Proposed Sole Source Purchase Form

Pursuant to New Mexico Procurement law, the UNM Purchasing Department will post your completed form on the UNM Sunshine Portal for 30 days prior to purchase of the goods/services.

I. GENERAL INFORMATION. PLEASE PROVIDE THE FOLLOWING:

<table>
<thead>
<tr>
<th>Date of Request</th>
<th>5 Sep 2018</th>
<th>Requisition Number (If Applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request Submitted by:</td>
<td>John Wood</td>
<td>Title</td>
</tr>
<tr>
<td>Department</td>
<td>Manufacturing Engineering Program</td>
<td>Email</td>
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<tr>
<td>Proposed Vendor</td>
<td>Barrett Technology (Boston)</td>
<td>Amount</td>
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</table>

Buyer Team - See Commodity list at [http://www.unm.edu/~purch/commcodes.pdf](http://www.unm.edu/~purch/commcodes.pdf)

Provide a basic description of goods/services to be provided:

The UNM MEP has a Whole Arm Manipulator (WAM robot consisting of 4-DOF arm, 3-DOF wrist, and 3-finger hand) that was purchased in 2008. For functional reasons, it is in need of an upgrade including additional features (such as the new Perception Palm). The proposed PO covers upgrade of the joint controllers, internal wiring, F/T sensors, and addition of Perception Palm. Specifically, the MEP wants to upgrade, for our “South” robot:

- UNM ID # N00016642 s/n 5033, 4-DOF WAM (purchased 6/19/2008, PO #0066375, $76,865).
- UNM ID # N00017013, s/n 06219, Modular 3-DOF wrist (purchased 7/11/2008, PO #0066375, $37,987).
- UNM ID # N00018321, s/n 137, BH-8 robot hand (purchased 9/19/2008, PO #0073864, $27,635).

We will need to ship these components to Barrett Technology in Boston. BT expects to do the upgrade over two months.

Why is this purchase needed?

The MEP is part of a new AFRL robotics/manufacturing contract. Funds ($110k) were identified in the award for the WAM upgrade. The upgrade will improve the performance of the WAM and make for better research results.

II. BASIS FOR SOLE SOURCE PROCUREMENT. CHOOSE APPLICABLE BOX(ES) AND PROVIDE ADDITIONAL INFORMATION, AS REQUESTED:

- Proprietary item, technology or service only available from the proposed vendor. (Check box and describe proprietary component)

The Barrett Technology was the vendor for the original WAM (with wrist and hand). They are the only vendor for the WAM. The PO herein is for an upgrade of the WAM components. Only Barrett offers these components. Only Barrett can install these components. There are at least 7 patents that cover features of the WAM.
Compatibility requirement with existing item, technology or service. (Check box and describe compatibility requirement)

Barrett Technology was the vendor for the original WAM (with wrist and hand). They are the only vendor for the WAM. The PO herein is for an upgrade of the WAM components. Only Barrett offers these components. Only Barrett can install these components. The WAM upgrade components, including tactile sensors and light-based sensors, must be compatible with the existing WAM.

Renewal of support/maintenance/subscription of software, technology or other intellectual property. (Check box and describe)

N/A.

Other Basis for Sole Source: Please describe below:

None.

III. SUPPLEMENTAL DETAILS. PLEASE PROVIDE ADDITIONAL INFORMATION AS REQUESTED BELOW:

Describe in detail the unique capabilities of the proposed vendor's goods/service and/or personnel performing the work and why this constitutes the only source. Focus on what is unique about the goods/service and why no other vendor could meet your needs.
The WAM® is unique among robots today. Especially in research, the most important quality is its open architecture. While the WAM hardware can be run from a high level, the architecture allows unprecedented access to low-level hardware, right down to the motor torques and motor positions. To facilitate total user flexibility all (C-Language) source code is made available to the customer. No other robot manufacturer provides this level of access. The WAM also has lower intrinsic moving mass than any other human-size robotic arm in the world and as such is the only arm ever to have been approved by the US FDA for force-interactive surgery.

The Puck is one of the most advanced high-performance brushless servomotor controllers available. It also is the world’s smallest brushless servomotor controller by a factor of 1:10. The Puck is protected by three issued patents of international scope.

The Puck-driven 3-fingered BarrettHand has unique twin-opposable “spread” fingers to grasp the largest possible variety of objects. The BarrettHand also weighs only 1 kg (including all servo electronics) with a payload of 2 kg per finger. The fingers use unique coupling mechanisms that enable control of 8 axes with only 4 servomotors. All of the motors are Puck® driven, covered by 7 patents.

Describe the due diligence made to locate other possible sources including communications with other universities, communications with similar providers, web searches, yellow page searches, review of advertisements and trade publications, etc.

None. Only Barrett can install the requested upgrade.

List the other vendors who were contacted. Please describe the specs/qualifications/criteria that the other vendors were unable to satisfy.
None. The WAM is a proprietary product from Barrett Technology.