DEPARTMENT OF VETERANS AFFAIRS

Justification and Approval (J&A)
For
Other Than Full and Open Competition (>$150K)

Acquisition Plan Action ID: VA260-17-AP-6170

1. **Contracting Activity:** Department of Veterans Affairs, VISN 20, Puget Sound Health Care System, 1660 S. Columbian Way, Seattle, WA 98108-1587.

2. **Nature and/or Description of the Action Being Processed:** Procurement of a Mikrolar Inc. R3100 rotopod robot including a new, custom mounting frame and travel/installation costs (firm-fixed-price: . Will replace existing obsolete Mikrolar Inc. R2000 rotopod robot (EE63745), mounting frame, and software-compatible computer. Procurement items are one part of our robotic gait simulator (RGS) that simulates walking of prosthetic and cadaveric feet. The Kollmorgen Servostar CD amplifiers within the R2000 reached end-of-life in December 2016. The existing robotic gait simulator is located in the Biomechanical Testing Laboratory at the Center for Limb Loss and Mobility (Building 100, Room 1D-133B of VA Seattle-663).

   FAR13.5 Simplified Procedures for Certain Commercial Items: This procurement is for a Mikrolar Inc. R3100 rotopod robot including a new, custom mounting frame and travel/installation (one part of the RGS) in accordance with FAR 13.5 Simplified Procedures for Certain Commercial Items and specifically FAR 13.501 Special Documentation Requirements.

3. **Description of Supplies/Services Required to Meet the Agency's Needs:** The procurement will replace a part of the existing robotic gait simulator, specifically the Mikrolar Inc. R2000 rotopod robot and frame. The Mikrolar Inc. R3100 rotopod robot and new frame will replace the current R2000 rotopod robot and frame to rotate the existing simulation to be right-side up so gravity acts in the proper direction relative to the foot (simulations are currently performed sideways) and at faster speeds, closer to normal walking. The robotic gait simulator was developed by Dr. Patrick Aubin between 2004 and 2010; he was awarded his M.S. and Ph.D. in Electrical Engineering for this work. Since then, the RGS has been used for numerous cadaveric and prosthetic projects (2-4 per year) but has not received any software or hardware upgrades since development. Over 10 studies have been completed using the RGS with 4 studies currently in-development. Veterans Affairs funded studies include "Dynamic Gait Simulation: Neutrally Aligned and Pathologic Feet" (A3923R), "Surgically Re-establishing Foot Shape in Severely Deformed Flatfeet" (A6669R), and "Foot Bone Motion in End Stage Ankle Arthritis Patients" (F7968R). Seattle Institute of Biomedical and Clinical Research (SIBCR) funded studies include "A Prosthetic Foot Emulator to Optimize Prescription of Prosthetic Feet in Veterans and Service Members with Leg Amputations" (MD13). Studies are typically interested in prosthetic performance and functional changes due to foot and ankle pathology or intervention.

   Mikrolar Inc. costs include (1) the R3100 rotopod robot with special speed package and additional custom options , (2) the rotated frame and (3) travel/installation costs The total cost is The expected system performance is 10+ years.

4. **Statutory Authority Permitting Other than Full and Open Competition:** The statutory authority for restricting competition under SAP, or Single Sourcing, for acquisitions over $150,000 is 41 U.S.C. 3304(a)(1), as implemented by:

   FAR13.5 Simplified Procedures for Certain Commercial Items: The authority for applying the Simplified Procedures for Commercial Items of FAR 13.5 is 41 U.S.C. 1901 and is implemented by for restricting competition on this procurement via FAR 13.106-1(b)(2).

5. **Demonstration that the Contractor's Unique Qualifications or Nature of the Acquisition Requires the Use of the Authority Cited Above (applicability of authority):** Mikrolar Inc. is the only company that builds rotopod robots, highly specialized, major systems Further, Mikrolar Inc. can accommodate our special speed, frame, weight, size, motion, and miscellaneous design requirements. No other system would allow us to mount a heavy force plate to the top plate of the robot and move the force plate through physiologic walking motions at near-physiologic speeds, as is done now. No other company creates frames for sideways mounting of the rotopod (in order to walk lower limbs right-side up). No other system is robust enough to handle horizontal loads similar to what is seen when people walk (~1.2 times body weight). Also, three Center staff members are trained to use the rotopod software and can intelligently troubleshoot when software and hardware errors arise. Failure to procure the Mikrolar R3100 rotopod robot will result in unacceptable delays. Specifically, if any obsolete part associated with the R2000 rotopod fails, the RGS will become nonfunctional until the R3100 is purchased. Obsolete parts include the 6 Kollmorgen amplifiers that drive the 6 legs of the rotopod, the XMP controller card, and the purely 32-bit computer that runs the robot software. Furthermore, Mikrolar's R3100 is a patented product. The existence of a patent on the R3100 means Mikrolar has the sole rights to this product.

6. **Description of Efforts Made to ensure that offers are solicited from as many potential sources as deemed practicable:**

   Mikrolar Inc. was identified as the only source as Mikrolar is the only company that makes 6 degree-of-freedom rotopod robots that include our special speed, frame, weight, size, motion, and miscellaneous design requirements as described in Section 5. When looking to solicit offers from other companies, Symétrie's Sirius hexapod and Physik Instrumente's H-845.D61 hexapod were other robots that may have been able to meet the requirements. These other two sources of robots were found in a Google search using the term "hexapod robot." While the Sirius and H-845.D61 hexapods are similar in size to the R3100 rotopod, both are unable to meet our weight, motion, or speed requirements. The Sirius hexapod can only support ~175 lbs. of horizontal load and the H-845.D61 hexapod can only support 265 lbs. of horizontal load. The R2000 can handle, which the R3100 will also be able to handle, over 350 lbs. of horizontal load. The larger weight capacity of Mikrolar rotopods is necessary when full body weight simulations are being performed. The Sirius hexapod and H-845.D61 hexpod also fail to provide the amount of rotational motion that is necessary to simulate walking. The Sirius hexapod can only rotate ±20° along all 3 axes and the H-845.D61 hexpod can only rotate ±30° while the R3100 can rotate ±720° along the axis perpendicular to the top plate thus allowing physiologic walking motion to be simulated. Further, the Sirius hexapod and H-845.D61 hexapod fail to meet our speed requirements. The current R2000 rotopod robot can move at 100 mm/s and 120°/s. The Sirius hexapod can move at only 8 mm/s and 2.5°/s and the H-845.D61 hexapod can only move at 50 mm/s and ~2.9°/s. The R3100 can move at 100 mm/s and 400°/s.

7. **Determination by the Contracting Officer that the Anticipated Cost to the Government will be Fair and Reasonable:** The anticipated cost associated with the Mikrolar rotopod and frame purchase (including travel/installation) are expected to be fair and reasonable. the R3100 is a superior rotopod with improved stiffness and quieter motion. Hardware improvements, such as larger motors and different gearboxes, also make the R3100 the quickest rotopod while still being able to handle the same horizontal loads. Mikrolar provided their standard price sheet from 2013-2014, this sheet includes the R3000 which is priced at The base price of the S3100 is Mirkolar has built only one other R3100 for the Hospital for Special Surgery in New York and they charged them the same amount plus the additional premium price of for the additional speed option. This procurement also includes the Speed Package, therefore the base price of the R3100 plus the speed package is (See attached Mikrolar – Price List Email). The government has chosen additional options necessary to be included as part of the R3100 such as a custom table to mount, the custom frame required and the boot to house the unit for an additional These options allow the R3100 version to be 100% faster than the R3000 version. There are no published price lists for these accessories however the program provided IGCE estimates the actual Rotopod, accessories and travel to be in line with the firm fixed price quote of Mikrolar. The cost of travel and installation for this requirement is priced at Utilizing the GSA Calc tool (https://calc.gsa.gov/) to calculate the approximate hourly rate for an installation technician, it was determined the anticipated cost associated with this will be fair and reasonable.

8. **Description of the Market Research Conducted and the Results, or a Statement of the Reasons Market Research Was Not Conducted:** Market research was conducted to determine if a suitable alternative to the Mikrolar R3100 rotopod robot existed.

   Symétrie's Sirius hexapod robot and Physik Instrumente's H-845.D61 High-Load hexapod were the only robots found that had somewhat similar structures to Mikrolar's R2000 or R3100 rotopod. Neither hexapod can do what the R2000 and R3100 can do as it relates to top plate motion, speed, and load capacity as given below. These other two sources of robots were found in a Google search using the term "hexapod robot."

	Mikrolar R3100 rotopod	Symétrie Sirius hexapod	Physik Instrumente H-845.D61 hexapod
Rotation perpendicular to top plate of robot (°)	± 720	± 20	± 30
Horizontal load capacity (lbs.)	> 350	~175	265
Speed (mm/s)	100	8	50
Speed (°/s)	400	2.5	~2.9

   Theses hexapod limitations would not allow physiologic walking motion to be simulated at near physiologic speeds or loads. Only a Mikrolar rotopod will allow this.

   Additionally, the following techniques were used:

Medical Surgical Prime Vendor (MSPV) Contracts: A search was conducted on the National Acquisition Center's MedSurg Catalog search located at http://www.va.gov/nac/MedSurg/List for a list of nationally awarded contractors and/or prime vendor contracts. The MSPV for Seattle is Cardinal Health. A search using Cardinal Health as the Contractor and do not provide this machine on their MSPV contract.

GSA eLibrary: https://www.gsaelibrary.gsa.gov/ElibMain/home.do. On July 25, 2017, searches were conducted using the following keywords "robotic simulation" "rotopod" and "mikrolar" producing no results. Keywords "robotics testing" produced a result for category 67 100 - Photographic Equipment and does not fit this requirement. Another search using "robotic" produced a result for category 66 117 - Automated Pipetting And Dispensing Systems, And Laboratory Robotic Labware Handling Devices, Systems - These devices are intended the fully automated loading of such items as microplates, microtube strips, and other containers for long term, high throughput operations. Also includes diluting and dispensing devices and systems with accessories such as tips and filling wells. This does not fit this requirement. At this time, GSA is not an appropriate source for this requirement.

SDVOSB/VOSB Sources via VetBiz (VIP): In Accordance with VAAR Subpart 819.7004, 819.7005, 819.7006 - https://www.vip.vetbiz.gov/. A search on Vetbiz.gov was conducted in an attempt to locate Service-Disabled-Veteran-Owned-Small-Business (SDVOSB) and Veteran-Owned-Small Business (VOSB) concerns utilizing NAICS code 333999 (this search provided 59 results). From these results, all vendors were contacted via email (Attachment VIP Email). 0 vendors (responded as being able to meet the specifications of the requirement.

Small Business Administration (SBA) – Dynamic Small Business Search (DSBS): http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm. SBA DSBS market research was conducted utilizing NAICS code 333999 and the keyword "robotic". The search produced 43 results. From these results, all vendors were contacted via email (Attachment SBA Email). 1 vendor responded and would have been willing to respond to a request for proposal. This vendor stated the response time to get the OEM dealer connections paperwork (authorized distributer letter) was too short. However, this vendor is not be able to attain this authorized distributer letter. (see section Mikrolar Inc. below). Further, the government does not intend to enter into negotiations in a request for proposal. This acquisition will be solicited using a request for quote. Upon further investigation into SAM, this vendor's primary NAICS code is 333112 – lawn and garden tractor and home lawn garden equipment manufacturing. NAICS code 333999 used for this acquisition is not listed as part of their SAM registration data. It has been determined that this vendor is not authorized or capable of providing this requirement.

Solutions for Enterprise-Wise Procurement (SEWP): https://www.sewp.nasa.gov//. A search was conducted for "Mikrolar" as a provider. The search produced 0 results. The conclusion of

this search effort is that SEWP does not have the provider and is not a source for acquiring the RGS at this time. (Attachment – SEWP).

Mikrolar Inc.: Contacted Mikrolar Inc. and spoke with Michael Fortier on July 18, 2017. He stated they have a patent on the R3100, do not have any authorized distributors, and do not guarantee warranty or services through third parties if the product was purchased from them. He provided a statement in regards to this as well. (Attachment – Mikrolar Letter). Mikrolar Inc. also responded to an email (Attachment – Mikrolar Travel) in regards to cost of travel and installation for this requirement. Mikrolar provided approximate costs travel and 1 to 2 days installation. Utilizing the GSA Calc tool (https://calc.gsa.gov/) to calculate the approximate hourly rate for an installation technician, it was determined the anticipated cost associated with this will be fair and reasonable (Attachment – GSA Calc).

Federal Business Opportunities (FBO): https://www.fbo.gov/. A search for keyword "mikrolar" in the active and archive searches was conducted in an attempt to locate a similar procurement. No results were found. Another search for keyword "rotopad" also produced no results.

Federal Procurement Data System: A search for "mikrolar" produced 8 results. From those results (NNG10PB39P) in 2010 for and 2011 for or a total of for modifications for a R2000 system. This procurement is to upgrade from the R2000 system to the R3100. Outlined in the background information above "The current rotopod has seen two motor amplifier failures in its lifetime for which we had two replacements because we purchased them soon after the R2000 was purchased. These amplifiers are now obsolete making replacement difficult to impossible. If another amplifier were to fail, the RGS would become nonfunctional. The software that the rotopod utilizes is also near end-of-life and only runs on a purely 32-bit computer system, making computer replacement difficult." Modifications for this requirement is not an option as the R2000 is obsolete from 6 plus years ago. The other results were not relevant to this procurement. (Attachment – FPDS).

FBO Intent to Sole Source Notice: An Intent to Sole Source VA701-17-Q-0147 was published to Federal Business Opportunities (FBO) on August 16, 2017 (Attachment FBO). Zero (0) vendors responded as being able to meet the specifications of the requirement.

9. **Any Other Facts Supporting the Use of Other than Full and Open Competition:** There are no further facts. Previous sections have made it clear why the Mikrolar R3100 rotopod robot is the only source able to perform physiologic walking simulations at near physiologic speeds and loads.

10. **Listing of Sources that Expressed, in Writing, an Interest in the Acquisition:** Mikrolar expressed written interest in the robot acquisition. Mikrolar's R3100 is a patented product. The existence of a patent on the R3100 means Mikrolar has the sole rights to this product. Yard Magiq Corp responded

to market research and for reasons stated above in section 8, and is not a viable source for this acquisition.

11. **A Statement of the Actions, if any, the Agency May Take to Remove or Overcome any Barriers to Competition before Making subsequent acquisitions for the supplies or services required**: No actions are planned to foster competition between sources as Mikrolar is the only source suitable for our research needs.

12. **Requirements Certification:** I certify that the requirement outlined in this justification is a Bona Fide Need of the Department of Veterans Affairs and that the supporting data under my cognizance, which are included in the justification, are accurate and complete to the best of my knowledge and belief.

8/22/17
Date

Christina Stender
Research Engineer
VA Puget Sound Healthcare System

13. **Approvals in accordance with the VHAPM, Volume 6, Chapter VI: OFOC SOP.**

a. **Contracting Officer or Designee's Certification (required):** I certify that the foregoing justification is accurate and complete to the best of my knowledge and belief.

Heidi Gallaher
Contracting Officer
Program Contracting Activity Central

Date

b. **Director of Contracting /Designee (Required over$150K but not exceeding $700K):** I certify the justification meets requirements for other than full and open competition.

Grace Kelly-Burnsworth
Branch Chief
Program Contracting Activity Central

Date