

PROJECT CALL Q&A: IMPROVEMENTS IN MANUFACTURING PRODUCTIVITY VIA ADDITIVE CAPABILITIES AND TECHNO-ECONOMIC ANALYSIS 2.0 (IMPACT 2.0)

The following questions were submitted regarding this Project Call.

PART A

Q: What (if any) materials are of primary interest?

A: According to the DoD, the general materials of interest are nickel, titanium, steel, and aluminum. But if proposers have identified a specific DoD application with a different material, then that would be relevant as well.

PART A - Topic 3

Q: Is there a preferred platform for the development/deployment of the tool (e.g. Microsoft Excel, web-based)?

A: There is not a preferred platform for development/deployment of the tool. However, proposers need to make sure your platform addresses the requirement to integrate 3D part data into the tool.

Q: Are there specific features desired for accessibility (e.g. no specialized licenses required, interactive)?

A: No

Q: What type of analyses are expected between the tool and demonstration parts? What key metric(s) are expected?

A: Proposers are required to develop key performance parameters (KPPs) as part of the proposal. The demonstration parts should be used for measurement of some/all of the KPPs. Consider the following questions (not all inclusive):

- Did the tool accurately predict that the recommended method would successfully produce the demonstration parts?
- What are the calculated differences between predicted and actual costs of the process used? What caused the differences?
- What are the calculated between predicted and actual post-processing costs (machining costs, inspection costs, heat treatment)? What caused the differences?
- An assessment of usability of the tool (user interface, format of results, etc.)
- Recommendations for improvements/next steps

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PART A - Topic 3 (Cont'd)

Q: What types of information/input is expected to be provided by user(s) versus provided by/embedded within the tool?

A: Below is a list of examples of information/input from the users. This is not an all-inclusive list.

- Digital CAD data (see question below on formats)
- Part material
- Part cost target parameters: Cost not to exceed, cost range, etc.
- Quantity target (e.g., How many parts do we plan to make).
- Desired turn around time
- Acceptance and inspection criteria
- Inputs for process and post-process costs and lead times (for example, the foundry costs and lead times at a DoD depot)

Below is a list of examples of information/input that could be embedded in the tool. Again, this is not an all-inclusive list.

- Average industry costs for a process
- Average industry lead times and cycle times for a process
- Known constraints for a process: size, material, geometric features
- Specific cost and cycle times for a specific manufacturing equipment item (e.g., a make and model of a sand printer or a laser powder bed fusion system)

Q: What CAD formats need to be compatible (STEP, STL, or native CAD formats such as Creo, SolidWorks, NX, etc.)?

A: At minimum, the tool should be compatible with STEP files. Native CAD is desirable, but it is acknowledged that there are a multitude of CAD packages and many have proprietary file formats.

Q: What does it mean to use/ingest a CAD file and what are the expected outputs of such an ingestion?

A: The tool should use the CAD file to obtain the part geometry for a) process size constraints, b) geometric features that could constrain the process.

Q: Is there a preferred geometry 'processor' that be used?

A: No, that judgment is left to the proposer.

Q: What is the preferred 'architecture' (e.g. embedded geometry processor vs. API)?

A: There is not a preferred architecture.

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PART A - Topic 3 (Cont'd)

Q: Will the demonstration parts and their associated TDPs be specified by America Makes?

A: *No, selection of the demonstration parts is up to the proposer. It is recommended that proposers engage the casting, forging, and AM industries to ensure the development of an accurate tool and selection of appropriate demonstration parts. Within their proposals, proposers should discuss their inclusion of industry experience in their effort.*

Q: What is the scope of part sizes that need to be addressed by the demonstration parts?

A: *The scope of the demonstration part sizes is left to the proposer.*

Q: As part of proposal submission, do intended demonstration parts need to be identified/declared?

A: *At a minimum, proposers should identify a method/approach to identify demonstration parts within their proposal.*

Q: As part of proposal submission, do intended supplier(s) and site(s) of manufacturing need to be identified/declared?

A: *Proposal teams could include intended suppliers and sites of demonstration parts. Or, proposers could include in the cost volume a demonstration parts budget (with adequate cost justification) and leave the specific sources/sites of parts for later.*

Q: What downstream manufacturing steps will demonstration parts be required to go through (e.g. secondary processes, thermal processing, inspection, testing)?

A: *This depends on the parts selected by the proposer.*

PART A - Topic 4

Q: What is the scope of part sizes and materials that need to be addressed?

A: *The team should work with industry experts, foundries, and forge shops to determine the most relevant scope of sizes and materials to ensure continuity of operations. The scope of sizes will also be bound by the build volume of mature AM processes and materials.*

Q: What is the preferred format for the guide (e.g. PDF, Microsoft Word)?

A: *Either Microsoft Word or PDF would be acceptable.*

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PART A - Topic 4 (Cont'd)

Q: How many AM modalities should be considered/assessed?

A: *There is no set number, but the maturity of AM process and materials included in the assessment should be a consideration. Proposers should focus on AM processes and materials that are in production use now.*

Q: What level of specificity should the suitability guide address (e.g. specific parts, part families, part attributes)?

A: *Part families and/or part attributes should be the primary objective. Specific parts could be used as examples, but given the multitude of specific parts it is best to stick to families and attributes.*

Q: What elements of risk should be considered/included as part of the analysis?

A: *Risk should include the identification of the undesired event and/or condition, the criticality (the consequence of the event such as harm to people or equipment) and the likelihood (the probability of the event). The risks can be harm to equipment or people, production schedule, process/product cost, performance of product, etc.*

- Resources for risk analysis and risk management include:
 - DAU Risk Management Overview: https://content1.dau.edu/DAUMIG_se-brain-book_189/content/Management%20Processes/Risk-Management.html
 - ISO 31000 – Risk Management Guidelines <https://www.iso.org/standard/65694.html>

PART A & B

Q: Who will be reviewing what we are submitting?

A: *Reviewers will be across DoD, OSD, and other government agencies. Reviewers must sign a conflict of interest disclosure form before being sent items to review.*

Q: Why has die casting been left out of this RFP?

A: *The selection of topics in Part A were based on DoD priorities aligned with the AM for Casting and Forging Roadmap. Part B does not preclude vendors from using AM enabled die casting to deliver a steel or aluminum casting up to 400 lbs.*

Q: Are subcontractors that are not America Makes members allowed to have funded content in the proposal?

A: Yes.

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PART A & B (CONT'D)

Q: For subcontractors, what is the difference between having a fully executed America Makes Membership Agreement and becoming members of America Makes?

A: *To become a member, an entity would need to execute the America Makes Membership Agreement before proposing. Having a fully executed Agreement establishes membership with America Makes.*

PART B

Q: Is there a specific alloy that DoD is interested in?

A: *4340 or F357. Up to the proposers to choose which alloy they would like to use.*

Q: Is there a weight specified for the challenge casting?

A: *400lbs maximum part weight.*

Q: Since this involves a reverse engineering application, will there be access to anyone with knowledge of the design intent of the challenge casting (for design changes, etc.)?

A: *Yes, DoD will provide cognizant engineering authorities who will address questions on design and design intent.*

Q: What challenges might we encounter with the Part B demonstration?

A: *Details are in the RFP regarding what challenges might need to be addressed and overcome by the project teams. They will be technology or capability related.*

Q: Are we going to receive a drawing, or a physical part? Is it going to be a single part, or an assembly?

A: *In order to simulate an actual DoD requirement for sustainment parts in which data could come in a variety of conditions, we will not specify whether proposers will receive a drawing, a physical part, or combination. Proposer teams must have the capability and capacity to address any and all situations and provide a digital drawing along with the finished part.*

The requirement will be a for single part (finished casting) and not an assembly.

Q: How does the Period of Performance for Part B split with Stage 1 and Stage 2?

A: *The end of Stage 1 will be at the end of January 2025, with Stage 2 starting in February 2025.*

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PART B (CONT'D)

- Q:** The call indicates that “members” receiving funding must be members and paid in full by June 12. Does this include processing suppliers such as for NDT and heat treatment post processors who might be involved as needed service providers with the unknown speed challenge, but aren’t really doing research?
- A:** *The “members” clause does not apply to external suppliers you may need to utilize for services such as NDT and Heat Treatment. You can use external vendors who are not America Makes members, however, they are not able to participate in project update meetings with America Makes/AFRL, nor can they view member-only data generated by other parts of the project that do not apply to them.*
- Q:** How is one supposed to budget for unknown processes as you have to have the geometry to get a quote from most processing houses?
- A:** *You would need to do a Basis of Estimate if you are unable to get a quote with the limited information. If you need assistance on how to do a Basis of Estimate, we are able to send you something to help.*
- Q:** For the period of performance for the combined first and second stages, the total is 9 months (first stage is a maximum of 6 months) or less inclusive of the 2 months for reporting. Is that correct?
- A:** *The maximum period of technical performance is 7 months, with 2 months for reporting (9 months total).*
- Q:** Does the 9-month performance start at the time of contract execution?
- A:** Yes.
- Q:** On page 7, under Rapid Casting Demonstrated Challenge, the goal is to demonstrate delivery of an acceptable finished casting. What will be the acceptance criteria and is the finished casting exclusive of all machining for the next higher level assembly?
- A:** *The acceptance criteria will be based on the Stage 2 part application (e.g., ground vehicle, aviation, maritime) so it won’t be known until Stage 2. However, proposing teams should be capable of conducting acceptance testing for: dimensional compliance, chemical analysis, tensile properties, hardness, charpy v-notch, and internal soundness (e.g., radiographic testing, magnetic particle inspection, and/or ultrasonic testing).*

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PART B (CONT'D)

- Q:** On page 9 of the RFP, it states that the “Proposers shall detail an integrated project team (IPT) possessing all of the necessary skills, capabilities, and expertise to deliver an acceptable finished part.” Does “finished part” mean a fully machined part ready for the next sub-assembly steps, or was this meant to be a finished casting as would be delivered for machining operations as the next step in the value stream?
- A:** *“Finished part” means a machined part (machined in accordance with the drawing and/or physical part) ready for the next sub-assembly steps.*
- Q:** On page 9 of the RFP, it states that the demonstration casting will be of either AISI 4340 steel or aluminum F357. Will the part identified and supplied by the DoD partners on Day 1 of Stage 2 be of the same demonstration alloy?
- A:** *The two alloys are given to have wider participation from the casting community both ferrous and non-ferrous. If a team is a ‘steel team,’ the casting they will receive is a steel casting from DoD in Stage 2. If it is an ‘aluminum team,’ they will receive an aluminum casting from DoD in Stage 2.*
- Q:** Does the statement on page 6 of the proposal: “ The deadline for applicant members to establish a fully executed Membership agreement is 6/12/24” apply to all proposal team members or only the lead proposer?
- A:** *This only applies to the lead proposer.*