

**NOTICE OF FUNDING OPPORTUNITY (NOFO) -
NIST Public Safety Innovation Accelerator Program - Mission Critical Voice Test
Equipment**

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 – Mission Critical Voice Test Equipment
- **Announcement Type:** Initial
- **Funding Opportunity Number:** 2019-NIST-MCVTE-01
- **Catalog of Federal Domestic Assistance (CFDA) Number:** 11.609, Measurement and Engineering Research and Standards
- **Dates:** Electronic applications must be received at [grants.gov](https://www.grants.gov) no later than 11:59 p.m. Eastern Time, Friday, July 19, 2019. 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 A.M. Eastern Time Saturday	To 6:00 A.M. Eastern Time Monday
May 18, 2019	May 20, 2019
June 15, 2019	June 17, 2019

Applications cannot be submitted when Grants.gov is closed.

NIST expects to complete its review, selection of successful applicants, and award processing by August 2019. NIST expects the earliest start date for awards under this NOFO to be September 2019.

Applicants are strongly urged to read Section IV.2.b. Attachment of Required Application Documents of this NOFO with great attention. Applicants should carefully follow the instructions and recommendations regarding attachments and

use the Download Submitted Forms and Applications feature on www.grants.gov to check that all required attachments were contained in their submission. Applications submitted without the required documents will not pass the Initial Administrative Review, described in Section V.3.a. of this NOFO.

When developing the submission timeline, please keep in mind that: (1) all applicants are required to have current registrations in the electronic System for Award Management (SAM.gov) and Grants.gov; (2) the free annual registration process in the SAM.gov (see Section IV.3. and Section IV.7.a.(1).(b) of this NOFO) often takes between three and five business days and may take as long as two weeks; and (3) applicants will receive e-mail notifications over a period of up to two business days as the application moves through intermediate systems before the applicant learns via a validation or rejection notification whether NIST has received the application. (See grants.gov for full information on application and notification through Grants.gov). Please note that a federal assistance award cannot be issued if the designated recipient's registration in the System for Award Management (SAM.gov) is not current at the time of the award.

- **Application Submission Address:** Applications must be submitted using Grants.gov.
- **Funding Opportunity Description:** The NIST Public Safety Innovation Accelerator Program: Mission Critical Voice Test Equipment (PSIAP-MCVTE) is seeking applications from eligible applicants for activities to produce equipment and code required to test communications devices, based on 3rd Generation Partnership Project (3GPP) standards, for mission critical push-to-talk technology (MCPTT) and related public safety features such as Mission Critical Data (MCData) and Mission Critical Video (MCVideo).
- **Anticipated Amounts:** In FY2019, NIST anticipates funding awards in the range of approximately \$500,000 to \$2,000,000 per year with project performance periods of up to 2 years. Total funding for this program is anticipated to be approximately \$12,000,000.
- **Funding Instrument:** Cooperative agreement.
- **Eligibility:** This NOFO is open to all non-Federal entities. Eligible applicants include institutions of higher education, non-profit organizations, for-profit organizations, state and local governments, Indian tribes, hospitals, foreign public entities, and foreign governments. 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.

NIST will only consider one application per applicant; however, an applicant entity may be proposed as a sub-recipient, contractor, or unfunded collaborator within applications submitted by other entities.

- **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. of this NOFO.
- **Public Website, Frequently Asked Questions (FAQs) and Webinar:** NIST has a public website (pscr.gov) that provides information pertaining to this Funding Opportunity. NIST anticipates that a “Frequently Asked Questions” section or other resource materials will be maintained and updated on the website as needed to provide additional guidance and clarifying information that may arise related to this Funding Opportunity. Any amendments to this NOFO will be announced through Grants.gov.

Applicants must submit all questions pertaining to this funding opportunity via e-mail to pscr@nist.gov with ‘MCVTE’ in the subject line. Questions submitted to NIST may be posted on pscr.gov. Alternatively, applicants may ask questions during the informational public webinar as described in the next paragraph.

NIST will host a webinar to provide general information regarding this NOFO, offer general guidance on preparing applications, and answer questions. Scheduling details about the webinar will be available at pscr.gov. Proprietary technical 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. However, general questions about the PSIAP, eligibility requirements, evaluation and award criteria, selection process, and the general characteristics of a competitive application will be addressed at the webinar and by e-mail to pscr@nist.gov, as described in the previous paragraph. 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.

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FULL ANNOUNCEMENT TEXT

I. Program Description

The statutory authority for the NIST Public Safety Innovation Accelerator Program is 15 U.S.C. § 3706 and 47 U.S.C. § 1443.

The NIST Public Safety Innovation Accelerator Program: Mission Critical Voice Test Equipment (PSIAP-MCVTE) is seeking applications from eligible applicants for activities to develop test equipment and associated code required to test communications devices, based on 3rd Generation Partnership Project (3GPP) standards, for mission critical push-to-talk technology (MCPTT) and related public safety features such as Mission Critical Data (MCData) and Mission Critical Video (MCVideo). These goals, and specific technical areas of research in the PSIAP-MCVTE program, are discussed in detail in Section I.4. of this NOFO.

1. Background

The Public Safety Communications Research (PSCR) division, housed within the NIST Communications Technology Laboratory, conducts research for the first responder community. In 2012, NIST was mandated by Congress¹ to, among other things, “accelerate the development of mission critical voice for the nationwide public safety broadband network”. PSCR conducted extensive stakeholder engagement starting in 2013 to address the requirements of the legislation, including hosting two roundtable events in 2016 and 2017 focused on Mission Critical Voice (MCV) with stakeholders from public safety, government, and industry. In addition to funding internal research addressing these areas, in 2017 the PSIAP awarded \$14M for nine grants and cooperative agreements to address aspects related to the MCV portfolio

¹ 47 U.S.C. § 1443(b)(4) – Public safety wireless communications research and development

goals. Specific areas of these awards include research into MCPTT and Device-to-device (D2D) functionality. Outcomes of these awards include the creation of a commercial grade MCPTT application server, MCPTT Android applications, and development of the full Proximity Services (ProSe) Sidelink protocol stack. More information about the MCV portfolio, PSIAP, and PSCR can be found at pscr.gov.

Wireless telecommunications service providers, also called mobile network operators (MNOs), complete several overlapping testing processes prior to releasing new communications devices. These processes include (but are not limited to) regulatory testing to meet government standards, industry certification by telecommunications industry forums such as the PTCRB², and user testing within the MNO laboratories. The test standards and procedures processes meet the needs for commercial devices used under typical circumstances by civilians. However, these test standards and procedures cannot ensure a device's proper performance for public safety purposes. Communication devices must work seamlessly across a broad range of geographic and network conditions to be suitable for public safety users, which are not represented in typical test cases.

Although standardized test cases for industry certifications have been written for public safety features, the test equipment manufacturers have not yet produced equipment to support the test cases for public safety equipment features. Without the proper test equipment, public safety features will not be tested in industry certifications such as the PTCRB. Some aspects of features may be tested later in MNO-specific labs, but the scope of testing will be severely limited due to the inability to automate the testing and properly manipulate the Radio Frequency (RF) environment.

The limited availability of fully translated test cases has also hampered progress toward a standardized public safety communications device testing process. Test cases for public safety features have been written and published in the 3rd Generation Partnership Project (3GPP)³, the standards organization responsible

² PTCRB is now a pseudo-acronym, although it originally stood for PCS Type Certification Review Board. PCS is an acronym for Personal Communications Services. See <http://www.ptcrb.com>.

³ Mission Critical Services test cases in 3GPP are found in technical specifications TS 36.579-1 through TS 36.579-7:

TS 36.579-1 "Mission Critical (MC) services over LTE; Part 1: Common test environment"

TS 36.579-2 "Mission Critical (MC) services over LTE; Part 2: Mission Critical Push To Talk (MCPTT) User Equipment (UE) Protocol conformance specification"

TS 36.579-3 "Mission Critical (MC) services over LTE; Part 3: Mission Critical Push To Talk (MCPTT) Server Application conformance specification"

TS 36.579-4 "Mission Critical (MC) services over LTE; Part 4: Test Applicability and Implementation Conformance Statement (ICS) proforma specification"

TS 36.579-5 "Mission Critical (MC) services over LTE; Part 5: Abstract test suite (ATS)"

for creating 4G LTE and public safety broadband features such as MCPTT. Test equipment manufacturers require the test cases to be fully translated into Testing and Test Control Notation Code (TTCN) in order to fully support the standardized cases on their specific test equipment. Specifically, TTCN-3 is used. TTCN is a test specification language and a standardized testing technology designed for testing and certification.⁴ The 3GPP has started to translate the public safety feature test cases into TTCN, but translations are still ongoing due to limited resources.

In 2016, the First Responder Network Authority (FirstNet) announced its intention to develop device types and applications to meet public safety use cases identified by public safety users. FirstNet created its own carrier acceptance test plan that focuses on validating a device is safe for use on the Nationwide Public Safety Broadband Network (NPSBN), testing device features unique to public safety, and testing performance aspects of the NPSBN that are above and beyond the 3GPP and other specifications. The FirstNet device approval process includes a variety of testing and certification in areas such as interference, operation, environmental factors, and security. At the moment, a missing component to the testing ecosystem that FirstNet and other MNOs wish to deploy for testing public safety features is test equipment that supports 3GPP public safety test cases. The goals of this NOFO aim to address this shortcoming.

There has been some, albeit limited, public safety functionality implemented in test equipment. For example, some test equipment manufacturers have included the ability for high-power user equipment RF conformance tests. However, MCPTT and related features has remained unsupported across all test equipment manufacturers.

2. Research Opportunity

The intent of this NOFO is to produce test equipment and code required to test communications devices for MCPTT and related public safety features such as Mission Critical Data (MCData) and Mission Critical Video (MCVideo).

Award recipients will help achieve this by producing test equipment and associated code that supports the 3GPP-created test cases for MCPTT and, optionally, MCData and MCVideo. The test equipment and associated code that supports public safety features will enable the industry testing labs to start testing public safety features. The

TS 36.579-6 "Mission Critical (MC) services over LTE; Part 6: Mission Critical Video (MCVideo) User Equipment (UE) Protocol conformance specification"

TS 36.579-7 "Mission Critical (MC) services over LTE; Part 7: Mission Critical Data (MCData) User Equipment (UE) Protocol conformance specification"

See <http://www.3gpp.org/DynaReport/TSG-WG--R5.htm?Itemid=425>

⁴ See <http://www.ttcn-3.org>

projects can include the participation in 3GPP to help translate existing public safety feature test cases into the TTCN code, edit existing test cases, and create new public safety feature test cases. Award recipients, after the conclusion of the award period, will have the ability to market and sell the outputs of their funded projects.

Additionally, award recipients will have the opportunity in the future to compete for a second award to further develop their test equipment and code to incorporate off-network requirements for 3GPP Release 13, 14, and beyond.

3. Basic Competition Information

Applicants must address all goals defined in Section I.4.

The recipient P.I. will be required to attend the PSCR Public Safety Broadband Stakeholder Meetings (approximately five days) each calendar year during the term of the award to meet with stakeholders from public safety, government, industry, and academia and to present key plans and findings of their work to date. Other essential project staff are encouraged to attend. This event should be reflected in the project schedule and budget.

Once testing is completed at the PSCR Laboratory, if a Recipient wishes to have their test equipment returned, NIST will do so at the Recipients' expense.

4. Technical Program Goals

Goal 1. On-network Release 13 MCPTT

The Radio Access Network (RAN) Working Group 5 (RAN5)⁵ within the 3GPP created the technical specifications for testing MCPTT. The technical specifications are 3GPP TS 36.579-1 through TS 36.579-5 for Release 13. These specifications include the creation of TTCN code based on the test cases which is created by the 3GPP Task Force 160. Although the creation of the TTCN code is ongoing, the Task Force 160 is scheduled to have the TTCN code complete by the end of the calendar year 2019 or shortly after. Many test cases are already complete.

To enable testing of public safety devices for on-network MCPTT, applicants must create test equipment or add features to existing test equipment that support on-network MCPTT test cases which are defined in Chapters 5 and 6 from 3GPP TS 36.579-2 (Release 13). For the purposes of this NOFO, "on-network" MCPTT means that a device-under-test will communicate, via an MCPTT Client, with the test equipment's MCPTT Server and associated servers and simulated MCPTT Clients. Although the LTE Uu interface is preferred, the technology to connect the device-

⁵ <https://www.3gpp.org/specifications-groups/ran-plenary/ran5-mobile-terminal-conformance-testing>

under-test with the test equipment is left up to the applicant. For example, an IP-based solution can be implemented in lieu of the LTE Uu interface. The system simulator of the test equipment will need to support the signaling and procedures as described in 3GPP technical specifications⁶ TS 24.379, TS 24.380, TS 24.481, TS 24.482, TS 24.483, TS 24.484, and TS 33.179.

Goal 2. On-network Release 14 MCPTT, MCVideo, and MCDData

RAN5 is currently creating MCVideo and MCDData test cases. These test cases are defined in Release 14 and included in 3GPP TS 36.579-6 (MCVideo) and 3GPP TS 36.579-7 (MCDData). Currently, RAN5 is scheduled to complete 3GPP TS 36.579-6 and TS 36.579-7 by the end of the calendar year 2019 or shortly after. The TTCN should be completed shortly after the release of 3GPP TS 36.579-6 and 3GPP TS 36.579-7. RAN5 is also updating 3GPP TS 36.579-2 for Release 14 MCPTT test cases.

To enable testing of public safety devices for on-network MCVideo and MCDData, applicants must create test equipment or add features to existing test equipment that support on-network MCVideo and MCDData test cases which are defined in 3GPP TS 36.579-6 and 3GPP TS 36.579-7. For the purposes of this NOFO, “on-network” MCVideo means that a device-under-test will communicate, via an MCVideo Client, with the test equipment's MCVideo Server and associated servers and simulated MCVideo Clients. “On-network” MCDData means that a device-under-test will communicate, via an MCDData Client, with the test equipment's MCDData Server and associated servers and simulated MCDData Clients. Although the LTE Uu interface is preferred, the technology to connect the device-under-test with the test equipment is left up to the applicant. For example, an IP-based solution can be implemented in lieu of the LTE Uu interface. The system simulator of the test equipment will need to support the signaling and procedures as described in 3GPP technical specifications TS 24.281, TS 24.581, TS 24.282, TS 24.582, TS 24.481, TS 24.482, TS 24.483, TS 24.484, and TS 33.180.

To enable testing of public safety devices for on-network Release 14 MCPTT, applicants must create test equipment or add features to existing test equipment that support on-network MCPTT test cases which are defined in Chapters 5 and 6 from 3GPP TS 36.579-2 (Release 14). For the purposes of this NOFO, “on-network” MCPTT means that a device-under-test will communicate, via an MCPTT Client, with the test equipment's MCPTT Server and associated servers and simulated MCPTT Clients. Although the LTE Uu interface is preferred, the technology to connect the device-under-test with the test equipment is left up to the applicant. For example, an IP-based solution can be implemented in lieu of the LTE Uu interface. The system simulator of the test equipment will need to support the signaling and procedures as

⁶ <https://www.3gpp.org/DynaReport/status-report.htm>

described in 3GPP technical specifications TS 24.379, TS 24.380, TS 24.481, TS 24.482, TS 24.483, TS 24.484, and TS 33.180.

5. Subsequent Competition for Award Recipients

Organizations that receive awards through this competition will have the exclusive opportunity to compete for additional funding. The subsequent competition, which will take place at or near the conclusion of the period of performance for the awards made from this competition, will focus on incorporating off-network 3GPP Release 13 MCPTT and off-network 3GPP Release 14 and beyond MCPTT, MCDATA, and MCVideo technologies into the test equipment and code developed in the 2019-NIST-MCVTE-01 competition.

NIST will publish a separate NOFO for the subsequent competition at the appropriate time. Award recipients from this competition will be notified when that NOFO becomes available. Only award recipients from the 2019-NIST-MCVTE-01 competition will be eligible to compete in the subsequent competition.

II. Federal Award Information

1. Funding Instrument

The funding instrument used in this program will be cooperative agreements. The nature of NIST's "substantial involvement" will generally include collaboration with the recipients in conducting the approved scope of work.

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 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 FY2019, NIST anticipates funding awards in the range of approximately \$500,000 to \$2,000,000 per year with project performance periods of up to 2 years. Total funding for this program is anticipated to be approximately \$12,000,000.

III. Eligibility Information

1. Eligible Applicants

This NOFO is open to all non-Federal entities. Eligible applicants include institutions of higher education, non-profit organizations, for-profit organizations, state and local governments, Indian tribes, hospitals, foreign public entities, and foreign governments. 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.

NIST will only consider one application per applicant; however, an applicant entity may be proposed as a subrecipient, contractor, or unfunded collaborator within applications submitted by other entities.

2. Cost Sharing or Matching

Matching funds are not required. 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. of this NOFO.

IV. Application and Submission Information

1. Address to Request Application Package

The application package is available at grants.gov under Funding Opportunity Number 2019-NIST-PSIAP-MCVTE-01.

2. Content and Form of Application Submission

a. Required Forms and Documents. The Application must contain the following:

(1) 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 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 2019-NIST-PSIAP-MCVTE-01 Application Instructions document found on Grants.gov, as well as at [Instructions SF-424 \(R&R\), 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 2019-NIST-MCVTE-01 Application Instructions document on Grants.gov, as well as at [Instructions Research & Related Budget \(Total Fed + Non-Fed\) – Budget](#).

- (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 “2019-NIST-PSIAP-MCVTE-01” in the Award Number field. Enter the title of the application, or an abbreviation of that title, in the Project Name field.

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(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 2019-NIST-PSIAP-MCVTE-01 Application Instructions document on Grants.gov, as well as at [Instructions Research and Related Other Project Information](#). Please note that the Project Summary/Abstract field, which has a place to attach an optional Project Summary/Abstract, is not relevant to this competition.

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

(7) Project Narrative.

Section	Page Limit
Project Narrative - Quad Chart	1
Project Narrative - Executive Summary	1
Project Narrative - Technical Proposal (total)	24
- Project Description	15
- Project Execution	6
- Qualifications	3

A. Cover Page. The cover page should include the project title, identify the primary applicant, PI, and partner organizations, and any statements regarding confidentiality.

B. Table of Contents.

C. Quad Chart. The quad chart must consist of the following four sections, clockwise from top-left: 1) a problem statement; 2) the concept of the proposed project; 3) the potential impact of the project; 4) key milestones and/or deliverables. **The quad chart must not exceed one (1) page.** Any material provided beyond the one (1) page limit will be redacted and not provided to the reviewers.

D. Executive Summary. This section should summarize key aspects of the technical approach and qualifications of the team. This section must not include any proprietary or sensitive business information as NIST may make the executive summary available to the public after

selection of awards. **The executive summary must not exceed one (1) page.** Any executive summary material provided beyond this one-page limit will be redacted and not provided to the reviewers.

E. Technical Proposal. The Technical Proposal is a document that is responsive to the program description (see Section I. of this NOFO) and the evaluation criteria (see Section V.1. of this NOFO). Any material provided beyond the specified page limits (see Section IV.2.c.(4) of this NOFO) will be redacted and not provided to the reviewers. The Technical Proposal must contain the following information:

- i. Project Description.** This is a detailed description of the proposed project and potential impacts. This section must include:
 - (a) Detailed description of the approach to address the goals and requirements of this NOFO and how the proposed activities will impact and benefit public safety.
 - (b) Proposed list of technical outputs, details on how these outputs will be made available to the broader public safety and R&D communities, and how their adoption and impact will be tracked.
 - (c) Expected long-term impacts beyond the NOFO award period 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.1.a. of this NOFO). **The Project Description section must not exceed fifteen (15) pages.** Any Project Description material provided beyond this fifteen-page limit will be redacted and not provided to the reviewers.

- ii. Project Execution.** This section should provide clear and quantifiable goals, milestones, timelines, and methods to assess progress and performance towards achieving the objectives in the Technical Proposal. This section must include:
 - (a) A summary of the overall approach to executing the goals of this NOFO and how the schedule, deliverables, milestones, and risk management will maximize the applicant's chances of achieving the goals of this NOFO.

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- (b) A detailed project schedule (Gantt chart or similar) for the entire prize competition.
- (c) A deliverable summary table identifying all deliverables, a description of each, and due dates.
- (d) A milestone summary table identifying all milestones, a description of each, due dates, and clear, measurable criteria to verify milestone completion.
- (e) A risk summary table identifying major risks during each phase of the prize competition and mitigation strategies.
- (f) A description of the cost effectiveness and value of the proposed project in terms of meeting the stated objectives.

This section will be evaluated in accordance with the Project Execution evaluation criterion (see Section V.1.b. of this NOFO). **The Project Execution section must not exceed six (6) pages.** Any Project Execution material provided beyond this six-page limit will be redacted and not provided to the reviewers.

iii. Qualifications. This section should provide detailed examples demonstrating:

- (a) Qualifications of the individuals, teams, and organizations that will be executing or supporting the proposed project relative to the program goals.
- (b) Demonstrated success executing projects similar in scope and magnitude to the proposed project.
- (c) Access to the necessary staff, equipment, facilities, support, and resources to accomplish the proposed objectives.

This section will be evaluated in accordance with the Qualifications evaluation criterion (see Section V.1.c. of this NOFO). **The Qualifications section must not exceed three (3) pages.** Any Qualifications material provided beyond this three-page limit will be redacted and not provided to the reviewers.

F. Resume(s).

Resumes are required for all key personnel, including the principal investigator/project lead. Awardees are advised that any changes to individuals deemed 'key personnel', including disengagement from the project for more than three months or a 25% reduction of effort, will require prior approval, in writing, by the NIST Grants Officer.

This section will be evaluated in accordance with the *Qualifications* evaluation criterion (see Section V.1.c. of this NOFO). There are no page limits for resumes. However, any material considered inappropriate for inclusion in a resume (e.g. supplementary text for another section) will be redacted and not provided to the reviewers.

Resumes do not count against the page limit of the Technical Proposal.

(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 Research & Related 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. 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 (<http://go.usa.gov/SBYh>), which apply to awards in this program.

The Budget Narrative should also address the match of budget to the proposed work (see the evaluation criteria in Section V.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.

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 of the role of the position on the proposed project and the work to be performed.

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. Any items that do not meet the threshold for equipment can be included under the supplies line item. 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 Materials and Supplies line item in Section F, Other Direct Costs.

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.

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 or 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.

H. 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.2.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, accessible [HERE](#).

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 Technical Proposal. 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 sufficient 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.1.c.) of this NOFO). Letters of commitment do not count against the twenty (20) page limit of the Technical Proposal.

(11) Data Management Plan.

Consistent with NIST Policy 5700.00⁷, *Managing Public Access to Results of Federally Funded Research*, and NIST Order 5701.00⁸, *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 two 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 Foundation⁹ or the National Institutes of Health¹⁰).

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) (available at <http://go.usa.gov/3sZvQ>).

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

⁷ <https://www.nist.gov/sites/default/files/documents/2017/05/09/Final-P-5700.pdf>

⁸ https://www.nist.gov/sites/default/files/documents/2017/05/09/Final-O-5701_0.pdf

⁹ <http://www.nsf.gov/bfa/dias/policy/dmp.jsp>

¹⁰ http://grants.nih.gov/grants/policy/data_sharing/data_sharing_guidance.htm

The inclusion of the DMP will be considered as part of the administrative review (see Section V.3.a. of this NOFO); however, the DMP will not be evaluated against any evaluation criteria.

(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 found at: [Subaward Budget 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:

<https://www.nist.gov/oaam/grants-management-division/current-and-pending-support> and reference the guidance provided as it contains information to assist with accurately completing the form.

b. Attachment of Required Documents

Items IV.2.a.(1) through IV.2.a.(5) above are part of the standard application package in Grants.gov and can be completed through the download application process.

Item IV.2.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.2.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.2.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.2.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.2.a.(9), the Indirect Cost Rate Agreement, IV.2.a.(10), Letters of Commitment, and IV.2.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.2.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.2.a.(13), the Current and Pending Support Form must be completed and attached by clicking on “Add Attachments” found in item 13 (Other Attachments) of the Research and Related Other Project Information form.

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 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. 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) Figures, Graphs, Images, and Pictures. Should be of a size that is easily readable or viewable and may be landscape orientation. Any figures, graphs, images, or pictures will count toward the fifteen (15) page limit for the Project Description.

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

(4) Page Limits. See the table below:

Section	Page Limit
Project Narrative - Quad Chart	1
Project Narrative - Executive Summary	1
Project Narrative - Technical Proposal (total)	24
- Project Description	15

- Project Execution	6
- Qualifications	3
Data Management Plan	2

(5) Page Limit Excludes: SF-424 (R&R), Application for Federal Assistance; Research & Related Budget (Total Fed + Non-Fed); SF-424B, Assurances – Non-Construction Programs; CD-511, Certification Regarding Lobbying; Research and Related Other Project Information; SF-LLL, Disclosure of Lobbying Activities (if applicable); Cover Page of the Project Narrative; Table of Contents of the Project Narrative; Budget Narrative and Justification; Indirect Cost Rate Agreement; Letters of Commitment; Subaward Budget Form (if applicable); and Current and Pending Support Form.

(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 new application that is received by NIST before the submission deadline.

e. Pre-Applications. Pre-applications will not be accepted.

f. Statement of Intent. To assist NIST in gauging interest and planning for the evaluation process, all potential applicants are strongly encouraged to send an e-mail to pscr@nist.gov with 'MCVTE' in the subject line indicating intent to apply. The statement of intent will only be used for competition planning purposes; it will not be used as part of the evaluation process or to eliminate any applicants from consideration under this NOFO. An applicant will receive full consideration under this NOFO if they do not submit a statement of intent.

g. 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.

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

Pursuant to 2 C.F.R. part 25, applicants and recipients (as the case may be) 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.

4. Submission Dates and Times

Applications must be received at Grants.gov no later than 11:59 p.m. Eastern Time, Friday, July 19, 2019. Applications received after this deadline will not be reviewed or considered. NIST will consider the date and time recorded by Grants.gov as the official submission time. 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 A.M. Eastern Time Saturday	To 6:00 A.M. Eastern Time Monday
May 18, 2019	May 20, 2019
June 15, 2019	June 17, 2019

Applications cannot be submitted when Grants.gov is closed.

When developing the submission timeline, please keep in mind that: (1) all applicants are required to have current registrations in the electronic System for Award Management (SAM.gov) and Grants.gov; (2) the free annual registration process in the SAM.gov (see Sections IV.3. and IV.7.a.(1).(b). of this NOFO) often takes between three and five business days and may take as long as two weeks; and (3) applicants will receive e-mail notifications over a period of up to two business days as the application moves through intermediate systems before

the applicant learns via a validation or rejection notification whether NIST has received the application. (See grants.gov for full information on application and notification through Grants.gov.). Please note that a Federal assistance award cannot be issued if the designated recipient's registration in the System for Award Management (SAM.gov) is not current at the time of the award.

5. Intergovernmental Review

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

6. Funding Restrictions

Profit or fee is not an allowable cost.

7. Other Submission Requirements

a. Applications must be submitted electronically.

(1) Applications must be submitted via Grants.gov at grants.gov.

- (a) Applicants should carefully follow specific Grants.gov instructions to ensure that all attachments will be accepted by the Grants.gov system. A receipt from Grants.gov indicating an application is received does not provide information about whether attachments have been received. For further information or questions regarding applying electronically for the 2019-NIST-MCVTE-01 announcement, contact Leon Sampson by phone at 301-975-3086 or by e-mail at grants@nist.gov.
- (b) Applicants are strongly encouraged to start early and not wait until the approaching due date before logging on and reviewing the instructions for submitting an application through Grants.gov. The Grants.gov registration process must be completed before a new registrant can apply electronically. If all goes well, the registration process takes three to five business days. If problems are encountered, the registration process can take up to two weeks or more. Applicants must have a valid unique entity identifier number and must maintain a current registration in the Federal government's primary registrant database, the System for Award Management (<https://www.sam.gov>), as explained on the Grants.gov Web site (also see Section IV.3. of this NOFO). After registering, it may take several days or longer from the initial log-on before a new Grants.gov system user can submit an application. Only individuals authorized as organization representatives will be able to submit the application, and the system may need time to process a submitted application. Applicants should save and print the proof of submission they receive from Grants.gov. If problems occur

while using Grants.gov, the applicant is advised to (a) print any error message received and (b) call Grants.gov directly for immediate assistance. If calling from within the United States or from a U.S. territory, please call 800-518-4726. If calling from a place other than the United States or a U.S. territory, please call 606-545-5035. Assistance from the Grants.gov Help Desk will be available around the clock every day, except for Federal holidays. Help Desk service will resume at 7:00 a.m. Eastern Time the day after Federal holidays. For assistance using Grants.gov, the applicant may also contact support@grants.gov.

- (c) To find instructions for submitting an application on Grants.gov, Applicants should refer to the “Applicants” tab in the banner just below the top of the www.grants.gov home page. Clicking on the “Applicants” tab produces two exceptionally useful sources of information, Applicant Actions and Applicant Resources, which applicants are advised to review.

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.

Applicants should pay close attention to the guidance under “Applicant FAQs,” as it contains information important to successful submission on Grants.gov, including essential details on the naming conventions for attachments to Grants.gov applications.

All applicants should be aware that adequate time must be factored into applicants’ schedules for delivery of their application. Applicants are advised that volume on Grants.gov may be extremely heavy leading up to the deadline date.

The application must be both received and validated by Grants.gov. 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. 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 the application before the deadline. If the applicant does not correct the errors, the application will not be forwarded to NIST by Grants.gov.

Refer to important information in Section IV.4. Submission Dates and Times, to help ensure the application is received on time.

- b. 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 or may request copies by e-mail from pscr@nist.gov.

V. Application Review Information

1. Evaluation Criteria

The evaluation criteria that will be used in evaluating applications and assigned weights are as follows:

Evaluation Criteria	Maximum Points	Weight	Total
Technical Merit	10	4	40
Project Execution	10	2	20
Qualifications	10	4	40
Maximum score:			100

For example, an application receiving criterion scores of 8, 7, and 10, (respectively) would receive a total score of 86 according to the following calculation: $(8 \times 4) + (7 \times 2) + (10 \times 4) = 86$.

Subcriteria within each criterion will be weighted equally.

a. Technical Merit: Reviewers will evaluate:

- (1) The extent to which the proposal demonstrates a clear understanding of the program goals.
- (2) The extent to which the approach is cohesive, comprehensive, innovative, feasible, and likely to achieve the NOFO's stated objectives.
- (3) The likelihood and extent to which the proposal will further the

development of MCV equipment testing systems or the development of devices with mission critical services capabilities, or both.

- (4) The extent to which the outputs will be available, traceable, and extendable for industry certification labs, original equipment manufacturers (OEMs), and any other interested parties.

b. Project Execution: Reviewers will evaluate:

- (1) The feasibility and appropriateness of the proposed goals, milestones, timelines, and methods that would be used to assess project performance.
- (2) The appropriateness and cost effectiveness of the budget with respect to executing the proposed project.
- (3) The degree to which the budget reflects a clear understanding of the objectives of the NOFO.

c. Qualifications: Reviewers will evaluate:

- (1) The relevance and the appropriateness of the qualifications and experience of the key personnel and technical experts participating in the project, and the likelihood that they will be able to fulfill the objectives of this NOFO.
- (2) The applicant's access to the necessary staff, equipment, facilities, support, and resources to accomplish the proposed objectives.
- (3) Letters of Commitment (if required) for the appropriateness of the partnership, the relevance of their expertise, and their ability to contribute effectively to the project.

2. Selection Factors

The Selecting Official, the Chief of the PSCR Division, shall generally select and recommend the most meritorious applications for an award based upon the final adjectival ratings prepared by the Evaluation Panel and one or more of the five (5) selection factors listed 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.** Whether the project duplicates other projects funded by NIST, DoC, or by other Federal agencies;
- d.** The extent to which matching funds and/or in-kind contributions (voluntary committed cost share) would help ensure potential success of the project;

- e. Alignment with the NOFO objectives;
- f. Diversity of entity types within the PSCR R&D portfolio;
- g. Geographic diversity within the PSCR R&D portfolio.

3. Review and Selection Process

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

- a. **Initial Administrative Review of Applications.** 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). 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 an application that is missing non-substantive information, the absence of which may easily be rectified during the review process.
- b. **Full Review of Eligible, Complete, and Responsive Applications.** Applications that are determined to be eligible, complete, and responsive will proceed for full reviews in accordance with the review and selection process 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 application based on the evaluation criteria (see Section V.1. of this NOFO). 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 or teleconference 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 (see Section V.2. of this NOFO) for further deliberation, considering:

- (a) All application materials.
- (b) Results of the merit reviewers' evaluations, including scores and written assessments.
- (c) Any relevant publicly available information.
- (d) Any clarifying information obtained through e-mail or teleconferences with 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 will make final award recommendations to the NIST Grants Officer. The Selecting Official shall generally select and recommend the most meritorious applications for an award based on the final adjectival ratings prepared by the Evaluation Panel and one or more of the selection factors described in Section V.2. of this NOFO. The Selecting Official retains the discretion to select and recommend an application out of order (i.e., from a lower adjectival category) based on one or more of the selection factors.

NIST reserves the right to negotiate the budget costs with any applicant selected to receive an award, which may include requesting that the applicant removes certain costs. Additionally, NIST may request that successful applicants modify objectives or work plans and provide supplemental information required by the agency prior to award. 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. 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.

- c. 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 \$150,000), 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 Date

Review of Applications, selection of successful applicants, and award processing is expected to be completed by August 30, 2019. The earliest start date for awards under this NOFO is expected to be September 2019.

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.** Unsuccessful applications 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 Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards at 2 C.F.R. Part 200, which apply to awards in this program. Refer to <http://go.usa.gov/SBYh> and <http://go.usa.gov/SBg4>.
- b. **Department of Commerce Financial Assistance Standard Terms and Conditions.** The Department of Commerce will apply to each award in this program, the Financial Assistance Standard Terms and Conditions in effect on the date of award. The current version, dated April 30, 2019, is accessible [here](#). 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>. Refer to Section VII. of this NOFO, Federal Awarding Agency Contacts, Grant Rules and Regulations, for more information.
- d. **Funding Availability and Limitation of Liability.**

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.** 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 Terms and Conditions dated April 30, 2019, accessible at: [Department of Commerce Standard Terms and Conditions](#).

Any use of NIST-owned intellectual property by a recipient of an award under this announcement 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 in the course of 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. 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. Reports will be due within 30 days after the end of the reporting period to the NIST Federal Program Officer, Grants Officer and Grants Specialist named in the award documents. A final financial report is due within 90 days after the end of the project period.

(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 (<http://go.usa.gov/xkVgP>) 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.2.a.(10). 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 (i.e., 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:

Subject Area	Point of Contact
Programmatic and Technical Questions	E-mail: pscr@nist.gov with 'MCVTE' in subject line
Technical Assistance with Grants.gov Submissions	Leon Sampson Phone: 301-975-3086 Fax: 301-975-6368 E-mail: grants@nist.gov Or Grants.gov Phone: 800-518-4726 E-mail: support@grants.gov
Grant Rules and Regulations	Scott McNichol Phone: 303-497-3444 Fax: 303-497-5470 E-mail: scott.mcnichol@nist.gov

VIII. Other Information

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, and also by Federal agents and contractors, and/or by 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. § 200.31 03(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 Federal Funding Opportunity 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, Frequently Asked Questions (FAQS) and Webinar

NIST I.APSCR has a public website, pscr.gov, that provides information pertaining to this Funding Opportunity¹¹. NIST anticipates that a “Frequently Asked Questions” section or other resource materials will be maintained and updated on the website as needed to provide additional guidance and clarifying information that may arise related to this Funding Opportunity. Any amendments to this NOFO will be announced through Grants.gov.

Applicants must submit all questions pertaining to this funding opportunity in writing to pscr@nist.gov with ‘MCVTE’ in the subject line. Questions submitted to NIST may be posted on pscr@nist.gov. Alternatively, applicants may ask questions during the informational public webinar as described in the next paragraph.

NIST will host a webinar to provide general information regarding this NOFO, offer general guidance on preparing applications, and answer any questions. Proprietary technical discussions about specific project ideas will not be permitted and NIST staff will not critique or provide feedback on specific project ideas while they are being developed by an applicant or brought forth during the webinar or at any time before the deadline for all applications. However, questions about the 2019-NIST-MCVTE-01 eligibility requirements, evaluation and award criteria, selection process, and the general characteristics of a

¹¹ Refer to Section VII. of this NOFO, Federal Awarding Agency Contacts, Programmatic and Technical Questions, if more information is needed.

competitive application can be addressed at the webinar and by e-mail to pscr@nist.gov as described in the previous paragraph. 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. Additional information on the 2019-NIST-MCVTE-01 and webinar is available at pscr@nist.gov.