

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
NASA SHARED SERVICES CENTER (NSSC)**

**Justification for Other than Full & Open Competition  
(JOFOC)**

**FAR 6.302-1**

**(10 U.S.C. 2304(c)(1) or 41 U.S.C. 253(c)(1))**

**1. Recommendation**

It is recommended that NASA, NASA Shared Services Center (NSSC) award a sole source contract to The MathWorks, Inc for a NASA Agency-wide Indefinite Delivery-Indefinite Quantity (IDIQ) contract to purchase new software licenses, continued software maintenance, and training of MathWorks products and services used for control system analysis, design and testing.

**2. Nature of the Action**

Authority is requested to negotiate a firm-fixed price IDIQ contract with MathWorks, to procure Agency-wide maintenance licenses for all MathWorks design software tools, as the company is the only known source that can meet Agency requirements. The baseline requirements will include maintenance support for the existing license suite. Furthermore, the IDIQ component will enable the Agency to procure additional software licenses and training/consulting services for various MathWorks products (e.g., MatLab and Simulink). These products consist of Computer-aided design (CAD) software tools and MathWorks is the only source that can meet Agency requirements. The increased product offerings have a total estimated contract value of \$6,424,636.33 with a period of performance consisting of a one year base period and a one year option period. See the Government's estimated cost in the table below:

<b>IGCE (based on NASA MathWorks Historical Expenditures)</b>			
	<b>Base</b>	<b>Option YR1</b>	<b>2 Yr Total</b>
<b>Renewal/Maintenance</b>			
<b>New Product Purchases</b>			
<b>Training/Consulting</b>			
<b>Total</b>			<b>\$6,424,636.33</b>

### **3. Description of Required Services**

MathWorks products such as MATLAB software provide high-level technical computing language and interactive environment support for algorithm development, data visualization, data analysis, and numeric computation. MATLAB consists primarily of the core product, MATLAB, a numerical processing engine, and Simulink, a graphical model-based programming environment. The MATLAB software provides unique capabilities in a wide range of applications, including signal and image processing, communications, control design, test and measurement, financial modeling and analysis, and computational biology. Additional MATLAB software components (toolboxes) are available separately and provide specialized functions. Examples include the Controls Toolbox, which provides specialized functions for the design and analysis of feedback control systems that are key to NASA Langley's development of guidance and control software for both aeronautic and space applications, and the Signal Processing Toolbox, which provides specialized functions for time series data analysis and is often used in data reduction analysis from wind tunnel and flight experiments. These toolboxes, taken together with the core products, form an analysis and algorithm development environment that is essential to the timely execution of a number of active projects in aeronautics, space exploration, and atmospheric sciences.

The MATLAB Software Maintenance Service includes access to new product features, direct technical support, online license management, periodic release updates and enhancements (including all toolboxes), and critical fixes to the software as problems are discovered. The maintenance service also provides technical support to end-users through telephone/email and per-user web based tracking of service requests. Various NASA Centers have acquired "perpetual" licenses for MATLAB software. This means that at its current version and capability level, this software may be run without additional costs. However, past experience has shown that running the software without maintenance or with partial maintenance is not cost effective. Improvements in the product's capabilities are continually being made, and the loosely coupled "toolbox" nature of the MATLAB software allows these advances to be incorporated quickly. Running older versions of MATLAB also prevents realization of the benefits of advances in the underlying hardware (e.g. dual-core CPUs) and causes compatibility problems with other users which also impacts NASA's operational effectiveness. In most instances after running with lapsed maintenance, an upgrade to the current version of the software is eventually required. The cost of this is typically more expensive than having maintained a service agreement, and does not provide the benefit of access to technical support and interim releases.

In the new agreement, MathWorks shall provide maintenance, new licenses and updates for all MathWorks software in use at the NASA Centers. Furthermore the Contractor shall provide maintenance for any purchases of MathWorks software tools in use at NASA Centers. The NASA Centers and associated Facilities are covered by this agreement include Armstrong Flight Research Center (AFRC – including Dryden Aircraft Operations Facility), Ames Research Center (ARC), Glenn Research Center (GRC – including Plumbrook Facility), Goddard Space Flight Center (GSFC - including Wallops Flight Facility – WFF, White Sands Complex – WSC, Independent Verification and Validation Facility – IV&V, and Goddard Institute for Space Studies - GISS), Headquarters Main Campus (HQ), Johnson Space Center (JSC – including White Sands Test Facility – WSTF, El Paso Forward Operating Location, and the White Sands Space Harbor), Kennedy Space Center (KSC – including Vandenberg Air Force Base – VAFB, and Transoceanic Abort Landing Sites – TAL), Langley Research Center (LaRC), Marshall Space Flight Center Main Campus (MSFC – including Michoud Assembly Facility – MAF and the National Space Science & Technology Center – NSSTC), NASA Shared Services Center (NSSC), and Stennis Space Center (SSC).

#### **4. Statutory Authority**

Authority for the JOFOC is provided by 10 U.S.C. 2304(c)(1) as implemented by FAR 6.302-1, Only One Responsible Source and no Other Supplies or Services will Satisfy Agency Requirements. Furthermore, this action is being conducted as an acquisition under the authority of the test program for commercial items (section 4202 of the Clinger-Cohen Act of 1996) found in FAR Subpart 13.5. The authority found in FAR 13.5(a), authorizes as a test program, use of simplified procedures for the acquisition of supplies and services in amounts greater than the simplified acquisition threshold but not exceeding \$6.5 million (\$12 million for acquisitions as described in 13.500(e)), including options, if the contracting officer reasonably expects, based on the nature of the supplies or services sought, and on market research, that offers will include only commercial items. Under this test program, contracting officers may use any simplified acquisition procedure in this part, subject to any specific dollar limitation applicable to the particular procedure. This JOFOC complies with the special documentation requirements of FAR 13.501(a)(1)(ii).

#### **5. Contractor's Unique Qualifications**

This is an annual software maintenance renewal for new and existing CAD software tools being used in our labs. Market research was conducted to identify available software tools vendors that can provide an annual maintenance renewal. That market research identified The MathWorks as the only source for the required software tools and no other vendor could meet the Government's requirements. (See Section 8, Description of Market

Survey, below for further information regarding market research performed.)

MathWorks is the leading developer of mathematical computing software. Engineers and scientists within the Agency rely on MathWorks products to accelerate the pace of discovery, innovation, and development. One of MathWorks products (e.g., MATHLAB) leverages the language of technical computing, and is a programming environment for algorithm development, data analysis, visualization, and numeric computation. MathWorks produces nearly 100 additional products for specialized tasks such as data analysis and image processing that interface with MATLAB. This functionality is highly leveraged by NASA scientist and engineers supporting various programs and projects throughout the Agency.

MathWorks Inc. is the developer and manufacturer of MATLAB. As copyright holder for MATLAB, The MathWorks Inc. is the only vendor with access to the MATLAB code capable of modifying, updating, and maintaining the software in accordance with industry standards. Another vendor could not modify the software without express permission from MathWorks. As such, MathWorks is the only authorized provider of the software maintenance. The estimated cost to replace the current MathWorks CAD software tools with a comparable solution (estimated: \$33.4M) is significantly higher than the estimated Agency MathWorks Renewal cost of \$6,424,636.33.

**6. Effort to Solicit Other Sources**

This requirement will be posted on the NASA Acquisition Internet Service and will be synopsisized on FEDBIZOPPS in accordance with FAR 5.201. Synopsis results will be included in the official contract file.

**7. Determination of Fair and Reasonable Cost**

As NASA has historical contract information from previous awards with MathWorks for software maintenance, training and consulting services, there are no anticipated issues that would circumvent a fair and reasonableness price determination. The Contracting Officer will determine price reasonableness during the proposal evaluation process prior to contract award.

**8. Description of Market Survey**

A review of GSA Advantage was performed and the requisite software maintenance and support is not available on GSA Federal Supply Schedule (FSS) contracts. A review of the NASA SEWP contract was conducted as well

and no other NASA SEWP vendor had the ability to provide NASA with a consolidated contract to provision maintenance, new licenses, training, and consulting support for all of NASA. A Google search was performed and no additional sources were found. In addition, Mathworks was contacted directly and they confirmed that they do not have any authorized resellers for MATLAB software maintenance.

**Other facts supporting the use of other than full and open competition**

If the Agency has to select an alternative source to replace MathWorks products in use throughout the Agency, the change in the solution would adversely impact NASA's ability to meet various mission requirements. Some of the NASA Centers, Programs, and/or Projects that leverage the capabilities of MathWorks that would be adversely impacted include: the Engineering Directorate at the Johnson Space Center, the Scientific & Technical Information Program Office at the Langley Research Center, the Longitudinal Emergency Control System at the Armstrong Flight Research Center, the Sciences and Exploration Directorate at the Goddard Space Flight Center and NOAA's Geostationary Operational Environmental Satellites (GOES) program. The risk to those programs currently deployed is too great. Moreover, the cost to redesign and test those systems using a new CAD software solution would be unreasonable. Not to mention the various scientist and engineers throughout the NASA workforce would have to be retrained thus impacting their ability to meet mission milestones and support needs. Alternatives to MATLAB have been identified for specific operations, e.g. symbolic manipulations (Wolfram Research-Mathematica), data visualization (Tecplot Inc.-Tecplot-360), and real-time hardware interface (National Instruments-Lab View). All three of these software packages are used by several NASA Centers; however, none of these packages provide the comprehensive and integrated solution available through MathWorks products (e.g., MATLAB and its toolboxes).

Acquiring alternatives to MATLAB software would involve the purchase and installation of several products from different vendors to achieve the same basic capability. The integration of these tools would require data import/export utilities and result in a much less productive workflow. Training cost and investment would be substantial, and communication of research and analysis results both within and outside of NASA would be negatively impacted. Realistically, any perceived savings achieved by switching to an alternative solution would be quickly absorbed by increased costs associated with disrupting the current mission, which would ultimately cost the Agency more money in the long run.

9. **Actions to Remove Barriers to Competition**

None. It is anticipated that there will be no additional acquisitions other than future years maintenance for the currently procured MathWorks software products; some purchases of additional software to augment current instances of MathWorks software and associated MathWorks product training. However; the Agency will continue to assess the viability of alternative solutions prior to exercising options and when a new follow on contract is contemplated.

10. **Firms Expressing an Interest in this Procurement**

There are other companies who develop CAD software, but there are no other companies who have authority to distribute, maintain, and support the source code which is proprietary to products that are sold by MathWorks. If any companies express interest in the procurement as a result of the synopsis discussed in paragraph 6, the Contracting Officer will address their interest and whether they can comply with the government's requirements in the official contract file.

**TECHNICAL CERTIFICATION:**

I hereby certify the facts in this justification and any supporting data used for this justification are accurate and complete to the best of my knowledge.

[REDACTED]

ELMT Strategist

**CONTRACTING OFFICER CERTIFICATION:**

I hereby certify that the above justification is complete and accurate to the best of my knowledge and belief pursuant to the requirements prescribed in FAR 6.302-1.

[REDACTED]

Contracting Officer

**CONCURRENCE:**

[REDACTED]

Procurement Officer  
NASA Shared Services Center

**COMPETITION ADVOCATE APPROVAL:**

[REDACTED]

Acting Executive Director  
NASA Shared Services Center