



ASTI-FM 03-11  
REV 1/13 January 2020

**DOST-ASTI Bids and Awards Committee  
Invitation to Bid (Public Bidding)**

<b>ITB No:</b>	21-10-3586	<b>Date:</b>	November-11-2021
<b>PR No:</b>	ROAMER-21-09-12122	<b>Date:</b>	September-21-2021
<b>Source of Funds:</b>			
<b>Total ABC:</b>		Php 2,700,000.00	
<b>Time, Date &amp; Venue of Pre-bid Conference:</b>		November 19, 2021, 2:00 PM at Via videoconferencing	
<b>Time and Date of Submission of Bids:</b>		December 01, 2021, 10:00 AM	
<b>Time, Date &amp; Venue of Opening Bids:</b>		December 01, 2021, 10:30 AM at DOST-ASTI and Videoconferencing	
<b>Date of availability of Complete Set of Documents:</b>		November 11, 2021	
<b>Deadline of Potential Bidder's Clarifications:</b>		November 21, 2021	
<b>Deadline of ASTI's Supplemental Bid Bulletin:</b>		November 24, 2021	
<b>Delivery Schedule:</b>			

The Advanced Science and Technology Institute (ASTI), through its Bids and Awards Committee (BAC), hereby invites all interested bidders to submit their bids for the item(s) listed below. Guidelines regarding the format, eligibility, technical and financial documents needed are described in the Instruction to Bidders of the Philippine Bidding Documents

Bidding will be conducted through open competitive bidding procedures using a non discretionary "pass/fail" criterion as specified in the 2016 R-IRR of RA 9184.

A complete set of Bidding Documents may be purchased by interested bidders upon payment of a fee for the Bidding Documents. It is also downloadable for free of charge at DOST-ASTI's website - [www.asti.dost.gov.ph](http://www.asti.dost.gov.ph)

For further inquiries, contact ASTI's BAC Secretariat via email at [bac-sec@asti.dost.gov.ph](mailto:bac-sec@asti.dost.gov.ph). Interested bidders may also call the number - (632)-426-7423 and look for ASTI's BAC Secretariat.

Respectfully,

**GERWIN P. GUBA**  
BAC Chairman

NO.	TECHNICAL SPECIFICATIONS	QTY	UNIT	UNIT PRICE(Php)	TOTAL PRICE(Php)
1	<p><b>Mobile Robot Platform (including sensors and peripherals)</b> Mobile Robot Platform (including sensors and peripherals)</p> <p>1. General Statement/Background/Objectives 1.1. The Advanced Science and Technology Institute is seeking qualified and competent bidders for the supply and delivery of one (1) lot of mobile robot platform including sensors and peripherals. 1.2. The approved budget for the contract is inclusive of all applicable government taxes and services charges. 1.3. The mobile robot platform will be used in the development of a mobile robot model for mission-specific tasks as part of the objectives of the project.</p>	1	lot	2700000.00	2,700,000.00

1.4. The technical specifications indicated herein are minimum requirements, unless otherwise specified.

## 2. Technical Specifications

- 2.1. Quantity: One (1) lot Mobile Robot Platform (including sensors and peripherals)
- 2.2. External Dimensions: 990 x 670 x 390 mm (39 x 26.4 x 14.6 in)
- 2.3. Internal Dimensions: 296 x 411 x 155 mm (11.7 x 16.2 x 6.1 in)
- 2.4. Weight: 50 kg (110 lbs)
- 2.5. Wheels: 330 mm (13 in) Lug Tread
- 2.6. Ground Clearance: 130 mm (5 in)
- 2.7. Max Payload: 75 kg (165 lbs)
- 2.8. All-Terrain Payload: 20 Kg (44 lb)
- 2.9. Max Speed: 1.0 m/s (2.2 mph)
- 2.10. Drivetrain / Drive Power: 4x4 Zero-Maintenance
- 2.11. Tires: Rugged and all-terrain
- 2.12. Max Climb Grade: 45° (100% Slope)
- 2.13. Max Traversal Grade: 30° (58% Slope)
- 2.14. Battery Chemistry: Sealed Lead Acid
- 2.15. Capacity: 24 V, 20 Ah
- 2.16. Runtime - Standby: 8 Hours
- 2.17. Runtime - Nominal Usage: 3 Hours
- 2.18. Charge Time: 4 Hours
- 2.19. User Power: 5 V, 12 V, 24 V Fused at 5 A each; 192 W total available power
- 2.20. Control Modes: Direct voltage, wheel speed, and kinematic velocity
- 2.21. Feedback: Battery voltage, motor currents, wheel odometry, and control system output
- 2.22. Communication: RS232 @ 115200 baud
- 2.23. Encoders: Quadrature: 78,000 pulses/m
- 2.24. Drivers and APIs: ROS Kinetic (or later), C++, Python, Mathworks
- 2.25. Operating Ambient Temperature: -10 to 40 °C (14 to 104 °F) Not in direct sunlight
- 2.26. Storage Temperature: -40 to 60 °C (-40 to 140 °F)
- 2.27. Rating: IP 44 (upgrade to IP 55 available)

## 3. Accessories

- 3.1. One (1) lot of mobile robot platform must include the following items with the following specifications:
  - 3.1.1. One (1) Robot Base Unit:
    - 3.1.1.1. One (1) UGV Chassis
    - 3.1.1.2. One (1) Payload Mounting Framework
    - 3.1.1.3. One (1) Onboard Microcontroller
    - 3.1.1.4. Three (3) User Power Ports (VBat, 12V, 5V fused at 5A each)
    - 3.1.1.5. Two (2) Gear Motors with Wheel Encoders
    - 3.1.1.6. One (1) Current and Voltage Sense Package
    - 3.1.1.7. One (1) Temperature Diagnostics Package
    - 3.1.1.8. One (1) 24V 20Ah SLA Battery Pack
    - 3.1.1.9. One (1) 24v DC Battery Charger
    - 3.1.1.10. Compatibility: serial communications
    - 3.1.1.11. with ROS driver
  - 3.1.2. One (1) Top Plate
    - 3.1.2.1. Diameter: 1/4" Aluminium top plate (for mounting sensing and computing payloads)
  - 3.1.3. One (1) IMU/AHRS OpenIMU UM7

- 3.1.3.1. Three axes
- 3.1.3.2. 500Hz EKF with 100Hz Output
- 3.1.3.3.  $\pm 2^\circ$  Static pitch / roll accuracy
- 3.1.3.4.  $\pm 5^\circ$  Static pitch / roll accuracy
- 3.1.3.5.  $0.01^\circ$  Angular resolution
- 3.1.3.6. ARM Cortex processor
- 3.1.3.7. Open Firmware
- 3.1.3.8. Serial interface
- 3.1.3.9. With Vehicle mounting and wiring
- 3.1.4. One (1) Computer Board
  - 3.1.4.1. CPU: 8-core ARM Carmel v.8.2 @ 2.26 GHz
  - 3.1.4.2. GPU: Volta 512 cores @1.37GHz
  - 3.1.4.3. Tensor Cores: 64
  - 3.1.4.4. Memory: 16 GB 256-bit LPDDR4, 137 GB/s
  - 3.1.4.5. Connectivity: 1 Gigabit Ethernet, 3x USB 3.1, 2x USB 2.0, 1x 16 lanes PCIe Gen4
  - 3.1.4.6. Storage: 32GB eMMC 5.1
  - 3.1.4.7. With wireless controller pad
  - 3.1.4.8. Installation of robot API ROS libraries and testing
- 3.1.5. One (1) Wireless Access Point
  - 3.1.5.1. 802.11a/g/n
  - 3.1.5.2. Four (4) Gigabit LAN Ports
  - 3.1.5.3. Three (3) External Antenna
- 3.1.6. One (1) Depth Camera
  - 3.1.6.1. Vision processor D4
  - 3.1.6.2. Up to 1280x720 active stereo depth resolution
  - 3.1.6.3. Up to 1920x1080 RGB
  - 3.1.6.4. Up to 90 FPS global shutter
  - 3.1.6.5. Range: 0.2m up to 10m
  - 3.1.6.6. FOV: 90 degrees
  - 3.1.6.7. Built-in 6DOF IMU
  - 3.1.6.8. With Integration, software, and URDF setup
- 3.1.7. One (1) 3D LiDAR
  - 3.1.7.1. FOV:  $360^\circ \times 30^\circ$
  - 3.1.7.2. 16 Channel
  - 3.1.7.3. Range: 100+m
  - 3.1.7.4. Dual return
  - 3.1.7.5. 300,000 points per second
  - 3.1.7.6. With Vehicle mounting and wiring
- 3.1.8. One (1) Spare Kit
  - 3.1.8.1. One (1) MC + user power board
  - 3.1.8.2. One (1) Brushed DC Motor Controller
  - 3.1.8.3. One (1) Geared Motor
  - 3.1.8.4. One (1) Belt Replacement Package
  - 3.1.8.5. One (1) Bumper
  - 3.1.8.6. Two (2) Wheels
  - 3.1.8.7. One (1) Lead-Acid Battery Pack (24V @ 20Ah)

#### 4. Aftersales/Technical Support Service

- 4.1. Technical support service must be available 9 hours per day, Monday to Friday (including holidays), during business hours, 9AM-6PM Philippines Standard Time (UTC+8)
- 4.2. End-user must be able to request technical support by phone, email or through a website
- 4.3. Technical support must respond within four (4) business hours, and for unresolved issues exceeding one (1) business day, updates must be made available to the end-users every three (3) business days.

<p>4.4. Any repair or replacement service must be successfully performed within twenty (20) business days</p> <p>5. Terms of delivery, payment, and warranty</p> <p>5.1. Must be shipped with 60-calendar day return for advanced replacement on DOA parts and components, and 1-year limited warranty that covers defects in materials and workmanship</p> <p>5.2. Delivery of the Goods shall be made by the Supplier within One Hundred Twenty (120) calendar days upon issuance of Notice to Proceed (NTP)</p> <p>5.3. The price of bid must be inclusive of government tax.</p> <p>5.4. Payment shall be made only upon certification/acceptance by the End User to the effect that the Goods have been rendered or delivered in accordance with the terms of this Contract and have been duly inspected and accepted. No payment shall be made for services not yet rendered or for supplies and materials</p>				
<b>TOTAL APPROVED BUDGET FOR THE CONTRACT (ABC):</b>				<b>Php 2,700,000.00</b>
<b>RESERVATION CLAUSE</b>				
<p>The Advanced Science and Technology Institute reserves the right to accept or reject any proposal, to annul the bidding process, and to reject all proposals at any time prior to contract award, without thereby incurring any liability to the affected proponent or proponents.</p>				