application has been submitted. Revisions can only be made by submitting a complete application to Grants.gov before the submission deadline.

**e. Certifications Regarding Federal Felony and Federal Criminal Tax Convictions, Unpaid Federal Tax Assessments and Delinquent Federal Tax Returns**

In accordance with Federal appropriations law, an authorized representative of the selected applicant(s) may be required to provide certain pre-award certifications regarding federal felony and federal criminal tax convictions, unpaid federal tax assessments, and delinquent federal tax returns.

**4. Unique Entity Identifier and System for Award Management (SAM)**

Pursuant to 2 C.F.R. part 25, applicants and recipients are required to: (i) be registered in SAM before submitting its application; (ii) provide a valid unique entity identifier in its application; and (iii) continue to maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by a Federal awarding agency, unless otherwise excepted from these requirements pursuant to 2 C.F.R. § 25.110. NIST will not make a Federal award to an applicant until the applicant has complied with all applicable unique entity identifier and SAM requirements and, if an applicant has not fully complied with the requirements by the time that NIST is ready to make a Federal award pursuant to this NOFO, NIST may determine that the applicant is not qualified to receive a Federal award and use that determination as a basis for making a Federal award to another applicant.

**5. Submission Dates and Times**

Pre-Applications must be received at grants.gov no later than 11:59 p.m. Eastern Time, Monday, December 15, 2019. Full-Applications must be received at grants.gov no later than 11:59 p.m. Eastern Time, Thursday, August 20, 2020. Applications received after this deadline will not be reviewed or considered. Paper applications will not be accepted.

**Applicants should be aware, and factor in their application submission planning, that the Grants.gov system is expected to be closed for routine maintenance at the following times:**

From 12:01 Eastern Time Saturday	To 6:00 a.m. Eastern Time Monday
April 18, 2020	April 20, 2020
May 16, 2020	May 18, 2020
June 20, 2020	June 22, 2020
July 18, 2020	July 20, 2020
August 15, 2020	August 17, 2020

Applications cannot be submitted when Grants.gov is closed.

## **6. Intergovernmental Review**

Applications under this NOFO are not subject to Executive Order 12372.

## **7. Funding Restrictions**

Profit or fee is not an allowable cost.

## **8. How to Submit**

Applications must be submitted via [grants.gov](https://grants.gov).

### **a. Instructions on Applying**

Instructions on applying and other resources for applicants, including important FAQs, may be found under the “Applicants” tab on [grants.gov](https://grants.gov).

Applicants are strongly encouraged to start early and not wait until the approaching due date before logging on and attempting to submit an application through Grants.gov. Applicants must be registered on Grants.gov registration before they can apply. The registration process typically takes three (3) to five (5) business days, but applicants should err on the side of caution and budget two (2) weeks if they do not have a current, active Grants.gov registration. Applicants must have a unique entity identifier number (formerly DUNS) and also be currently registered in the U.S. Government’s [System for Award Management](#) (See *also* Section IV.4 of this NOFO).

Only authorized individual(s) will be able to submit an application, and the system may need time to process a submitted application. The application must be both received *and* validated by Grants.gov. Applicants will receive a series of e-mail messages over a period of up to two business days before learning whether a Federal agency’s electronic system has received its application. Closely following the detailed information in these subcategories will increase the likelihood of acceptance of the application by the Federal agency’s electronic system. The application is “received” when Grants.gov provides the applicant a confirmation of receipt and an application tracking number. If an applicant does not see this confirmation and tracking number, the application has not been received.

Note that a receipt from grants.gov indicating that an application has been received does not provide information about whether specific attachments have been received. Applicants should consult the “Attachments” section of the Applicant FAQs to help ensure their attachments are received.

After the application has been received, it must still be validated. During this process, it may be “validated” or “rejected with errors.” To know whether the

application was rejected with errors and the reasons why, the applicant must log in to Grants.gov, select “Applicants” from the top navigation, and select “Track my application” from the drop-down list. If the status is “rejected with errors,” the applicant may still seek to correct the errors and resubmit your application before the deadline. If the applicant does not correct the errors, the application will not be forwarded to NIST by Grants.gov.

Applicants should save and print the proof of submission they receive from Grants.gov

#### **b. Help**

If applicants encounter problems while using Grants.gov, the applicant is advised to print any error message(s) received and contact Grants.gov Applicant Support directly for immediate assistance either by e-mail ([support@grants.gov](mailto:support@grants.gov)) or phone (800-518-4726 with U.S; +1-606-545-5035 outside U.S.). Applicant Support is available 24 hours every day, except for U.S. Federal holidays after which it will resume at 7:00 a.m. Eastern Time the following day.

#### **9. Amendments**

Any amendments to this NOFO will be announced through Grants.gov. Applicants may sign up on Grants.gov to receive amendments by e-mail.

### **V. Application Review Information**

Proposals, reports, documents and other information related to pre-applications submitted to NIST and/or relating to financial assistance awards issued by NIST will be reviewed and considered by Federal employees, Federal agents and contractors, and/or by non-Federal personnel who have entered into conflict of interest and confidentiality agreements covering such information, when applicable.

#### **1. Evaluation Criteria, Review and Selection Process – Pre-applications**

##### **a. Initial Screening of Pre-applications**

Pre-applications received by the deadline will be reviewed to determine eligibility, completeness, and responsiveness to this NOFO and to the scope of the stated program objectives (see Section I of this NOFO). Pre-applications determined to be ineligible, incomplete, and/or nonresponsive may be eliminated from further review. However, NIST, in its sole discretion, may continue the review process for a Pre-application that is missing non-substantive information, the absence of which may easily be rectified during the review process.

## **b. Evaluation Criteria, Review of Eligible Pre-applications, and Invitation to Submit Full Applications**

Pre-applications that are determined to be eligible, complete, and responsive will be reviewed by an Evaluation Panel according to the criteria listed below:

- (1) The likelihood that the proposed approach will meet the goals of this NOFO and have the desired impact.
- (2) The relevance and extent of the applicant's qualifications, experience, and capabilities as it applies to executing prize competitions or technology demonstrations similar in magnitude, complexity, and risk.

The Evaluation Panel will be composed of three (3) or more independent, objective Federal employees with relevant professional and technical expertise, who are knowledgeable in the subject matter of this NOFO. The Evaluation Panel members will review the Pre-applications but will not use specific numerical weights. The Evaluation Panel members will discuss their individual reviews and conduct a final “yes or no” vote based on the evaluation criteria and the following standard: “Whether the Pre-Application provides sufficient evidence that the proposed project and applicant have a reasonable chance of meeting the Goal(s) and objectives identified in this NOFO.” Applicants whose Pre-Applications receive “yes” votes from a majority of the Evaluation Panel will be invited to submit a Full Application.

## **2. Evaluation Criteria, Review and Selection Process – Full Applications**

### **a. Initial Screening of Full Applications**

Full applications received by the deadline will be reviewed to determine eligibility, completeness, and responsiveness to this NOFO and to the scope of the stated program objectives (see Section I of this NOFO). Full applications determined to be ineligible, incomplete, and/or nonresponsive may be eliminated from further review. However, NIST, in its sole discretion, may continue the review process for a Full Application that is missing non-substantive information, the absence of which may easily be rectified during the review process.

NIST will only review Full Applications submitted by applicants who were invited to submit Full Applications at the conclusion of the Pre-application stage. Any Full Application received in the absence of an invitation by NIST will be deemed ineligible and eliminated from the competition without further review.

### **b. Evaluation Criteria and Review of Eligible Full Applications**

All Full Applications that are determined to be eligible, complete, and responsive will proceed for full review in accordance with the review and selection processes set forth below.

## **(1) Merit Review**

At least three (3) objective reviewers, who may be Federal employees or non-Federal personnel, with appropriate professional and technical expertise relating to the topics covered in this NOFO, will evaluate and score each eligible, complete, and responsive Full Application based on the evaluation criteria below.

### **(a) Technical Merit**

Reviewers will evaluate the:

- (i) Extent to which the proposal demonstrates a clear understanding of this NOFO.
- (ii) Extent to which the approach is cohesive, comprehensive, innovative, feasible, and likely to achieve successful administration of a prize competition that will meet the program goals described in this NOFO.
- (iii) Extent to which the approach to collaborating with NIST and subject matter experts from both industry/academia and public safety will result in a successful prize competition.
- (iv) Likelihood that the proposal will result in significant outcomes and impacts, both short-term and long-term, for the PSIAP, competitors, public safety, and the R&D community.

### **(b) Project Execution**

Reviewers will evaluate the:

- (i) Extent to which the project approach is clearly described and supports the objectives of this NOFO.
- (ii) Feasibility, sufficiency, clarity, and appropriateness of the schedule, deliverables, milestones, risk management, and data management plan for achieving the goals of the prize competition.
- (iii) Extent to which the budget narrative reflects a clear understanding of this NOFO, and the appropriateness and cost effectiveness of the budget with respect to executing the prize competition – in particular, the ratio of prize awards to administrative costs.

### **(c) Qualifications**

Reviewers will evaluate the:

- (i) Relevance and sufficiency of the qualifications of the individuals, teams, and organizations that will be executing or supporting the proposed prize competition, and the likelihood that they will be able to fulfill the objectives of this NOFO.

- (ii) Applicant's access to the necessary equipment, facilities, and resources to accomplish the proposed objectives.
- (iii) Applicant's demonstrated success executing prize competitions or technology demonstrations similar in scope and magnitude to the proposed project, including any examples of working with a diverse cross-section of experts from across academia, industry, and the public sector to create a clear and concise plan that achieved high-reaching goals.
- (iv) Level of participation by project team members as evidenced by their integration in the project execution and letters of commitment.

Total scores will be calculated out of a maximum of 100 points according to the individual points and weights associated with each criterion in the table below.

Criteria	Basis	Points	Weight	Total Points / 100
Technical Merit	Project Description	10	5	50
Project Execution	Project Execution, Budget Narrative	10	3	30
Qualifications	Qualifications	10	2	20

While every application will have at least three (3) reviewers, applications may have more than three (3) reviewers if specialized expertise is needed to evaluate an application. During the review process, the reviewers may discuss the applications with each other, but scores will be determined on an individual basis. Reviewers may consult as a panel with Federal or non-Federal subject-matter experts to seek clarification or explanation of specific issues identified during the initial review process. Applications will be ranked by averaging the scores of all reviewers for each application.

## (2) Evaluation Panel

Following the merit review, an evaluation panel consisting of NIST staff and/or other Federal employees with the appropriate technical expertise will conduct a panel review of the ranked applications. The evaluation panel may contact applicants via e-mail to clarify contents of an application. The evaluation panel will provide a final adjectival rating and written evaluation of the applications to the Selecting Official for further deliberation, considering:

- All application materials.
- Results of the merit reviewers' evaluations, including scores and written assessments.
- Any relevant publicly available information.
- Any clarifying information obtained from the applicants.

The adjectival ratings are:

Outstanding  
Very Good  
Average  
Deficient

For decision-making purposes, applications receiving the same adjectival rating will be considered to have an equivalent ranking, although their review scores may not necessarily be the same.

### **(3) Selection**

The Selecting Official, Chief of the PSCR Division, will make the final award recommendation to the NIST Grants Officer. The Selecting Official shall generally select and recommend the most meritorious application for an award based on the final adjectival ratings prepared by the Evaluation Panel and one or more of the selection factors below. The Selecting Official also retains the discretion to select and recommend applications out of order (i.e. from a lower adjectival category) based on one or more of the following selection factors:

- (a)** Results of the merit reviewers' evaluations.
- (b)** The availability of funding.
- (c)** The extent to which matching funds and/or in-kind contributions (voluntary committed cost share) would help ensure potential success of the project.
- (d)** Whether the project duplicates other projects funded by NIST or other Federal agencies.
- (e)** Alignment with the NOFO objectives.

NIST reserves the right to negotiate the budget costs with the applicants that have been selected to receive awards, which may include requesting that the applicant remove certain costs. Additionally, NIST may request that the applicant modify objectives or work plans and provide supplemental information. NIST also reserves the right to reject an application where information is uncovered that raises a reasonable doubt as to the responsibility of the applicant. NIST may select some, all, or none of the applications, or part(s) of any application. In some cases, NIST may ask applicants to consider combining projects. The final approval of selected applications and issuance of awards will be by the NIST Grants Officer. The award decisions of the NIST Grants Officer are final.

### **3. Federal Awarding Agency Review of Risk Posed by Applicants.**

After applications are proposed for funding by the Selecting Official, the NIST Grants Management Division (GMD) performs pre-award risk assessments in accordance with 2 C.F.R. § 200.205, which may include a review of the financial stability of an applicant, the quality of the applicant's management systems, the history of performance, and/or the applicant's ability to effectively implement statutory, regulatory, or other requirements imposed on non-Federal entities.

In addition, prior to making an award where the total Federal share is expected to exceed the simplified acquisition threshold (currently \$250,000), NIST GMD will review and consider the publicly available information about that applicant in the Federal Awardee Performance and Integrity Information System (FAPIIS). An applicant may, at its discretion, review and comment on information about itself previously entered into FAPIIS by a Federal awarding agency. As part of its review of risk posed by applicants, NIST GMD will consider any comments made by the applicant in FAPIIS in making its determination about the applicant's integrity, business ethics, and record of performance under Federal awards. Upon completion of the pre-award risk assessment, the Grants Officer will make a responsibility determination concerning whether the applicant is qualified to receive the subject award and, if so, whether appropriate special conditions that correspond to the degree of risk posed by the applicant should be applied to an award.

### **4. Anticipated Announcement and Award Dates**

Review of Applications, selection of successful applicants, and award processing is expected to be completed by September 2020. The earliest start date for awards under this NOFO is expected to be November 2020.

### **5. Additional Information**

#### **a. Safety**

Safety is a top priority at NIST. Employees and affiliates of award recipients who conduct project work at NIST will be expected to be safety-conscious, to attend NIST safety training, and to comply with all NIST safety policies and procedures, and with all applicable terms of their guest research agreement.

#### **b. Notification to Unsuccessful Applicants**

Unsuccessful applicants will be notified by e-mail and will have the option to receive a debriefing after the opportunity is officially closed. Applicants must submit their request within 10 business days of the email notification to receive a debrief from the program office. The program office will then work with the unsuccessful applicant in arranging a date and time of the debrief.

### **c. Retention of Unsuccessful Applications**

Copies of each unsuccessful application will be retained in accordance with the [General Record Schedule 1.2/021](#).

## **VI. Federal Award Administration Information**

### **1. Federal Award Notices**

Successful applicants will receive an award package from the NIST Grants Officer.

### **2. Administrative and National Policy Requirements**

#### **a. Uniform Administrative Requirements, Cost Principles and Audit Requirements**

Through 2. C.F.R. § 1327.101, the Department of Commerce adopted the Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards at 2 C.F.R. Part 200, which apply to awards made pursuant to this NOFO. Refer to <http://go.usa.gov/SBYh> and <http://go.usa.gov/SBq4>.

#### **b. Department of Commerce Financial Assistance Standard Terms and Conditions**

The Department of Commerce will apply the [Financial Assistance Standard Terms and Conditions](#) in effect on the date of award to any award made under this NOFO. The current version is dated April 30, 2019. Refer to Section VII of this NOFO, Federal Awarding Agency Contacts, Grant Rules and Regulations, if you need more information.

#### **c. Pre-Award Notification Requirements**

The Department of Commerce will apply the Pre-Award Notification Requirements for Grants and Cooperative Agreements dated December 30, 2014 (79 FR 78390), accessible at <http://go.usa.gov/hKkR>, to any award made under this NOFO. Refer to Section VII of this NOFO, Federal Awarding Agency Contacts, Grant Rules and Regulations, if you need more information.

#### **d. Funding Availability and Limitation of Liability**

Funding for the program listed in this NOFO is contingent upon the availability of appropriations. NIST or the Department of Commerce will not be responsible for application preparation costs, including but not limited to if this program fails to receive funding or is cancelled because of agency priorities. Publication of this NOFO does not oblige NIST or the Department of Commerce to award any specific project or to obligate any available funds.

#### **e. Collaborations with NIST Employees**

All applications should include a description of any work proposed to be performed by an entity other than the applicant, and the cost of such work

should ordinarily be included in the budget. If an applicant proposes collaboration with NIST, the statement of work should include a statement of this intention, a description of the collaboration, and prominently identify the NIST employee(s) involved, if known. Any collaboration by a NIST employee must be approved by appropriate NIST management and is at the sole discretion of NIST. Prior to beginning the merit review process, NIST will verify the approval of the proposed collaboration. Any unapproved collaboration will be stricken from the application prior to the merit review. Any collaboration with an identified NIST employee that is approved by appropriate NIST management will not make an application more or less favorable in the competitive process.

**f. Use of NIST Intellectual Property**

If the applicant anticipates using any NIST-owned intellectual property to carry out the work proposed, the applicant should identify such intellectual property. This information will be used to ensure that no NIST employee involved in the development of the intellectual property will participate in the review process for that competition. In addition, if the applicant intends to use NIST-owned intellectual property, the applicant must comply with all statutes and regulations governing the licensing of Federal government patents and inventions, described in 35 U.S.C. §§ 200-212, 37 C.F.R. Part 401, 2 C.F.R. § 200.315, and in Section C.03 of the [Department of Commerce Financial Assistance Standard Terms and Conditions](#) (April 30, 2019). Questions about these requirements may be directed to the Chief Counsel for NIST, (301) 975-2803, [nistcounsel@nist.gov](mailto:nistcounsel@nist.gov).

Any use of NIST-owned intellectual property by an applicant is at the sole discretion of NIST and will be negotiated on a case-by-case basis if a project is deemed meritorious. The applicant should indicate within the statement of work whether it already has a license to use such intellectual property or whether it intends to seek one.

If any inventions made in whole or in part by a NIST employee arise during an award made pursuant to this NOFO, the United States government may retain its ownership rights in any such invention. Licensing or other disposition of NIST's rights in such inventions will be determined by NIST.

**g. Research Activities Involving Human Subjects, Human Tissue, Data or Recordings Involving Human Subjects Including Software Testing.**

Any application that includes research activities involving human subjects, human tissue/cells, or data or recordings from or about human subjects, must satisfy the requirements of the Common Rule for the Protection of Human Subjects (“Common Rule”), codified for the Department of Commerce at 15 C.F.R. Part 27. Research activities involving human subjects that fall within one or more of the classes of vulnerable subjects found in 45 C.F.R. Part 46,

Subparts B, C and D must satisfy the requirements of the applicable subpart(s). In addition, any such application that includes research activities on these subjects must be in compliance with all applicable statutory requirements imposed upon the Department of Health and Human Services (DHHS) and other Federal agencies, all regulations, policies and guidance adopted by DHHS, the Food and Drug Administration (FDA), and other Federal agencies on these topics, and all Executive Orders and Presidential statements of policy on applicable topics. (Regulatory Resources: <http://www.hhs.gov/ohrp/humansubjects/index.html> which includes links to FDA regulations, but may not include all applicable regulations and policies).

NIST uses the following Common Rule definitions for research and human subjects research:

*Research:* A systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which meet this definition constitute research for purposes of this policy, whether or not they are conducted or supported under a program which is considered research for other purposes. For example, some demonstration and service programs may include research activities.

*Human Subject:* A living individual about whom an investigator (whether professional or student) conducting research: (i) Obtains information or biospecimens through intervention or interaction with the individual, and uses, studies, or analyzes the information or biospecimens; or (ii) Obtains, uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens.

- (1) *Intervention* includes both physical procedures by which information or biospecimens are gathered and manipulations of the subject or the subject's environment that are performed for research purposes.
- (2) *Interaction* includes communication or interpersonal contact between investigator and subject.
- (3) *Private information* includes information about behavior that occurs in a context in which an individual can reasonably expect that no observation or recording is taking place, and information which has been provided for specific purposes by an individual and that the individual can reasonably expect will not be made public (for example, a medical record). Private information must be individually identifiable (i.e., the identity of the subject is or may readily be ascertained by the investigator associated with the information) in order for obtaining the information to constitute research involving human subjects.

- (4) *Identifiable biospecimen* includes a biospecimen for which the identity of the subject is or may readily be ascertained by the investigator or associated with the biospecimen.

See 15 C.F.R. § 27.102 (Definitions).

**(1) Requirement for Federalwide Assurance.** If the application is accepted for [or awarded] funding, organizations that have an Institutional Review Board (IRB) are required to follow the procedures of their organization for approval of exempt and non-exempt research activities that involve human subjects. Both domestic and foreign organizations performing exempt research requiring limited IRB review or non-exempt research activities involving human subjects will be required to have protocols approved by a cognizant, active IRB currently registered with the Office for Human Research Protections (OHRP) within the DHHS that is linked to the engaged organizations. All engaged organizations must possess a currently valid Federalwide Assurance (FWA) on file from OHRP. Information regarding how to apply for an FWA and register an IRB with OHRP can be found at <http://www.hhs.gov/ohrp/assurances/index.html>. See 15 C.F.R. § 27.103. NIST relies only on OHRP-issued FWAs and IRB Registrations for both domestic and foreign organizations for NIST supported research involving human subjects. NIST will not issue its own FWAs or IRB Registrations for domestic or foreign organizations.

**(2) Administrative Review.** The NIST Research Protections Office (RPO) reserves the right to conduct an administrative review<sup>8</sup> of all applications that potentially include research involving human subjects and were approved by an authorized non-NIST institutional entity (an IRB or entity analogous to the NIST RPO) under 15 C.F.R. § 27.112 (Review by Institution). If the NIST RPO determines that an application includes research activities that potentially involve human subjects, the applicant will be required to provide additional information to NIST for review and approval. The documents required for funded proposals are

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<sup>8</sup> Conducting an “administrative review” means that the NIST RPO will review and verify the performing institution’s determination for research not involving human subjects or exempt human subjects research. In addition, for exempt research requiring limited IRB review and non-exempt human subjects research, the NIST RPO will review and confirm that the research and performing institution(s) are in compliance with 15 C.F.R. Part 27, which means RPO will 1) confirm the engaged institution(s) possess, or are covered under a Federalwide Assurance, 2) review the research study documentation submitted to the IRB and verify the IRB’s determination of level of risk and approval of the study for compliance with 15 C.F.R. Part 27, 3) review and verify IRB-approved substantive changes to an approved research study before the changes are implemented, and 4) review and verify that the IRB conducts a continuing review at least annually, as appropriate.

listed in each section below. Most documents will need to be produced during the proposal review process; however, the Grants Officer may allow final versions of certain required documents to be produced at an appropriate designated time post-award. Research involving human subjects may not start until the NIST Grants Officer issues an award explicitly authorizing such research. In addition, all amendments, modifications, or changes to approved research and requests for continuing review and closure will be reviewed by the NIST RPO.

**(3) Required documents for proposal review. All applications involving human subjects research must clearly indicate, by separable task, all research activities believed to be exempt or non-exempt research involving human subjects, the expected institution(s) where the research activities involving human subjects may be conducted, and the institution(s) expected to be engaged in the research activities.**

**(a) Not research determination.** If an activity/task involves human subjects as defined in the Common Rule, but the applicant participant(s) indicates to NIST that the activity/task is not research as defined in the Common Rule, the following information may be requested for that activity/task:

- (i) Justification, including the rationale for the determination and such additional documentation as may be deemed necessary by NIST to review and/or support a determination that the activity/task in the application is not research as defined in the Common Rule.
- (ii) If the applicant participant(s) used a cognizant IRB that provided a determination that the activity/task is not research, a copy of that determination documentation must be provided to NIST. The applicant participant(s) is not required to establish a relationship with a cognizant IRB if they do not have one.

NIST will review the information submitted and may coordinate further with the applicant before determining whether the activity/task will be defined as research under the Common Rule in the applicable NIST financial assistance program or project.

**(b) Research not involving human subjects.** If an activity/task is determined to be research and involves human subjects, but is determined to be *not human subjects research* (or *research not involving human subjects*) under the Common Rule, the following information may be requested for that activity/task:

- (i) Justification, including the rationale for the determination and such additional documentation as may be deemed necessary by NIST to review and/or support a determination that the activity/task in the application is not research as defined in the Common Rule.
- (ii) If the applicant participant(s) used a cognizant IRB that provided a determination that the activity/task is research not involving human subjects, a copy of that determination documentation must be provided to NIST. The applicant participant(s) is not required to establish a relationship with a cognizant IRB if they do not have one.

**(c) Exempt research determination with no IRB.** If the application appears to NIST to include exempt research activities that do not meet the criteria for requiring a limited IRB review, and the performer of the activity or the supplier and/or the receiver of the information or biospecimens from human subjects **does not** have a cognizant IRB to provide an exemption determination, the following information may be requested during the review process so that NIST can evaluate whether an exemption under the Common Rule applies (see 15 C.F.R. § 27.104(b) and (d)):

- (i) The name(s) of the institution(s) where the exempt research will be conducted.
- (ii) The name(s) of the institution(s) providing the biospecimens or information from human subjects.
- (iii) A copy of the protocol for the research to be conducted; and/or the biospecimens or information from human subjects to be collected/provided, not pre-existing samples (*i.e.*, will proposed research collect only information without personal identifiable information, will biospecimens or information be de-identified and when and by whom was the de-identification performed, how were the materials or data originally collected).
- (iv) For pre-existing biospecimens or information from human subjects, provide copies of the consent forms used for collection and a description of how the biospecimens or information were originally collected and stripped of personal identifiers. If copies of consent forms are not available, explain.
- (v) Any additional clarifying documentation that NIST may deem necessary in order to make a determination whether the activity/task or use of biospecimens or information from human subjects is exempt under the Common Rule.

**(d) Research review with an IRB.** If the application appears to NIST to include research activities (exempt or non-exempt) involving human

subjects, and the proposed performer of the activity has a cognizant IRB registered with OHRP, and linked to their Federalwide Assurance, the following information may be requested during the review process:

- (i) The name(s) of the institution(s) where the research will be conducted.
- (ii) The name(s) and institution(s) of the cognizant IRB(s), and the IRB registration number(s).
- (iii) The FWA number of the applicant linked to the cognizant IRB(s).
- (iv) The FWAs associated with all organizations engaged in the planned research activity/task, linked to the cognizant IRB.
- (v) If the IRB review(s) is pending, the estimated start date for research involving human subjects.
- (vi) The IRB approval date (if currently approved for exempt or non-exempt research).
- (vii) If any of the engaged organizations has applied for or will apply for an FWA or IRB registration, those details should be clearly provided for each engaged organization.

If the application includes research activities involving human subjects to be performed in the first year of an award, additional documentation may be requested by NIST during pre-award review for those performers, and may include the following for those research activities:

- (i) A copy of each applicable final IRB-approved protocol.
- (ii) A signed and dated approval letter from the cognizant IRB(s) that includes the name of the institution housing each applicable IRB, provides the start and end dates for the approval of the research activities, and any IRB-required interim reporting or continuing review requirements.
- (iii) A copy of any IRB-required application information, such as documentation of approval of special clearances (*i.e.*, biohazard, HIPAA, etc.) conflict-of-interest letters, or special training requirements.
- (iv) A brief description of which portions of the IRB submitted protocol are specifically included in the application submitted to NIST, if the protocol includes tasks not included in the application, or if the protocol is supported by multiple funding sources. For protocols with multiple funding sources, NIST will not approve the study without a non-duplication-of-funding letter indicating that no other federal funds will be used to support the tasks proposed under the proposed research or ongoing project.

- (v) If a new protocol will only be submitted to an IRB if an award from NIST is issued, a draft of the proposed protocol.
- (vi) Any additional clarifying documentation that NIST may request during the review process to perform the NIST administrative review of research involving human subjects. (See 15 C.F.R. § 27.112 (Review by Institution)).

This clause reflects the existing NIST policy and requirements for Research Involving Human Subjects. Should the policy be revised prior to award, a clause reflecting the policy current at time of award may be incorporated into the award.

If the policy is revised after award, a clause reflecting the updated policy may be incorporated into the award.

For more information regarding research projects involving human subjects, contact Anne Andrews, Director, NIST Research Protections Office (e-mail: [anne.andrews@nist.gov](mailto:anne.andrews@nist.gov); phone: (301) 975-5445).

#### **h. Research Activities Involving Live Vertebrate Animals or Pre-Existing Cell Lines/Tissues From Vertebrate Animals.**

Any application that proposes research activities involving live vertebrate animals that are to be cared for, euthanized, or used by award recipients to accomplish research goals, teaching, or testing must meet the requirements of the Animal Welfare Act (AWA) (7 U.S.C. § 2131 et seq.), and the AWA final rules (9 C.F.R. Parts 1, 2, and 3), and if appropriate, the Good Laboratory Practice for Nonclinical Laboratory Studies (21 C.F.R. Part 58). In addition, such research activities should be in compliance with the *“U.S. Government Principles for Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training”* (Principles). The Principles and guidance on these Principles are available in the National Research Council's *“Guide for the Care and Use of Laboratory Animals,”* which can be obtained from National Academy Press, 500 5<sup>th</sup> Street, N.W., Department 285, Washington, DC 20055, or as a free PDF online at <http://www.nap.edu/catalog/12910/guide-for-the-care-and-use-of-laboratory-animals-eighth>.

**(1) Administrative Review.** NIST reserves the right to conduct an administrative review<sup>9</sup> of all applications that potentially include research

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<sup>9</sup> Conducting an “administrative review” means that the NIST RPO will review and verify the performing institution's IACUC's approval of research with live vertebrate animals and confirm that the research and performing institution(s) have an appropriate assurance and are in compliance with applicable regulations. RPO will 1) confirm the engaged institution(s) possess, or are covered under an applicable assurance, 2) review the research study documentation submitted to the IACUC and verify the IACUC's determination of level of risk and approval of the study for compliance with applicable regulations,

activities that involve live vertebrate animals, or custom samples from, or field studies with live vertebrate animals. If the application includes research activities, field studies, or custom samples involving live vertebrate animals, the applicant will be required to provide additional information for review and approval. In addition, NIST will verify the applicant's determination(s) of excluded samples from vertebrate animals. The documents required for funded proposals are listed in each section below. Some may be requested for a pre-review during the proposal review process; however, the Grants Officer may allow final versions of certain required documents to be produced at an appropriate designated time post-award. If an award is issued, no research activities involving live vertebrate animals shall be initiated or costs incurred for those activities under the award until the NIST Grants Officer issues written approval. In addition, all re-approvals, amendments, modifications, changes, annual reports and closure will be reviewed by NIST.

- (2) Required documents for NIST proposal review. The applicant should clearly indicate in the application, by separable task, all research activities believed to include research involving live vertebrate animals and the institution(s) where the research activities involving live vertebrate animals may be conducted. In addition, the applicant should indicate any activity/task that involves an excluded or custom collection from vertebrate animals, or a field study with animals.

**(a) Excluded Collections from Vertebrate Animals:** The requirements for review and approval by an Institutional Animal Care and Use Committee (IACUC) do not apply to proposed research using preexisting images of animals or to research plans that do not include live animals. These regulations also do not apply to obtaining stock or pre-existing items from animal material suppliers (e.g., tissue banks), such as pre-existing cell lines and tissue samples, or from commercial food processors, where the vertebrate animal was euthanized for food purposes and not for the purpose of sample collection.

For pre-existing cell lines and tissue samples originating from vertebrate animals, NIST requires that the proposer provide documentation or the rationale for the determination that the cell line or tissue is pre-existing and not a custom collection from live vertebrate animals for an activity/task within the proposal. NIST may require additional documentation to review and/or support the determination that the cells

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3) review and verify IACUC-approved substantive changes to an approved research study before the changes are implemented, and 4) review and verify that the IACUC receives an annual report for the study and conducts an appropriate continuing review at least every three years.

and/or tissues from vertebrate animals are excluded from IACUC review.

**(b) Custom Collections Harvested from Live Vertebrate Animals:**

NIST requires documentation for obtaining custom samples from live vertebrate animals from animal material suppliers and other organizations (*i.e.*, universities, companies, and government laboratories, etc.). Custom samples include samples from animal material suppliers, such as when a catalog item indicates that the researcher is to specify the characteristics of the live vertebrate animal to be used, or how a sample is to be collected from the live vertebrate animal.

**(c) Field Studies of Animals:** Some field studies of animals may be exempt under the Animal Welfare Act from full review and approval by an animal care and use committee, as determined by each institution. Field study is defined as “... *a study conducted on free-living wild animals in their natural habitat...*”. 9 C.F.R. § 1.1. However, this term excludes any study that involves an invasive procedure or that harms or materially alters the behavior of an animal under study. Field studies, with or without invasive procedures, may also require obtaining appropriate federal or local government permits (marine mammals, endangered species, etc.). If the applicant’s institution requires review and approval by an animal care and use committee, NIST will require that documentation to be provided as described below.

**(d) For custom collections or studies with live vertebrate animals that require review and approval by an animal care and use committee the following documentation is required:**

- (i) **Requirement for Assurance.** An applicable assurance for the care and uses of the live vertebrate animal(s) to be used in the proposed research is required. NIST may request documentation to confirm an assurance, if adequate confirmation is not available through an assuring organization’s website. The cognizant IACUC where the research activity is located may hold one or more assurances applicable to the research activity that are acceptable to NIST. These four assurances are:
  - (a) Animal Welfare Assurance from the Office of Laboratory Animal Welfare (OLAW) indicated by the OLAW assurance number, *i.e.*, A-1234;
  - (b) USDA Animal Welfare Act certification indicated by the certification number, *i.e.*, 12-R-3456;

- (c) Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) indicated by providing the organization name accredited by AAALAC as listed in the AAALAC Directory of Accredited Organizations; and
  - (d) Letter of Assurance of compliance with the Animal Welfare Act, the U.S. Government Principles, and National Marine Fisheries Service (NMFS) IACUC policy that is valid for five years and provided by a NMFS Regional IACUC for activities with marine mammals or sea turtles (NMFS Policy Directive 04-112).
- (ii) **Documentation of Research Review by an IACUC:** If the applicant's application appears to include research activities, field studies, or custom sample collections involving live vertebrate animals the following information regarding review by an applicable IACUC may be requested during the application review process:
- (a) The name(s) of the institution(s) where the research involving live vertebrate animals will be conducted and/or custom samples collected.
  - (b) The assurance type and number, as applicable, for the cognizant Institutional Animal Care and Use Committee (IACUC) where the research activity is located. [For example: Animal Welfare Assurance from the Office of Laboratory Animal Welfare (OLAW) should be indicated by the OLAW assurance number, i.e. A-1234; an USDA Animal Welfare Act certification should be indicated by the certification number i.e. 12-R-3456; and an Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC) should be indicated by AAALAC.]
  - (c) The IACUC approval date for the Animal Study Protocol (ASP) (if currently approved).
  - (d) If the review by the cognizant IACUC is pending, the estimated start date for research involving vertebrate animals.
  - (e) If any assurances or IACUCs need to be obtained or established, that should be clearly stated.
  - (f) If any special permits are required for field studies, those details should be clearly provided for each instance, or indicated as pending.

If the application includes research activities involving vertebrate animals to be performed in the first year of an award, additional documentation may be

requested by NIST during pre-award review for those performers, and may include the following for those research activities, which may also include field studies, custom sample collections involving live vertebrate animals:

- (a) A copy of the IACUC approved ASP.
- (b) Documentation of the IACUC approval indicating the approval and expiration dates of the ASP.
- (c) If applicable, a non-duplication-of-funding letter if the ASP is funded from several sources.
- (d) If a new ASP will only be submitted to an IACUC if an award from NIST is issued, a draft of the proposed ASP may be requested.
- (e) Any additional clarifying documentation that NIST may request during review of applications to perform the NIST administrative review of research involving live vertebrate animals.

This clause reflects the existing NIST policy for Research Involving Live Vertebrate Animals. Should the policy be revised prior to award, a clause reflecting the policy current at time of award may be incorporated into the award.

If the policy is revised after award, a clause reflecting the updated policy may be incorporated into the award.

For more information regarding research projects involving live vertebrate animals, contact Linda Beth Schilling, Senior Analyst (e-mail: [linda.schilling@nist.gov](mailto:linda.schilling@nist.gov); phone: 301-975-2887).

#### **i. Collaborations Making Use of Federal Facilities**

All applications should include a description of any work proposed to be performed using Federal facilities.

If an applicant proposes use of NIST facilities, the statement of work should include a statement of this intention and a description of the facilities. Any use of NIST facilities must be approved by appropriate NIST management and is at the sole discretion of NIST. Prior to beginning the merit review process, NIST will verify the availability of the facilities and approval of the proposed usage. Any unapproved facility use will be stricken from the application prior to the merit review. Examples of some facilities that may be available for collaborations are listed on the following NIST Web site: <https://www.nist.gov/labs-major-programs/user-facilities>.

### 3. Reporting

#### a. Reporting Requirements

The following reporting requirements described in Sections A.01, Reporting Requirements, of the [Department of Commerce Standard Terms and Conditions, dated April 30, 2019](#) apply to awards in this program.

##### (1) Financial Reports

Each award recipient will be required to submit an SF-425, Federal Financial Report on a quarterly basis for the periods ending March 31, June 30, September 30, and December 31 of each year to the Federal Program Officer, NIST Grants Officer, and Grants Specialist named in the award documents. Reports will be due within 30 days after the end of the reporting period. A final financial report is due within 90 days after the end of the project period to the Federal Program Officer, NIST Grants Officer and Grants Specialist named in the award documents.

##### (2) Research Performance Progress Report (RPPR)

Each award recipient will be required to submit a [RPPR](#) to the Federal Program Officer, NIST Grants Officer and Grants Specialist named in the award documents on a quarterly basis for the periods ending March 31, June 30, September 30, and December 31 of each year. Reports will be due within 30 days after the end of the reporting period. The RPPR shall conform to the requirements in 2 C.F.R. § [200.328](#)) and [Department of Commerce Financial Assistance Standard Terms and Conditions](#), Section A.01.

A final RPPR shall be submitted within 90 days after the expiration date of the award, and publication citation information as well as links to publicly available data shall be submitted as soon as they become available.

If a recipient's Data Management Plan (DMP) has changed since their last submission of a technical progress report, the recipient must include their revised DMP in the next technical progress report following the revision to the DMP. The revised DMP must include all the requirements described in Section IV.3.a.(11) of this NOFO.

##### (3) Patent and Property Reports

From time to time, and in accordance with the Uniform Administrative Requirements (see Section VI.2.a. of this NOFO) and other terms and conditions governing the award, the recipient may need to submit property and patent reports.

##### (4) Recipient Integrity and Performance Matters

In accordance with section 872 of Public Law 110-417 (as amended; see 41 U.S.C. 2313), if the total value of a recipient's currently active grants, cooperative agreements, and procurement contracts from all Federal awarding agencies exceeds \$10,000,000 for any period of time during the period of performance of an award made under this NOFO, then the recipient shall be subject to the requirements specified in Appendix XII to 2 C.F.R. Part 200, <http://go.usa.gov/cTBwC>, for maintaining the currency of information reported to SAM that is made available in FAPIIS about certain civil, criminal, or administrative proceedings involving the recipient.

#### **b. Audit Requirements**

The Department of Commerce Financial Assistance Standard Terms and Conditions, Section D.01.b., and 2 C.F.R. Part 200 Subpart F, adopted by the Department of Commerce through 2 C.F.R. § 1327.101, require any non-Federal entity (e.g., including non-profit institutions of higher education and non-profit organizations) that expends Federal awards of \$750,000 or more in the recipient's fiscal year to conduct a single or program-specific audit in accordance with the requirements set out in the Subpart. Additionally, unless otherwise specified in the terms and conditions of the award, entities that are not subject to Subpart F of 2 C.F.R. Part 200 (e.g., for-profit commercial entities) that expend \$750,000 or more in DOC funds during their fiscal year must submit to the Grants Officer either: (i) a financial related audit of each DOC award or subaward in accordance with Generally Accepted Government Auditing Standards; or (ii) a project specific audit for each award or subaward in accordance with the requirements contained in 2 C.F.R. § 200.507. Applicants are reminded that NIST, the Department of Commerce Office of Inspector General, or another authorized Federal agency may conduct an audit of an award at any time.

#### **c. Federal Funding Accountability and Transparency Act of 2006**

In accordance with 2 C.F.R. Part 170, all recipients of a Federal award made on or after October 1, 2010, are required to comply with reporting requirements under the Federal Funding Accountability and Transparency Act of 2006 (Public Law No. 109-282). In general, all recipients are responsible for reporting sub-awards of \$25,000 or more. In addition, recipients that meet certain criteria are responsible for reporting executive compensation. Applicants must ensure they have the necessary processes and systems in place to comply with the reporting requirements should they receive funding. Also see the Federal Register notice published September 14, 2010, at 75 FR 55663 available here <http://go.usa.gov/hKnQ>.

### **VII. Federal Awarding Agency Contacts**

Questions should be directed to the following contact persons:

Subject Area	Point of Contact
Programmatic and Technical Questions	E-mail: <a href="mailto:pscr@nist.gov">pscr@nist.gov</a> with 'FR3D' in subject line
Technical Assistance with Grants.gov Submissions	Grants.gov Phone: 800-518-4726 E-mail: <a href="mailto:support@grants.gov">support@grants.gov</a>
Grant Rules and Regulations	Scott McNichol Phone: 303-497-3444 E-mail: <a href="mailto:scott.mcnichol@nist.gov">scott.mcnichol@nist.gov</a>
Human Subjects Research	Anne Andrews Phone: 301-975-5445 E-mail: <a href="mailto:anne.andrews@nist.gov">anne.andrews@nist.gov</a>
Live Vertebrate Animals Research	Linda Beth Schilling Phone: 301-975-2887 E-mail: <a href="mailto:linda.schilling@nist.gov">linda.schilling@nist.gov</a>

## VIII. Other

### 1. **Personal and Business Information**

The applicant acknowledges and understands that information and data contained in applications for financial assistance, as well as information and data contained in financial, performance and other reports submitted by applicants, may be used by the Department of Commerce in conducting reviews and evaluations of its financial assistance programs. For this purpose, applicant information and data may be accessed, reviewed and evaluated by Department of Commerce employees, other Federal employees, Federal agents and contractors, and/or non-Federal personnel, all of whom enter into appropriate conflict of interest and confidentiality agreements covering the use of such information. As may be provided in the terms and conditions of a specific financial assistance award, applicants are expected to support program reviews and evaluations by submitting required financial and performance information and data in an accurate and timely manner, and by cooperating with Department of Commerce and external program evaluators. In accordance with 2 C.F.R. § 200.303(e), applicants are reminded that they must take reasonable measures to safeguard protected personally identifiable information and other confidential or sensitive personal or business information created or obtained in connection with a Department of Commerce financial assistance award.

In addition, Department of Commerce regulations implementing the Freedom of Information Act (FOIA), 5 U.S.C. Sec. 552, are found at 15 C.F.R. Part 4, Public Information. These regulations set forth rules for the Department regarding making requested materials, information, and records publicly available under the FOIA. Applications submitted in response to this NOFO may be subject to requests for

release under the Act. If an application contains information or data that the applicant deems to be confidential commercial information that should be exempt from disclosure under FOIA, that information should be identified, bracketed, and marked as Privileged, Confidential, Commercial or Financial Information. In accordance with 15 CFR § 4.9, the Department of Commerce will protect from disclosure confidential business information contained in financial assistance applications and other documentation provided by applicants to the extent permitted by law.

## **2. Public Website, and Frequently Asked Questions (FAQS)**

NIST has a public website (<https://www.nist.gov/ctl/pscr/psiap-first-responder-3d-indoor-tracking>) that provides a “Frequently Asked Questions” page and other information pertaining to this Funding Opportunity. Any amendments to this NOFO will be announced through Grants.gov.

NIST will host a webinar on October 24, 2019 to provide general information regarding this NOFO, offer general guidance on preparing applications, and answer questions. There is no cost to attend the webinar, but participants [must register in advance](#). Participation in the webinar is not required and will not be considered in the application review and selection process.

General questions about this opportunity including eligibility requirements, the review and selection process, and the general characteristics of a competitive application may be addressed during the webinar or by e-mail to [pscr@nist.gov](mailto:pscr@nist.gov) with ‘FR3D’ in the subject line. Questions submitted to NIST during the webinar or by e-mail may be posted on [pscr.gov](http://pscr.gov). Discussions about specific project ideas will not be permitted during the webinar and NIST staff will not critique or provide feedback on specific project ideas while they are being developed by an applicant, brought forth during the webinar, or at any time before the deadline for all applications.