Request for Information (RFI)
DARPA-SN-26-81
Revolutionizing Industrial Scale Materials Processing

Responses Accepted: Until 5:00 PM (Eastern) on 24 July 2026
Point of Contact: Dr. Hunter Martin
Email Address: DARPA-SN-26-81@darpa.mil

BACKGROUND

DARPA is seeking engagement from industrial producers of raw materials including cast, rolled, and forged metals, bulk ceramics, and composites to aid in developing a future program. This RFI is meant to provide the reasoning behind our need for engagement. By participating in this potential effort, producers stand to gain custom, physics-informed optimization tools designed to increase yield and product quality within their existing facilities, requiring zero capital investment. DARPA aims to translate the intuitive art of your best operators into scalable, quantitative models that outlast workforce turnover. As a result, producers can increase yield and offer superior products at premium market prices. Included is a simple survey to gather information on willingness to participate in a future effort. DARPA is considering a program to bring together performer teams composed of the best materials scientists, process engineers, and data scientists to revolutionize industrial scale materials processing. Currently, process uncertainty forces system designers to rely on minimum expected property values to guarantee reliability. As a result, even though most processed materials exceed these data sheet minimums, designers must either sacrifice potential system performance margins or use unnecessarily expensive materials to account for statistical variability. Furthermore, this same process uncertainty inevitably yields some products that fall below minimum specifications, reducing overall yield and forcing producers into costly re-processing or scrapping of materials.

DARPA believes recent advances in material informatics and physical modeling can demystify the "art" of industrial scale production (>10T/year) processing. While modern industry excels at minimizing variability to meet current baselines, there is significant room for growth; for example, many 7000 series aluminum alloys have a potential performance margin exceeding 15% at fixed plate thicknesses and heat treatments. The challenge lies in the complex, interconnected nature of production variables—such as slight fluctuations in composition, heat treatment, rolling or forging temperatures, and environmental conditions. Because these factors are highly interdependent, optimizing one step does not guarantee a better final product if a subsequent step introduces new variations. Currently, navigating this complexity relies heavily on the intuitive, tacit knowledge that operators develop over decades—an approach that is virtually impossible to replicate or scale.

DARPA aims to develop quantitative, physics-informed techniques to uncover the exact causes of product variability. This approach allows producers to fix inefficiencies using their current processes, avoiding the need for expensive capital investments or major facility overhauls.

However, the tools can only be developed if there is a substantial amount of multi-year processing data from large-scale producers. DARPA acknowledges that this data is central to a producer's competitive advantage. DARPA guarantees that producers will retain all operational benefits generated from this data. DARPA will work directly with you to implement tailored security protocols—such as NDAs, secure data enclaves, and competitive firewalls—ensuring your operational data remains secure and the benefits stay entirely on your production floor. Our goal is to securely leverage your historical data to return a tailored optimization capability back to your production floor.

REQUESTED INFORMATION

The attached survey is a fillable form for ease of use. The questions included are meant to help respondents understand how best to engage with DARPA to protect commercial interests and support technology transition into industry.

To the maximum extent possible, respondents are encouraged to send non-proprietary information; if proprietary information is included, respondents are responsible for clearly identifying such information. Responses containing proprietary information must have each page containing such information clearly marked with a label such as "Proprietary" or "Company Proprietary." DO NOT INCLUDE ANY CLASSIFIED INFORMATION IN THE RFI RESPONSE.

SUBMISSION INSTRUCTIONS

Completed surveys should be submitted to DARPA-SN-26-81@darpa.mil by 5:00 PM (Eastern) on 24 July 2026. A secure data transfer link via DoDSAFE may be requested by the deadline via the same email address. Industry leaders who employ best practices that may be outside the traditional Department of Defense industrial base are encouraged to respond to this request. For those new to DARPA or national security, the agency offers comprehensive, free resources on how to do business with DARPA via DARPAConnect. Register for access via https://www.darpaconnect.us/home.

This notice is not a solicitation for proposals, and awards will not be made through this notice. This information is subject to change in content, relative importance, or other meaningful ways without further notification.

Revolutionizing Industrial Scale Materials Processing
RFI Response Form
DARPA-SN-26-81

Respondent Information

Organization Name _____

Point of Contact Name _____

Title/Role _____

Email Address _____

Phone Number _____

Website _____

---

1. Do you have data related to large scale material processing (e.g. >10 Tons/year)?

☐ Yes
☐ No

2. Please provide some general details on the materials produced and quantities.

3. What would be the required restrictions to sharing that data with DARPA Performer(s) under a future program (e.g. NDA or other more restrictive data agreement)?

4. Would you expect to exclude data sharing from specific entities or industry competitors that you could enumerate (do not specify here)?

☐ Yes
☐ No

5. Would you allow data to be processed utilizing cloud compute capabilities?

☐ Yes
☐ No

5a. If yes, what additional data protection would be required, if any?

6. How many years of data do you have available?

Years available: _____

6a. What is the physical or digital state of that data?

6b. Would DARPA need to fund additional data extraction and binning of data to be useful?

☐ Yes
☐ No

7. Do you have any future intention of further instrumenting your processing to improve analytics?

☐ Yes
☐ No

7a. Would government funding accelerate this timeline?

☐ Yes
☐ No

8. Is the value proposition of the proposed DARPA program clear and compelling? If not, what alternative technology areas or high-impact investments should DARPA prioritize instead?

(Note: DARPA invests in technology development and does not fund capital investments.)