



The Digital Manufacturing Institute

MxD

REQUEST FOR QUOTATION

MxD SENSOR KIT 2.0

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I. RECORD OF CHANGE

Revision	Date	Sections	Description
1.0	August 19, 2026	N/A	Original

II. TIMELINE

Deadline for submissions to be received	September 9, 2026
Follow up clarification meetings as needed	Throughout the submission phase
Feedback to participants	By September 18, 2026

III. INTRODUCTION

MxD: The Digital Manufacturing Institute strengthens U.S. economic prosperity and national security by driving digital adoption in manufacturing. In partnership with the Department of Defense, MxD (also referred to as the Institute) equips U.S. factories with the digital tools and expertise required for modernization. MxD's core mission is to strengthen U.S. manufacturing global competitiveness to advance economic prosperity and national security by accelerating digital adoption, securing supply chains, and empowering the workforce.

MxD has invested over \$400 million in more than 200 applied research and development projects in areas including design, product development, systems engineering, factory modernization, agile and resilient supply chains, workforce training, and cybersecurity.

MxD is also the DoD's National Center for Cybersecurity in Manufacturing. All MxD projects must take cybersecurity into consideration.

This RFQ is publicly available on the MxD website at <https://members.mxdusa.org/page/project-calls>. This public posting represents the official notification of a request to submit the required documents. Amendments to an MxD RFQ may be used to extend due dates, clarify procedural requirements, or modify technical requirements. If an updated RFQ is issued, the previous RFQ will be rescinded. Those interested in responding to this RFQ should carefully monitor the MxD website after an original posting, up to the time of the quotation submission date. Any revisions, amendments or updates will appear in the same section of the website as the original solicitation. It is the responsibility of the Respondents to monitor the MxD RFQ updates and ensure that their quotation meets the solicitation requirements.

The Respondent to an RFQ is the non-Federal organization that submits a quotation in response to the RFQ. Submission to this RFQ is not a commitment for further business by either MxD or the DoD.

All responses to this RFQ are kept strictly confidential and are shared only with DoD authorized personnel in accordance with contractual requirements.

Due to the expedited nature of this RFQ schedule, Respondents are encouraged to meet with MxD project members and ask any questions for clarification purposes. Note that responses to questions may be made public to all Respondents.

Direct all questions to both:

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TECHNICAL SUMMARY



IV. TECHNICAL SUMMARY

PROBLEM STATEMENT

In 2025 MxD, in partnership with Portsmouth Naval Shipyard (PNSY), deployed 10 first-generation industrial sensor kits, which enabled secure, real-time data collection from legacy equipment in PNSY's machine shop. These kits provided much-needed visibility into machine health and operations, directly supporting submarine maintenance planning and reducing downtime.

However, while the initial pilot demonstrated technical feasibility and operational value, it revealed key limitations such as high cost per unit which limits scalability across the Organic Industrial Base (OIB), configuration and deployment complexity restricting widespread adoption, and a lack of productization for diverse use cases across different facilities. Given that the OIB includes thousands of legacy machines requiring digital integration, there is a critical need for a streamlined, scalable, and cost-effective next-generation sensor solution.

OVERVIEW AND BACKGROUND

The MxD Sensor Kit was originally created to respond to small and medium-sized manufacturers' (SMMs) need for digitalization and to show manufacturers that going digital does not have to be expensive or complicated. The device is designed to be a simple, no-code solution that interfaces with most commercially available sensors to allow manufacturers to monitor their processes more closely, shortening downtimes or reducing failures.

As a Manufacturing Innovation Institute, MxD is not set up to produce sensor kits at scale and therefore is seeking a partner with design, production, and deployment expertise to develop the next generation solution, building off the successes of the initial product.

OBJECTIVES

The objective of this project is to take the successes of the first-generation sensor kit and, working with PNSY to understand the shipyard's use cases, develop and produce a lower cost sensor kit (or family of sensor kits) to deploy at PNSY. At least 100 sensor kits will be installed, and a roadmap to producing at least 400 will be developed.

REQUIREMENTS

Requirements & Use Case Development

The contractor shall:

- Identify and prioritize legacy manufacturing equipment use cases in partnership with PNSY
- Determine required sensing capabilities using the identified use cases. Capabilities may include vibration, temperature, pressure, current, fluid level, rotational speed, cycle time, utilization, and machine/equipment health.
- Define functionality, operational, cybersecurity, networking, installation, usability, and performance requirements.
 - Cybersecurity requirements shall adhere to NIST 800-82



- Identify installation, environmental, power, networking, and operational constraints.
- Develop standardized sensor kit configuration(s).
- Electronics must be TAA compliant and comply with:
<https://www.acquisition.gov/far/52.204-25>
- Ensure the system supports DoW and commercial manufacturing environments.
- Define interfaces for AI analytics, predictive maintenance, and digital twins.
- Define requirements supporting increased machine health data collection and continuous condition monitoring.
- Define installation and configuration requirements that reduce deployment time and complexity.

System Design & Architecture Development

The contractor shall:

- The kit shall be designed to support applicable Zero Trust (ZT) principles and Risk Management Framework (RMF) security requirements.
- The kit shall use FIPS-140 validated cryptographic modules for applicable functions.
- The kit shall support IEEE 802.1x authentication for wired ethernet and IEEE 802.11/Wi-Fi network connections.
- Design a modular, scalable sensing platform for multiple machine types.
- Reduce hardware complexity to improve manufacturability, reliability, and maintainability.
- Develop interchangeable sensor interfaces to support diverse applications.
- Support connected and air-gapped operation.
- Enable secure integration with existing OT networks.
- Integrate secure edge computing.
- Design for future hardware and software expansion.
- Reduce production costs compared to the first-generation system.
- Design recommendations shall include any changes to the current process, including physical positioning of the work, operators, and equipment.
- Design shall communicate with existing process control systems.
- Provide data storage options or recommendations for storage methods.
- Call out any calibration of sensors and include procedures for troubleshooting.
- Design shall call out any software application licensing subscriptions and terms.

Prototype Development & Validation

The contractor shall:

- Develop prototype systems representative of production design.
- Demonstrate operations across representative manufacturing use cases.
- Validate all system requirements
- Implement secure communications, authentication, and encryption.
- Protect data confidentiality, integrity, and availability.
- Document cybersecurity architecture, risk mitigations, and compliance.
- Develop an NDAA-compliant hardware supply chain with component traceability.
- Conduct usability testing with PNSY personnel.



- Incorporate user feedback into the production design.
- Deliver validation reports cover functionality, reliability, cybersecurity, networking, installation, usability, and corrective actions.

Production & Deployment

The contractor shall:

- Develop scalable manufacturing processes and supply chain strategy.
- Manufacture a minimum of 100 production-ready sensor kits for previously identified/prioritized PNSY use cases.
- Deploy production systems on PNSY equipment.
- Provide training to shipyard personnel.
- Collect and securely manage machine health and operational data.
- Standardize data formats for analytics.
- Enable future adoption for AI-enabled analytics, predictive maintenance, and digital twin environments.
- Validate installation, operational integration, networking, cybersecurity, and data collection performance.
- Provide installation guides, maintenance documentation, user manuals, and training materials.
- Support deployment across a minimum of 100 manufacturing assets.

Scaling & Transition Planning

The contractor shall:

- Develop a roadmap for deployment to approximately 400 systems.
- Develop scale-up manufacturing plans.
- Define transition strategies for additional DoW and commercial facilities.
- Identify technical, manufacturing, supply chain, and operational risks.
- Develop lifecycle sustainment plans, including maintenance, software support, and cybersecurity updates.
- Support future system expansion with minimal redesign.
- Increase real-time machine health and operational data availability across deployed systems.
- Provide training for maintaining and updating the kits.



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PROGRAM OVERVIEW



V. PROGRAM REQUIREMENTS

QUOTATION

While the format of the quotation is flexible, the following information must be clearly included:

- 1) Summary of background experience demonstrating domain qualifications and expertise
- 2) Experience level and number of headcount being proposed for this effort
- 3) Acknowledgement that all headcount are US citizens subject to a criminal background check (see note below)
- 4) Hourly rate for proposed headcount
- 5) Total hours proposed for the project
- 6) Total cost (see note below)

Neither MxD nor the U.S. Government has any responsibility for costs associated with development, submissions, or pre-award negotiations for this quotation and subsequent contracts.

PERIOD OF PERFORMANCE REQUIREMENTS

Estimated period of performance is 24 months from contract award.

TRAVEL, FACILITY ACCESS AND INSURANCE REQUIREMENTS

All travel requirements and associated costs needed for execution of the objectives and deliverables must be included in the quotation. There is no increase in funding should additional travel be required to fulfill the agreed upon requirements

OWNERSHIP OF DELIVERABLES AND INTELLECTUAL PROPERTY

It is expected that some or all of the project deliverables will become a commercially viable solution. Any existing, background, intellectual property (IP) shall remain the property of the applicable IP owner, who expressly reserves all rights in such existing, background IP, including the unrestricted right to license, use, modify, and otherwise exploit such IP. Subject to any intellectual property rights retained by the United States Government, any new intellectual property (IP) developed jointly by the respondent and MxD in the performance of this contract shall initially be jointly owned by the respondent and MxD, with each party sharing right, title, and interest in and to such new IP. The parties acknowledge that the final ownership, licensing, and other intellectual property rights and obligations relating to such new IP will be negotiated and set forth in the definitive contract.

VI. ELIGIBILITY

MxD MEMBERSHIP

This RFQ is open to the public; any organizations regardless of membership status may submit a quotation in response to this RFQ. However, once a Proposal Team is downselected, each member of the Proposal Team shall execute the MxD Membership Agreement and Standard Project Agreement (SPA) within 30 days of notification of project downselect; acknowledgment of this is required in the Technical Proposal submission.



Any non-MxD members are strongly encouraged to conduct a legal pre-review of the Membership Agreement and Standard Project Agreement (SPA) before submission, as this is a common source of delay during negotiations with proposal teams chosen during downselection.

Proposals submitted by active MxD members shall ensure they are in good standing and have an executed Standard Project Agreement (SPA) within 30 days of notification of project downselection. If an active MxD member has not executed the SPA, they are strongly encouraged to execute the SPA as early as proposal submission, as this is a common source of delay during negotiations with proposal teams chosen during downselection.

For information on MxD membership, including pricing and benefits, please contact MxD's Director of Business Development, Tony Papke (tony.papke@mxdusa.org). For more information on becoming a MxD Member, please visit the MxD Membership page on our website. Federally Funded Research and Development Centers (FFRDCs) and Government entities (Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations. They cannot propose to Project Calls in any capacity unless they address the following conditions:

- FFRDCs or Government entities may not exclusively team on any specific proposal team.
- FFRDCs must demonstrate that the proposed work is not otherwise available from the private sector and must also provide a letter on letterhead from their sponsoring organization citing the specific authority establishing their eligibility to compete with industry and propose to solicitations utilizing Government funding.
- Government entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority and, where relevant, contractual authority, establishing their ability to propose to solicitations utilizing government funding.

Government agencies interested in participating in MxD RFQs as a respondent or subcontractor should notify MxD in advance of the RFQ submission. For RFQs utilizing federal funding, special agreements and considerations may need to be implemented to enable participation.

NOTIFICATION OF PARTICIPATION NON-U.S. CITIZENS

Award shall be granted only to U.S. companies, firms, organizations, institutions, or other entities organized or existing under the laws of the United States, its territories, or possessions (as defined in Section 120.15 of International Traffic in Arms Regulations, 22 CFR § 120 et. seq. ("ITAR")).

It is a requirement that work related to the Award must be completed in the U.S. by people legally authorized to work in the U.S. All proposed participation by non-U.S. Citizens must be disclosed to MxD on Attachment 1 Non-U.S. Citizens at least 60 days prior to proposed participation. Written approval of non-U.S. Citizens must be received by the Awardee from MxD prior to commencing work.



VII. QUOTATION EVALUATION

EVALUATION PROCESS

An MxD Evaluation Board (EB) will review and evaluate each submitted quotation. The EB may consist of recognized experts from industry and academia and key government stakeholder representatives (when appropriate). MxD representatives, such as the Director of R&D Projects, the Director of Engineering, and technical subject matter experts may participate in and lead EB meetings.

All members of the EB must agree to a statement of personal and organizational conflict of interest and must agree to a non-disclosure, if not already covered by an MxD NDA.

Through its deliberations, the EB will determine “selectability” of each quotation. Selectability determination is based on quotation evaluation criteria below. Through this process, the quotations are down selected.

EVALUATION CRITERIA

Each quotation is evaluated by a specific set of criteria. Below are the quotation evaluation criteria for this RFQ:

Quotation Evaluation Criteria
Requirements Compliance • <i>Quoted solution clearly addresses all tasks identified in RFQ</i> • <i>Clear identification of any risks and mitigations</i> • <i>Complete and clear itemization of all requirements</i>
Respondent Qualifications • <i>Respondent is highly qualified to accomplish the tasks with clear delineation of roles and responsibilities</i> • <i>Respondent has unique capabilities that are directly associated with the target technology and tasks</i>
Cost Factors • <i>Quoted costs are reasonable and realistic for the proposed work effort</i> • <i>Quoted costs are competitive relative to other quoted commercial offerings</i> • <i>Value is maximized through inclusion of optional cost share and objectives</i>

SUBMISSION DETAILS

Each Respondent must submit their quotation no later than 5:00PM Central Time, September 9th, 2026. All submissions must be submitted electronically to MxD’s submission form, [LINK HERE](#). Please complete the form and hit **SUBMIT** in order to fully submit your quotation.



VIII. NEXT STEPS

NOTIFICATION

MxD will notify all Respondents of the status of their quotation by September 18, 2026. This notification will include decision of the EB. If the quotation has been accepted for award, instructions for next steps will be reviewed with the selected Respondent.

FINAL REVISIONS

MxD reserves the right to negotiate the cost and scope of the proposed work with a Respondent that has been down selected. The selected Respondent(s) and subcontractors, if any, who intend to pursue selection may be required to participate in the revision process prior to award.

CONTRACT

Final contract vehicle and contract terms will be negotiated at the time of contracting. Down selection of a quotation does not constitute agreement to quoted terms by either MxD or the DoD.