

Statement of Work

Highspeed Optical Tracking Markerless Cameras

Requesting Laboratory / Division / Group:

Communications Technology Laboratory
Public Safety Communications Research Division
671

I. BACKGROUND:

NIST PSCR requires reinstalling and configuring an existing high-speed optical motion capture system that has been relocated. This system provides large-scale immersive virtual reality and indoor localization tracking. A ground-truth reference is essential for evaluating the capabilities and limitations of prototype indoor localization systems for public safety across large areas of a multistory building. The VR (VR) capabilities allow for tracking of multiple objects and individuals for testing communication technologies for first responders. The new system must be fully compatible with the existing OptiTrack cameras and Motive software currently in use at the laboratory.

II. PURPOSE:

The Public Safety Communications Research (PSCR) Division at NIST drives the development and implementation of critical communications technologies for the public safety community. By fostering research, development, and standard-setting, PSCR ensures that first responders have access to high-quality, reliable, and interoperable communication tools. This acquisition directly supports this mission by creating a specialized evaluation facility capable of tracking personnel and equipment across multiple areas of a building. It provides the necessary infrastructure to validate indoor localization systems, which is vital for maintaining the safety and efficiency of public safety users in complex environments. It also provides digital twin capabilities for testing the user experience for first responder technologies in VR.

Place of Performance:

NIST-Boulder

Regular Business Hours:

Regular business hours are Monday through Friday, 8:00 am to 5:00 pm Local Time, excluding Federal holidays and NIST closures.

Period of Performance/Delivery Date:

The final system installation and configuration shall be delivered for acceptance no later than 60 days After Receipt of Order (ARO) .

III. SPECIFIC REQUIREMENTS:

Task 1 - Install Existing High-Speed Optical Motion Capture System

The contractor shall:

- 1.1 Install, configure, and calibrate the existing system of 62 PrimeX13 cameras to a free-standing truss system in the "PSITC" room.
- 1.2 Ethernet cables must be installed from network switch located in the room to each camera location.
 - A. Cameras already have Manfrotto quick-release mounting hardware attached and are stored at the NIST installation site in boxes.
 - B. Network and computer hardware are provided.
 - C. Ethernet cables from the prior location are provided.

Task 2 - Software and Hardware Expansion for High-Speed Optical Motion Capture System

The contractor shall:

- 2.1 The system shall be capable of tracking the dynamic position of personnel and equipment.
- 2.2 Hardware should include two sets of passive markers and eight active marker kits for integrating into 3d printed trackable objects. Hardware must be compatible with existing OptiTrack hardware and Motive software.
- 2.3 Software includes markerless capture for body and hands.
- 2.4 Software includes 3-year licensing for base and any features.

- 2.4 An additional software license for base tracking software without markerless capture for a separate workstation for 3 years of licensing.

Task 3 - Safety on the NIST Campus

NIST is committed to maintaining a work environment that safeguards the public and the environment, as well as personnel and property.

If the award requires construction, demolition, excavation, renovation, or other work for which the contractor directs and oversees contractor personnel (including subcontractors) at NIST-owned and operated sites, the contractor shall:

Provide a detailed, site-specific Safety Plan to the contracting officer within 7 days after award that describes how the contractor will maintain a safe work environment and comply with applicable Occupational Safety and Health Administration (OSHA) standards, as well as with applicable state and local laws, standards, and codes.

The Safety Plan shall specify how the company's policies and practices will comply with each of the applicable standards, laws, and codes.

The contracting officer will provide written comments regarding the plan to the contractor within seven (7) days of receipt and will require the contractor to submit a revised safety plan within seven (7) days after that to the contracting officer for their review. This cycle may be repeated, if necessary, until the contracting officer determines the safety plan to be acceptable.

Reference:

See NIST's Contractor Safety Program for required elements of Contractor Safety Plans.

Task 4 - Safety-Related Equipment

The Contractor shall:

Provide all safety-related equipment required to perform the work under this award, including personal protective equipment (PPE) and other equipment that is required or appropriate to protect contractor personnel and other personnel on the NIST campus. Contractor-provided personal protective equipment shall include, at a minimum, hard hats, safety shoes, safety glasses (prescription or standard), respiratory protection (powered air purifying respirator or full-face mask respirator), high visibility clothing and gloves that meet applicable OSHA standards for PPE.

Task 5 - Health Hazard Assessments and Medical Evaluations

The Contractor shall:

Provide required health hazard exposure assessments, medical evaluations and screenings, and exposure monitoring required by applicable OSHA requirements. Ensure PII information is protected.

Task 6 - Homeland Security Presidential Directive - 12 (HSPD-12) (Required Task)

The Contractor (and/or any subcontractor) and its employees who require physical access to NIST facilities or logical access to NIST IT networks or systems must comply with HSPD-12, Policy for a Common Identification Standard for Federal Employees and Contractors; OMB M-05-24; OMB M-19-17; FIPS 201, Personal Identity Verification (PIV) of Federal Employees and Contractors; NIST HSPD-12 policy; and Executive Order 13467, Part 1 §1.2.

The Contractor (and/or any subcontractor) must submit a roster by name, position, e-mail address, phone number and responsibility, of all staff working under this acquisition where the Contractor will develop, have the ability to access, or host and/or maintain a government information system(s).

The roster must be submitted to the COR and/or CO within 14 days of the effective date of this contract. Any revisions to the roster as a result of staffing changes must be submitted within 14 days of the change. The COR will notify the Contractor of the appropriate level of investigation required for each staff member. If the employee is filling a new position, the Contractor must provide a position description and the Government will determine the appropriate suitability level.

Position Sensitivity Designations Requirement

All Contractor (and/or any subcontractor) employees must obtain a background investigation commensurate with their position sensitivity designation that complies with Parts 1400 and 731 of Title 5, Code of Federal Regulations (CFR).

The following position sensitivity designation levels apply to this solicitation/contact:

IV. GENERAL REQUIREMENTS

Government Responsibilities:

Provide existing cameras, cabling, and mounts for the system. Provide truss for mounting and installation.

Government Furnished Property

All property, data and information provided by the Government in the performance of this task remains the property of the Government and shall be surrendered to the government upon completion or termination of this requirement. Likewise, all deliverables generated under this requirement remain the property of the Government.

The property listed in this section (below) is property that is incidental in the place of performance due to the task order requiring the contractor personnel to be located on a Government site and the property used by the Contractor within the location remains accountable to the Government. Per FAR Part 45.000(5) items considered to be incidental to the place of performance include office space, desk, chair, telephone computer and fax machine.

Item:	IT equipment, to include network switches and a computer running tracking software, will be available onsite and incidental to the worksite.
Model Number:	TBD
Serial Number(s):	TBD

Incidental Property Provided:

- Office Space
- Desk
- Chair
- Telephone
- Printer/Copy/Fax Machine

Upon award of this requirement, the Government will provide the Contractor with all access to all equipment and resources needed in the performance of this requirement.

Inspection and Acceptance

In addition to the inspection and acceptance terms articulated in the specific FAR clause that allows the Government reserves the right to perform such performance tests and evaluations as defined below to verify specified system performance.

Such tests and evaluations, if performed, shall be conducted within the environment that the system is to be operated. The Contractor has the right to be present during the tests and evaluations, if performed, at the Contractor's expense.

Performance Tests:

Test	Description	Standard
1	Marker points will be selected within the capture volume and measurements shall be taken to determine the physical distance between these points using suitable equipment such as professional survey equipment	Not to exceed 10cm

NIST may choose at its discretion to forego this part of acceptance testing.

A visual inspection of the equipment will be performed by the NIST POC to identify surface defects or any form of indication that any equipment was damaged during transport to NIST. The Government shall have sole discretion to require repair or replacement of damaged and/or nonconforming supplies at no cost to the Government. The Government at any time prior to acceptance shall reject the equipment due to defects and/or nonconformance. The vendor is responsible for latent defects discovered any time after final inspection. However, the extent of its liability shall be prorated over the useful life of the equipment.

Ownership of the equipment shall be transferred to NIST upon acceptance by the Government.

The Government will test, inspect, and accept or reject the equipment within 10 days of the receipt of the equipment unless otherwise indicated above. The Government reserves the right to conduct quality assurance testing to confirm that a given instrument(s) meets the manufacturer's and/or the Government's performance specifications. It is anticipated that the equipment will meet all manufacturer's specifications and/or the Government's performance specifications identified in the most recent operations and maintenance manual for each piece of equipment and/or in this document.

REQUIREMENTS FOR CONTRACTOR PERSONNEL

(1) Safety: The Contractor employee must be responsible for knowing and complying with all installation safety prevention regulations. Such regulations include, but are not limited to, general safety, fire prevention, and waste disposal.

(2) Security: NIST is a restricted campus. An identification badge is required for access for entry into buildings and is shown to the armed Security Police when entering the campus.

(3) Identification Badges: Contractor employees must comply with NIST identification and access requirements. Each Contractor employee must wear a visible identification badge provided by the NIST Security Office.

(4) Vehicle Registration: All Contractor employees must register their vehicles with the NIST Security Office to gain access to the campus. A valid driver's license, Government-furnished civilian ID, proof of insurance and current registration must be presented to the NIST Security Office, at which time a NIST vehicle pass will be issued. The pass shall be displayed on the vehicle in accordance with NIST Security Office instructions.

V. Schedule of Deliverables:

Deliverable	Description	Format	Due Date	Quantity
1	Installation and Configuration	Conducted in person on the NIST campus but shall be coordinated with the SME prior to taking place	60 DAYS After award	1
2	Delivery of software and hardware	Equipment	60 DAYS After award	1

Standards of Acceptance:

The NIST Point of Contact (POC) shall review all the above deliverables and respond with an acceptance or request for revision email to the Contractor POC within 10 days of receipt of deliverable. This section applies to deliverables which must be reviewed and approved for acceptances (e.g., draft plans, drawings, etc.)