



The Digital Manufacturing Institute

# MxD

## REQUEST FOR PROPOSALS

Jacket Forming Process  
Feasibility Study

21-19-03

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## I. RECORD OF CHANGE

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| Revision | Date             | Sections | Description |
|----------|------------------|----------|-------------|
| 1.0      | January 31, 2023 | N/A      | Original    |

## II. TIMELINE

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|  |                                 |
|--|---------------------------------|
| Deadline for submissions to be received    | March 30, 2023                  |
| Follow up clarification meetings as needed | Throughout the submission phase |
| Feedback to participants                   | April 14, 2023                  |

## III. INTRODUCTION

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MxD: The Digital Manufacturing Institute is where innovative manufacturers go to forge their futures. In partnership with the Department of Defense, MxD (also referred to as the Institute) equips U.S. factories with the digital tools and expertise they need to begin building every part better than the last. MxD's core mission is to transform American manufacturing, by fully integrating the digital thread across the manufacturing enterprise to reduce overall manufacturing costs, stabilize and grow the manufacturing industrial base and improve US competitiveness.

MxD has invested over \$120 million in more than 85 applied research and development projects in areas including design, product development, systems engineering, future factories, agile and resilient supply chains, and cybersecurity.

MxD operates from a nearly 75,000-square-foot innovation center near downtown Chicago. Its future factory floor features some of the most advanced manufacturing equipment in the world, which partners can use for experimentation and training on everything from augmented reality to advanced simulation techniques.

MxD is also the DoD's National Center for Cybersecurity in Manufacturing which focuses on three key areas. First, it uses its factory floor as a demonstration area for existing cybersecurity technology. Second, it works to develop new tools to address very specific pain points for manufacturers. And third, it is working with industry and government to figure out how to get these tools to small and medium-sized manufacturers. All MxD projects must take cybersecurity into consideration.

This RFP is publicly available on the MxD website at <https://mxdusa.org/projects/>. This public posting represents the official notification of a request to submit the required documents. Amendments to an MxD RFP may be used to extend due dates, clarify procedural requirements, or modify technical requirements. If an updated RFP is issued, the previous RFP will be rescinded. Those interested in responding to this RFP should carefully monitor the MxD website after an original posting, up to the time of the proposal 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 RFP updates and ensure that their proposal meets the solicitation requirements.

The Respondent to an RFP is the non-Federal organization that submits a proposal in response to the RFP. The Respondent is considered the Prime contractor. Any other companies involved are considered Subcontractors typical of a Prime/Subcontractor relationship. All Subcontractors are subject to flow-down clauses in the Prime contract as required by all government stipulations.

Any questions regarding this solicitation must be provided to [projects@mxdusa.org](mailto:projects@mxdusa.org). The questions will be sent to the appropriate MxD point of contact, and answers will be published on the MxD website, if appropriate.



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# TECHNICAL SUMMARY



## IV. TECHNICAL SUMMARY

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### OVERVIEW AND BACKGROUND

The Department of Defense (DoD) is executing their Digital Modernization Strategy through four strategic initiatives: innovation for advantage, optimization, resilient cybersecurity, and cultivation of talent to strengthen the Industrial Base. MxD is tasked with assisting the DoD in the identification of opportunities to develop and implement Advanced Manufacturing Technologies in critical processes to improve methods for manufacturing of existing products. With many pieces of equipment already established in supporting current production, the focus is on what technology can be introduced to gain valuable real-time feedback in improve business decisions along with ability to collect and share information with other facilities for seamless production transitions.

### PROBLEM STATEMENT

As the Joint Center of Excellence for Lethality, Picatinny Arsenal provides prototyping capability for small caliber jacket forming. Increasing the critical quality data captured during the process and packaging it in a concise Technical Data Package (TDP) for transfer to full production sites will enhance project transitions to full rate production. MxD is looking to engage with a partner to perform a feasibility study of the current system and plan a solution for future implementation with the goal of the production sites having a fast ramp-up to production levels upon receipt of the TDP.

This activity has the potential for subsequent work for implementation at Picatinny Arsenal and other DoD facilities.

### OBJECTIVES

The objective of this project is to assess the current environment, develop the requirements and collect the associated costs to achieve the outlined desired state. The desired state will capture data from the small caliber jacket forming process with the goal of utilizing the information for a fast ramp-up to production levels at the production sites. As a pre-production site, part quality data, machine parameters, and other pertinent data are provided to full production sites as Government Furnished Information (GFI). The GFI is intended to give full production sites assurance that running machines with given parameters will yield quality parts. The system to be developed should include, but is not limited to, machine data collection, environmental data collection, metrology for collection of part quality data, software to aggregate and display data, digital twin of the forming machine, and proposed formats for TDP. It is expected a study of the current process will be needed to understand what data is critical to be collected, and what constraints exist. It is advised that the project include the insights from at least one production site as part of the project.

The following sections highlight the desired requirements proposed by MxD to meet the objectives of the project. However, MxD is open to receiving an expanded proposal with additional inputs if they are relevant to supporting the objectives while meeting budget and time constraints.

To support the key objectives of this project the proposal should try to prioritize the use of Commercial Off the Shelf (COTS) where possible.



## TECHNICAL REQUIREMENTS

### Feasibility Study

The primary deliverable is an implementation plan based on the result of the current system study to retrofit machines to deliver the requirements below. Implementation plan is to include cost, estimate, schedule, and general statement of work.

### Current System Study

The contractor will perform a process study of the current small caliber jacket forming process to capture the full product lifecycle and determine data critical to captured during the process.

- Contractor shall perform a study of the current small caliber jacket forming process at Picatinny Arsenal.
- The study shall evaluate the process for collection, aggregation, and display of process data.
- The study shall evaluate the network and security requirements needed for implementation.
- Insights and feedback from at least one production site should be included in the case study. This could include any current production ramp metrics to set as a baseline
- The study shall evaluate desired digital formats for the TDP.
- The study shall evaluate current operator machine interactions and suggest training required for operator in future state outlined in System Design.

### System Design

The contractor will deliver a study detailing the scope of work with cost estimates to implement the supporting technology for:

- The collection, aggregation, and display of process data which may include load and part temperature, part length, and any other data determined critical by the team.
- Securely managing Data designated Controlled Unclassified Information (CUI).
- Synchronizing data from difference sources by a common variable.
- Utilizing analytics to evaluate and display cause and effect relationships between data sources if any.
- Utilizing on-board inspection technology to measure length of jackets coming out of the press in real time.
- Capabilities for a descriptive digital twin of the small caliber jacket forming machine.
- Interactive controls at the machine to reference/display process data and metrics.
- The logging of feedback from full production sites on key performance indicators (KPIs) measuring effectiveness of the data shared.
- Any recurring costs with application licenses or other supporting services.
- Operator general knowledge considerations to use system to identify and develop specific training.
- Retrofitting similar machines internally and outside of Picatinny.

### Technical Data Package

The contractor will recommend work products and formats for a TDP containing data collected by the proposed system for delivery to production facilities. System needs to log feedback on the



effectiveness of the shared data at the production site for the ramp-up effort as part of the TDP lifecycle.

- Data formats should be readable by full production sites.
- TDP should include method for full production sites to send feedback to Picatinny.

### **Cybersecurity Considerations and Requirements**

Cybersecurity must be considered when selecting the hardware and software for the system design. Any software required by the proposed system will require approval for use on Picatinny's Defense Research and Engineering Network (DREN).

- Contractor must abide by security requirements outlined in National Institute of Standards and Technology (NIST) 800 SP-53 and NIST 800 SP-82 R2

### **RFP SCOPE OF WORK**

MxD requires submission of proposed solutions by March 30, 2023, by 5pm CST. All proposals must be submitted via the MxD website. The SUBMIT button can be found on each RFP webpage at [www.mxdusa.org/projects](http://www.mxdusa.org/projects). By clicking the SUBMIT button, applicants will be directed to the official Submission Form. A review of proposal will be completed within 30 working days after the response due date. If there are any questions with a proposal, MxD will request addition information. Each submitter will be notified when a contract has been awarded.

### **PROPOSAL REQUIREMENTS**

A response to this RFP must include a detailed statement of work to deliver the feasibility study as outlined above and include a cost proposal. Please use whatever format best provides the details of the solution; a template will not be provided.





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# PROGRAM OVERVIEW





## V. PROGRAM REQUIREMENTS

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### PROGRAM MANAGEMENT

The selected Respondent will be awarded for the proposed solution. The Awardee is responsible for providing the detailed plans as outlined in the technical objectives and requirements as based on the proposal. The Awardee will coordinate with the MxD point of contact (POC) for reporting purposes and for coordinating the study at Picatinny Arsenal.

### PERIOD OF PERFORMANCE REQUIREMENTS

Estimated period of performance is 2 months from contract award. MxD and Picatinny Arsenal are flexible on when the study is to be completed per the objectives. However, there is no increase in funding beyond what was agreed to per contract.

### TRAVEL, FACILITY ACCESS AND INSURANCE REQUIREMENTS

Picatinny Arsenal is in Wharton, NJ. All travel requirements and associated costs needed for execution of the objectives and deliverables must be included in the proposal. There is no increase in funding should additional travel be required to fulfill the agreed upon requirements. Proposals must include an estimate for required travel to Picatinny Arsenal to perform all work as defined above. Awardee and / or its authorized subcontractor(s) will need to access the facility to perform the necessary onsite study as outlined in this RFP. Awardee and / or its authorized subcontractor(s) must meet any terms and conditions for access as set forth by Picatinny Arsenal.

Awardee and / or its authorized subcontractor(s) will need to access the Picatinny facility to perform the necessary onsite study work as outlined in this RFP. Awardee and / or its authorized subcontractor(s) must meet any terms and conditions for access as set forth at Picatinny.

### OWNERSHIP OF DELIVERABLES AND INTELLECTUAL PROPERTY

It is expected that the solution to meet the objectives will be comprised of commercially available components. Any existing, background intellectual property (IP) remains the property of the IP owner.

### FUNDING REQUIREMENTS

MxD anticipates awarding a **fixed-price contract** resulting from this RFP. MxD reserves the right to fund all, some, or none of the proposals received under issued RFPs. Final award amounts will be determined accordingly based on proposals received, subsequent evaluations, and final agreement between MxD and the Awardee.

## VI. ELIGIBILITY

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### MxD MEMBERSHIP

This RFP is open to the public; any organizations regardless of membership status may submit a response to this RFP. **Membership in MxD is not required to be awarded a contract for this RFP.**

If a Respondent or Awardee wishes to promote their affiliation with MxD because of this RFP or subsequent award, MxD membership is required. This can include participation in workshops, social media promotion, and networking with other members. MxD membership does not grant



rights to publish association with the project. Publication of association with the project will be subject to terms to be determined at the time of contracting.

Any Respondents who are non-MxD members are encouraged to review the Membership Agreement prior to submission and to direct questions to MxD's Director of Business Development, Tony Papke ([tony.papke@mxdusa.org](mailto:tony.papke@mxdusa.org)). For more information on how to become 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 and cannot propose to RFPs in any capacity unless they address the following conditions:

- FFRDCs or Government entities may not exclusively respond to this RFP.
- FFRDCs must clearly 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, as well as, where relevant, contractual authority, establishing their ability to propose to solicitations utilizing government funding.

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

### **NOTIFICATION OF PARTICIPATION BY 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. PROPOSAL EVALUATION**

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### **EVALUATION PROCESS**

An MxD Evaluation Board (EB) will review and evaluate each submitted proposal utilizing the evaluation criteria specified in the following section.

The EB may consist of recognized experts from industry and academia and key government stakeholder representatives (when appropriate). MxD representatives, such as the PMO Senior Director, Engineering Director or MxD POC, may participate in and lead EB meetings. All members of the EB will need to meet strict standards of personal and organizational conflict of



interest. The evaluators may be supported by subject matter experts to review and comment upon the proposed work.

Through its deliberations, the EB will determine “selectability” of each proposal. Selectability determination incorporates average EB judgement of objective compliance, budget availability, and overall perceived value. The Senior Director, PMO with the consultation of other MxD representatives, will determine which subset of the proposed proposals deemed “selectable for negotiation” will be down selected for negotiations. This determination will take into account the EB’s recommendation, funding availability, alignment with MxD’s mission and strategic goals as well as external stakeholder requirements (when applicable).

**EVALUATION CRITERIA**

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

| <b>Proposal Evaluation Criteria</b>   |
|---|
| <p><b>Requirements Compliance</b></p> <ul style="list-style-type: none"> <li>• <i>Proposed solution clearly addresses all mandatory objectives identified in RFP</i></li> <li>• <i>Clear identification of assumptions, risks, and mitigations</i></li> <li>• <i>Complete and clear itemization of all requirements</i></li> </ul>  |
| <p><b>Respondent Qualifications</b></p> <ul style="list-style-type: none"> <li>• <i>Respondent and any proposed subcontractors highly qualified to accomplish objectives with clear delineation of roles and responsibilities</i></li> <li>• <i>Respondent and any subcontractors have unique capabilities that are directly associated with the target technology</i></li> </ul> |
| <p><b>Cost Factors</b></p> <ul style="list-style-type: none"> <li>• <i>Proposed costs are reasonable and realistic for the proposed work effort</i></li> <li>• <i>Proposed costs are competitive relative to other commercial offerings</i></li> </ul>  |

**VIII. PROJECT AWARDS**

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**CONTRACT**

The award of this contract will be subject to the requirements of the contract between the Defense Logistics Agency (DLA) and MxD. All contractual negotiations related to the RFP will be executed by MxD. Funds will be distributed to the Awardee selected through the evaluation/selection process utilizing a fixed price contract.

**FINAL REVISIONS**

MxD reserves the right to negotiate the cost and scope of the proposed work with a Respondent that has been down selected prior to award. MxD will facilitate the creation of a Statement of Work



with the Respondent including technical scope modifications and program management aspects. The Respondent and subcontractors, if any, who intend to pursue selection are required to participate in the revision process prior to award. For example, MxD may request that the organizations revise the proposal to better align to RFP requirements.

### **SUBMISSION DETAILS**

Each Respondent must submit their proposal (including Attachment 1) no later than 5:00PM CST, March 30<sup>th</sup>, 2023. All proposals must be submitted via the MxD website. The SUBMIT button can be found on each RFP webpage at [www.mxdusa.org/projects](http://www.mxdusa.org/projects). By clicking the SUBMIT button, applicants will be directed to the official Submission Form.



## Attachment 1

### Certification of Non-U.S. Citizens

\_\_\_ There is NO participation by Non-U.S. Citizens proposed for this effort.

\_\_\_ The following Non-U.S. Citizen(s) are participating in this effort.

| Non-U.S. Citizen Name, Contact Info | Country of Citizenship | Primary Employment Location | Employer | US Work Authorization (Visa, Green Card, Etc) | Justification* |
|-------------------------------------|------------------------|-----------------------------|----------|---|----------------|
|                                     |                        |                             |          |   |                |
|                                     |                        |                             |          |   |                |
|                                     |                        |                             |          |   |                |

\*The Justification section should clearly outline the rationale behind the individual's request for participation, the type of data they will have access to, and other pertinent information regarding their skill set/expertise.