

**PROJECT CALL to Members of the
National Additive Manufacturing Innovation Institute
for APPLIED RESEARCH PROJECTS**



America Makes

National Additive Manufacturing Innovation Institute

Prepared by

**The National Center for Defense Manufacturing & Machining
(NCDMM)**

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1 EXECUTIVE SUMMARY

Funding Opportunity Title: America Makes Project Call

Announcement Type: Project Call

Dates: Notice of intent to submit should be received no later than Wednesday, March 25, 2015, with an email to john.wilczynski@ncdmm.org. The notice of intent is not required, but is being requested for review process planning. Only those who intend to be a lead Proposer should submit a notice of intent and should include the topic(s) to which they intend to propose.

Electronic proposals must be received no later than Friday, May 1, 2015. Proposals received after the deadline will not be considered. The anticipated start date is expected to be Friday, July 10, 2015.

Submission Address: All proposals are to be submitted electronically to john.wilczynski@ncdmm.org. All submissions will be acknowledged by a return email confirmation from NCDMM.

Funding Opportunity Description: NCDMM is soliciting competitive proposals supporting the America Makes mission of promoting and accelerating the development and deployment of innovative, cost effective, energy-efficient Additive Manufacturing (AM) and 3D Printing (3DP) technologies to meet defense and/or commercial needs. Furthermore, proposals must demonstrate that the proposed project has the potential to increase U.S. manufacturing competitiveness. Proposals should address technology development, technology transition and economic impact, and education and workforce training and will be evaluated as described in Section 4.

Total Amount to be Awarded: Approximately **\$8,000,000** is being made available to fund multiple awards. A proposed project must not exceed \$1,000,000 Government America Makes funding over 18 months, and smaller project sizes will be considered.

Proposer Eligibility: To be eligible, a lead proposer must be an America Makes member by the proposal submission deadline of Friday, May 1, 2015. Information on how to join America Makes is available at www.americamakes.us.

Cost Share Requirement: This project requires a cost share of at least a 100% match of the government funding and must be from non-Federal funding sources with further cost share considered as an evaluation criterion.

Period of Performance: 18 months or less with an anticipated start date of Friday, July 10, 2015.

2 PROPOSED RESEARCH PROGRAM

Program Description: The purpose of this Project Call is to solicit competitive proposals that shall propose detailed applied research projects, addressing one of the technical topic areas and including associated plans for technology transition and workforce and education. The targeted technical topic areas relate directly to AM and 3DP, a revolutionary suite of manufacturing technologies for building up parts, and potentially entire systems, in a layer-by-layer fashion, placing material precisely as directed by a 3D digital file. For this Project Call, AM refers to the “process of joining materials to make objects from 3D model data, usually layer-by-layer, as

opposed to subtractive manufacturing methodologies, such as traditional machining. Synonyms include additive fabrication, additive processes, additive techniques, additive layer manufacturing, and freeform fabrication” (ASTM 2792-12).

AM and 3DP are of significant interest to the U.S. manufacturing base as the technology enables shorter lead times, mass customization, energy reduction, complex shapes, and production of parts on demand providing benefits to both new acquisitions and legacy systems. America Makes seeks to promote and accelerate the development and deployment of innovative, cost effective, energy-efficient AM and 3DP technologies to meet defense and/or commercial needs. The projects being proposed should be applicable to Technology Readiness Level (TRL) 4-7 and Manufacturing Readiness Level (MRL) 4-7 at the start of the proposed project (DoD MRL guidance is located at www.dodmrl.com). Reference – MRL 4: Capability to produce the technology in a laboratory environment. This level of readiness is typical for S&T Programs in the budget activity 6.2 and 6.3 categories and acts as an exit criterion for the Materiel Solution Analysis (MSA) Phase approaching a Milestone A decision. Technologies should have matured to at least TRL 4. This level indicates that the technologies are ready for the Technology Development Phase of acquisition. At this point, required investments, such as manufacturing technology development, have been identified. Processes to ensure manufacturability, producibility, and quality are in place and are sufficient to produce technology demonstrators. Manufacturing risks have been identified for building prototypes and mitigation plans are in place. Target cost objectives have been established and manufacturing cost drivers have been identified. Producibility assessments of design concepts have been completed. Key design performance parameters have been identified as well as any special tooling, facilities, material handling and skills required.

Particular attention shall be focused on those areas with the greatest impact as determined by the America Makes membership participation in the Technology Investment Strategy Workshops facilitated by the America Makes Roadmap Advisory Group. The America Makes Project Call technical topics are summarized below with additional details being provided to America Makes members in an Addendum.

I. Additive Manufacturing Design:

The objective of this technical focus area is to drive technological advancements in new and novel non-proprietary design methods and tools required to enable a culture change and break the cycle of designing AM parts like cast or machined parts. This includes solutions that close roadmap gaps and that avoid being constrained by fundamental limitations associated with current CAD/CAM/CAE/PLM tools and design practices that have been developed for conventional manufacturing processes.

Current design methodologies and practices for product development have been optimized for conventional manufacturing processes (e.g., machining, casting, injection molding, powder pressing, composite mold lay-ups, electronic surface mount technology, etc.) and do not allow benefits and design freedom enabled by AM to be fully realized. Needed are new and novel design methodologies for AM produced parts that can fully exploit the benefits of being able to 3D print parts, using the rapidly growing variety of metallic; polymer and fiber-reinforced polymer; ceramic; and electronic feedstock materials for AM. This includes the integration of

these new non-proprietary product and process design practices to enable manufacturers of all sizes to adopt the technology and be able to effectively use it to drive innovation across the supply chain.

II. Additive Manufacturing Material:

The objective of this technical focus area is to build the body of knowledge around benchmark AM property characterization data and eliminate variability in “as-built” material properties. This includes creating a paradigm shift away from controlling process parameters and “as-built” microstructures to instead controlling the underlying physics of the AM process at the micro-scale to achieve consistent, reproducible microstructures and hence “as-designed” properties.

Current AM processes and “as-built” part properties are being characterized in an ad hoc manner, leading to inconsistent and incomplete datasets that exhibit a high degree of property variability and uncertainty. Needed are standardized specifications that minimize variability in feedstock material properties along with more rigorous processing methods and guidelines that enable better control of the underlying physics of the AM processing that enable “as-designed” microstructures to be produced leading to reduced variability in “as-built” material properties. This also includes the development of “open source” feedstock material specifications that are agnostic to a particular machine vendor and the development of standardized post-processing guidelines, such as, but not limited to, heat treatment and hot isostatic pressing for metallic parts to minimize property variability.

III. Additive Manufacturing Process:

The objective of this technical focus area is to drive technological advancements that enable faster, more accurate, and higher detail resolution AM machines with larger build volumes and improved “as-built” part quality. This includes targeting critical technologies and the associated sub-systems needed where the AM “machine level” process performance improvements are needed, similar to machine tool flexible manufacturing systems. This includes areas, such as, but not limited to, multi-axis, multi-power laser NC control sub-systems, process temperature gradient control sub-systems, etc.

Current state AM processing capability limitations prevent many candidate parts from being economically viable at production volumes and often require extensive secondary post-processing to achieve the same characteristics as conventionally produced parts. Needed are advancements in numerous machine-level technologies, allowing AM to move from being a primarily rapid prototyping technology to a production viable technology. This includes the development of technologies that help accelerate, optimize, and control the underlying physics of the deposition, melt/sinter/extrude, and solidification mechanisms, which contribute to improved processing capabilities.

IV. Additive Manufacturing Value Chain:

The objective of this technical focus area is to drive technological advancements that enable step change improvements in end-to-end value chain cost and time to market for AM produced products. This includes rapid qualification/certification methods, as well as a holistic focus on integrating technologies across the entire product life cycle, including material and product recyclability. This technical focus is intended to help drive a priority focus on identifying advance manufacturing enterprise (AME) opportunities for creating a single integrated digital thread; to help identify workforce skill set needs and technology enablers, such as design aides and apps to improve productivity and highlight the need for new and novel rapid design and inspection technologies.

Current AM technology development efforts have been targeting individual elements of the value chain and/or product development life cycle in a fragmented manner and do not approach improving AM produced part cost and cycle time using a holistic system integration approach. Needed are enabling technologies focused on better integrating all elements of the AM value chain and product development life cycle, including recognizing that design and inspection could become the new bottlenecks in the AM value chain as more complex 3D graded and multi-material components are produced. The goal of this technical focus area is thus to place a priority focus on the development and integration of affordability focused AM technologies across the entire life cycle and value chain to reduce the overall AM produced part cost, cycle time, and time to market.

V. Additive Manufacturing Genome:

The objective of this technical focus area is to drive technological advancements that enable step change improvements in the time and cost required to design, develop, and qualify new materials for AM. This includes the development of new and novel computational methods, such as physics-based and model-assisted material property prediction tools, the development of common benchmark data sets needed to validate the computational predictions, and new and novel ideas for material property characterization that help break the cycle of developing design allowables for “every” new AM material-process combination.

Current material development, characterization, and qualification approaches are both highly empirical and serial in nature and as such, the associated cost, time, and risk required to develop and qualify new AM materials and processes are inhibiting large-scale technology adoption and insertion. Needed are the development of new and novel computationally enabled paradigm shifting “genome” building blocks that radically accelerate the time and reduce the cost associated with new material discovery, development, and qualification using concurrent product and process development models. The technical focus and goals for this technical focus area mirror the larger National Materials Genome Initiative, which is targeting an aggressive 2X improvement in the cost and time required to develop and qualify new AM materials.

3 PROPOSAL AND SUBMISSION INFORMATION

3.1 Proposal Submission

Award of contract(s) resulting from this Project Call will be based upon the most responsive Proposer(s) whose offer(s) will be the most advantageous to NCDMM in terms of cost, functionality, and other factors as specified in this Project Call.

NCDMM reserves the right to:

- Reject any or all offers and discontinue this Project Call process without obligation or liability to any potential Proposer.
- Accept other than the lowest priced offer.
- Award a contract on the basis of initial offers received, without discussions or requests for best and final offers.
- Award more or less than one contract for any topic described in within Section 2 of this Project Call.

Proposals shall be submitted in several parts as set forth below. The Proposer will confine its submission to those matters sufficient to define its proposal and to provide an adequate basis for NCDMM's evaluation of the proposal.

3.2 Proposer Eligibility

In order to address the needs of this procurement, NCDMM encourages Proposers to work cooperatively in presenting integrated solutions. Proposer team arrangements are desirable to enable the organizations involved to complement each other's unique capabilities, while offering the best combination of performance, cost, and delivery. NCDMM will recognize the integrity and validity of Proposer team arrangements provided that:

- The lead Proposer is a current America Makes member by the proposal submission deadline of May 1, 2015. Information on how to join America Makes is available at americamakes.us. Other proposal team members may be non-America Makes members, but are encouraged to join America Makes during the performance of the project. Contribution of membership dues can be accomplished during the project through proposed cost share, and membership may be granted after the cost share is properly documented and accepted by America Makes.
- Each Proposal team must contain at least one (1) industry organization.
- Cost share of at least a 100% match of the government funding is required.
- Proposal team arrangements are identified and relationships are fully disclosed.
- The lead Proposer is fully responsible for all project and subcontract performance.

Subcontracted organizations that are not America Makes members shall not be permitted access to any project confidential information or project developed Intellectual Property (IP), nor shall they participate in America Makes project reviews or member activities. All project team members must have a signed sub-agreement with the lead proposer, obligating them to their agreed project

role, cost share, and the flow-down requirements of the over-arching contract between the lead proposer and NCDMM before any funds will be made available from NCDMM to the lead proposer for the project.

Proposals in response to this Project Call will be incorporated into a final agreement between NCDMM and the selected Proposer(s).

3.3 Required Forms and Documents

- **Technical Proposal.** The technical proposal should respond to the program description and shall contain the following information:
 - 1) **Executive Summary.** A concise synopsis of the Proposer's response to the Project Call, clearly indicating the topic(s) from Section 2 being responded to and not exceeding two (2) single-sided pages
 - 2) **Problem Statement and America Makes Relevance.** A description sufficient to permit evaluation of the proposal in accordance with evaluation criterion 1 (See Section 4.1 (1) of this Project Call)
 - 3) **Technical Approach and Methodology.** A description sufficient to permit evaluation of the proposal in accordance with evaluation criterion 2 (See Section 4.1 (2) of this Project Call)
 - 4) **Technology Transition and Pervasive Impact to Industrial Base.** A description sufficient to permit evaluation of the proposal in accordance with evaluation criterion 3 (See Section 4.1 (3) of this Project Call)
 - 5) **Sustainability.** A description sufficient to permit evaluation of the proposal in accordance with evaluation criterion 4 (See Section 4.1 (4) of this Project Call)
 - 6) **Education and Workforce Training.** A description sufficient to permit evaluation of the proposal in accordance with evaluation criterion 5 (See Section 4.1 (5) of this Project Call)
 - 7) **Project Management Approach.** A description sufficient to permit evaluation of the proposal in accordance with evaluation criterion 6 (See Section 4.1 (6) of this Project Call)
 - 8) **Exhibit I.** Identification of Background Intellectual Property using the form included in this project call
 - 9) **Exhibit II.** Multiple Submissions Summary using the form included in this project call
 - 10) **Exhibit III.** Letters of Commitment, detailing the organization name, point of contact, phone, email, summary of the agreed role, dollar value and description of proposed cost share from the team member
 - 11) **Exhibit IV.** Publication of Consortium Developed Intellectual Property agreement using the form included in this project call

12) **Exhibit V.** Identification of project Consortium Developed Intellectual Property, owning organization(s), and acknowledgement of any deliverable ITAR restrictions using the form included in this project call

- **Cost Volume.** The Cost Volume shall contain the following information:
 - 1) Include a cost breakdown by project phase and estimates of expenses. Proposals are required to have a minimum of 1:1 recipient cost share. Proposals with less than 1:1 recipient cost share will not be considered. Other Federal funding (non-America Makes) may be identified as leveraged funds, but are ineligible to be counted as recipient cost share. The Proposer shall submit a cost proposal in a separate volume marked “Proprietary Cost Proposal,” clearly identifying requested funding and cost share. NCDMM requires the Proposer to provide detailed, itemized pricing for proposal utilizing the provided cost template.
 - 2) **Exhibit VI.** Proposal Cost Summary
- **Project Team Appendix.** The Project Team Appendix shall contain biographies and relevant experience of key team staff and management personnel. Describe the qualifications and relevant experience of the types of staff that would be assigned to this project by providing biographies for those staff members.

3.4 Proposal Format

- 1) **Cover Page**
- 2) **Email.** The Proposer shall submit one (1) word processed electronic copy of its response to this Project Call.
- 3) **Paper copies and facsimile (fax) submission.** Paper and fax submissions will not be accepted.
- 4) **Figures, graphs, images, and pictures.** Figures and tables must be numbered and referenced in the text by that number. They should be of a size that is easily readable and may be in landscape orientation. They must be formatted to print on an 8.5 x 11 inch paper size.
- 5) **Font.** Proposals are to be prepared with easy to read font, such as Times New Roman or Arial (11 point minimum), single-spaced. Smaller font may be used in figures and tables, but must be legible.
- 6) **Page Layout.** The Technical Volume must be in portrait orientation except for figures, graphs, images, and pictures. Pages shall be single-spaced, 8.5 by 11 inches, with at least one-inch margins on both sides, top, and bottom.
- 7) **Page Limit.** Page limit for the Proposal shall be:
 - a. The Technical Volume is limited to (25) pages. Information beyond 25 pages will not be considered. The page limit includes table of contents (if included) and the required sections within the technical volume. The page limit does not include the Cover Page, or Exhibit I, Exhibit II, Exhibit III, Exhibit IV, and Exhibit V as indicated in Section 3.3.

- b. The Cost Volume is limited to (5) pages. Information beyond 5 pages will not be considered. The page limit includes table of contents (if included) and the required sections within the cost volume. The page limit does not include spreadsheets, containing detailed cost information and Exhibit VI as indicated in Section 3.3.
- c. The Project Team Appendix is limited to (10) pages. Information beyond 10 pages will not be considered. The page limit includes table of contents (if included). Page limit does not include the Cover Page.

8) **Page Numbering.** Number pages sequentially within each section of the proposal showing proposal section and page number.

9) **Proposal Language.** English

3.5 Submission Dates

An email confirmation of the proposer’s intent to respond to this Project Call is requested by **Wednesday, March 25, 2015**. All proposals are due by **Friday, May 1, 2015**. Any proposal received after the required time and date specified for receipt shall be considered late and non-responsive. Any late proposals will not be evaluated for award. NCDMM is not responsible for email system malfunctions or undeliverable email. Submissions must be presented by email to the technical contact listed below with “America Makes PROJECT PROPOSAL” as the Subject line. Send submissions to:

John Wilczynski
 America Makes Deputy Director, Technology Development
 National Center for Defense Manufacturing and Machining
john.wilczynski@ncdmm.org

Event	Date
1. Project Call Announcement and Posting	02/27/2015
2. Written Confirmation of Proposer’s Intention to Respond	03/25/2015
3. Questions from Proposers about Scope or Approach Due	04/03/2015
4. Responses to Proposers about Scope or Approach Due (all questions and responses will be shared with all proposers)	04/10/2015
5. Fully Executed NDA with NCDMM (if proposal contains proprietary information)	04/17/2015
6. Proposal Due Date	05/01/2015

Event	Date
7. Target Date for Review of Proposals	05/15/2015
8. Anticipated Decision and Selection of Projects	06/12/2015
9. Anticipated Start Date	07/10/2015

4 PROPOSAL REVIEW INFORMATION

4.1 Evaluation Criteria

The elements used in evaluating submitted proposals and assigned weights are as follows:

1) Problem Statement and America Makes Relevance (0-10 points)

The degree to which the proposal:

- Provided a clear, concise statement of the problem(s).
- Identified the AM industry need being addressed.
- Detailed opportunities for improvement in AM and 3DP.
- Demonstrated the importance of the proposed effort to the AM and 3DP U.S. manufacturing base and expected impact of a success project on both Federal and commercial supply chains and overall U.S. manufacturing competitiveness.
- Explained clearly the need for America Makes funding, including an explanation of the specific benefits to America Makes members with said America Makes funding and other funding sources that have been obtained or are being pursued.

2) Technical Approach and Methodology (0-25 points)

The degree to which the proposal:

- Described in detail the project's scope of work and the approach used to achieve the results.
- Illustrated the relevance of the proposed effort to the technical topic(s) described in Section 2.
- Described how barriers (that have prevented the identified problem or need from being addressed and /or resolved in the past) are to be overcome by the proposed effort.
- Outlined the solution and its level of innovative and/or its game-changing potential.
- Demonstrated awareness of competing and emerging technologies and identified how the proposed concept provides significant improvements over other solutions.

- Identified, quantified, and explained Key Performance Parameters for the technology and measurable success criteria for the project.
- Planned to obtain or leverage additional or external resources, and the credibility of that plan.
- Demonstrated the scientific and technical merit of the project by citing prior work, such as proof of concepts studies, experimentation, relevant patents, publications, and other results as appropriate.
- Substantiated the strength of the proposal team, including the capabilities, facilities, experience, and ability of the team to successfully complete the project.

3) Technology Transition and Pervasive Impact to Industrial Base (0-25 points)

The degree to which the proposal:

- Articulated a clear plan to transition the project results into identifiable commercial and/or government products, systems, and applications and provided evidence justifying the likelihood that the transition will occur.
- Described a Technology Transition Plan (TTP) in regard to:
 - determining how project results entering the identified target market;
 - identifying the stakeholders;
 - ensuring transferable data exchange of project deliverables within the America Makes member community;
 - identifying transition and economic development goals and related assumptions; outlining the current maturity level of the technology and the target maturity needed for successful transition;
 - identifying the window of opportunity with required actions and timing;
 - specifying the funding strategy, estimated ROI, and commitments secured;
 - identifying key transition decision points; and
 - determining transition milestones and anticipated transition schedule.
- Described an Economic Development Plan (EDP) in regard to the expected impact on the U.S. AM infrastructure supply chains, recognizing the multitude of diverse and various supply chain partners and for applications relevant to the commercial industry (especially small business and entrepreneurs), NASA, Department of Defense (DoD) and/or Department of Energy (DOE).
- Addressed reasonably the TTP and EDP assumptions and the credibility of the team's commitment to implementation.

- Included the appropriate supply chain representation, as well as all required technology developers, stakeholders, technology users, and organizations engaged in economic development.

4) Sustainability (0-10 points)

The degree in which the proposal:

- Articulated the potential for more efficient and effective energy, water, and/or material resource utilization over the entire lifecycle of manufactured goods. Additive manufacturing processes affect material and energy use throughout the value chain from feedstock material production through final product disposal. Efficiencies and energy savings may result from reductions in material use, upstream energy savings from material substitution, decreased processing energy compared to an alternative process, service life extension for manufactured components, application in clean energy production and energy efficiency systems, increasing systems efficiency through assembly consolidation and a variety of other pathways.
- Complimented Department of Energy goals (<http://energy.gov/eere/amo/advanced-manufacturing-office>) and/or quantifies potential energy impacts through the use of the Additive Manufacturing Energy Impacts Assessment Tool, which is available to members at americamakes.us, will be considered. Applicants may consider demonstrating the potential sustainability impact metrics such as: aggregate cumulative energy savings, reduction in greenhouse gas emissions, reduction in material use and/or water use on a life-cycle basis over ten years relative to existing available technologies.

5) Education and Workforce Training (0-15 points)

The degree in which the proposal:

- Addressed Workforce and Educational Outreach (WEO) deliverables, ensuring tangible assets of value for the Institute and its members.
- Provided a description of WEO deliverables that are academically relevant, targeted, complete, easily transferrable, and professionally prepared and are developed with the expectations of widespread and frequent socialization and presentation of material across the nation.
- Illustrated the adaptation of the technical results into an educational module (curricular materials and assessment tools) to support related training and education activities and demonstrated the breadth of applicability (industry segment, technology, and student population) of the educational module.
- Planned for the proliferation of the education module through the America Makes network, primarily via electronic distribution.

- Considered integrative participation in the educational module, ranging from K-12 education through advanced graduate degree programs, across a breadth of disciplines and skill levels.
- Demonstrated the magnitude of impact of educational outcomes in terms of meeting America Makes goals of broad AM adoption.

6) Program Management Approach (0-15 points)

The degree in which the proposal:

- Provided a description of the organizational structure for the project, clearly identifying the role and responsibilities of each participant, including subcontractors and an effective plan to manage people and resources, schedule, and work breakdown structure.
- Described the project work breakdown structure using a Gantt chart, showing tasks, subordinate tasks, performers, deliverables, and critical milestones / deliverables.
- Used “SMART” metrics (Specific, Measurable, Actionable, Relevant, and Timely) to measure progress at intervals not greater than six (6) months.
- Described clearly the project tasks in narrative form and outlined a plan for accomplishing project goals.

7) Cost (Cost and cost share are not scored, but will be considered as part of the overall value proposition of the proposal.)

The degree in which the proposal:

- Calculated proposed costs, mindful of the reasonableness, realism, and affordability of those costs, including the quality and quantity of the project team’s cost share, specifically the degree to which the proposed cost share was of high value in terms of source, quality and applicability of any in-kind cost share to the performance of the project. [Cost share guidelines can be found at http://americamakes.us/images/publicdocs/Cost_Share_Form_rev061614.xls.]
- Demonstrated the value and credibility of the commitments in the included letters of commitment. (Federal funding is not eligible to be counted as cost share, however, consideration will be provided in the evaluation regarding the extent that other federal funding is leveraged.)

8) Special Consideration (Special Consideration is not scored, but will be considered as part of the overall value proposition of the proposal.)

The degree in which the proposal:

- Leveraged the America Makes Innovation Factory to validate project results.

- Planned to entrust equipment (especially unique, state-of-the-art, and/or pre-production), provide materials for experimentation within the current equipment, and entrust personnel to do applied R&D within the America Makes Innovation Factory.

4.2 Review and Selection Process

- 1) **Initial Screening of All Proposals for Compliance with Proposal Requirements.** All proposals will receive an administrative review for adherence to the Project Call requirements. Ineligible and/or incomplete proposals are subject to elimination from further review.
- 2) **Proposal Evaluation and Peer Review.** Proposals determined eligible and/or complete will proceed for a full evaluation by evaluators who are independent of all teams submitting proposals. Proposals will be selected based on score, cost and cost share, and how they contribute to the balance (technologies addressed, risk, cost, etc.) in the overall Technology Investment Portfolio.

4.3 Reporting Requirements

In addition to reporting requirements that are part of the sub-recipient agreement between NCDMM and the proposer, the following are required:

- 1) Monthly project status reports that include technical progress, financial reporting, and cost share accrual
- 2) Project briefings at the semi-annual America Makes Program Management Reviews
- 3) Virtual monthly team meetings that include the NCDMM PM and Governments advisors that are assigned post award.

5 ADMINISTRATIVE INFORMATION

All questions concerning this Project Call must be presented by email to the technical contact below. Frequently asked questions and responses will be posted to the America Makes website at americamakes.us for clarification.

5.1 Contact Information.

- Questions concerning technical specifications must be directed to:

Name	John Wilczynski, America Makes Deputy Director, Technology Development
Address	National Center for Defense Manufacturing and Machining 236 West Boardman Street Youngstown, Ohio 44503
Phone	724-539-5352
Email	john.wilczynski@ncdmm.org

- Questions concerning contractual terms and conditions or proposal format must be directed to:

Name	Gene Berkebile, Vice President and Chief Financial Officer
Address	National Center for Defense Manufacturing and Machining 486 Cornell Road Blairsville, PA 15717
Phone	724-539-5743
Email	gene.berkebile@ncdmm.org

5.2 Responsibility for Compliance with Legal Requirements

The Proposer’s products, services, and facilities shall be in full compliance with all applicable federal, state, and local laws, regulations, codes, standards, and ordinances regardless of whether or not they are referred to by NCDMM.

5.3 Proposer Rights

Upon delivery, all materials submitted in response to this Project Call may be appended to any formal documentation, establishing a contractual relationship between NCDMM and the Proposer.

NCDMM and potential Proposer will sign a non-disclosure agreements (NDAs) to protect corporate intellectual property if contained in the proposal. Information contained in proposals shall be unclassified. If a project proposal contains export control and/or proprietary information, this must be identified on the cover page of the proposal and identified within the proposal.

5.4 Proposer Incurred Costs

The Proposer shall be responsible for all costs incurred in preparing or responding to this Project Call. Materials and documents submitted in response to the Project Call will not be returned.

5.5 Proposer Errors or Omissions

NCDMM is not responsible for any Proposer errors or omissions concerning the Project Call process.

5.6 Modification or Withdrawal of a Proposal

The Proposer agrees in submitting a proposal that the proposal may not be modified, withdrawn, or cancelled by the Proposer, unless agreed upon with NCDMM, for ninety (90) calendar days following the submittal date. Proposer’s proposal will be valid for a period of ninety (90) calendar days following the submittal date.

5.7 Reservation of Rights

This Project Call does not commit NCDMM to award a contract, to pay any costs incurred in the preparation of a proposal to this request, or to procure or contract for services or supplies. NCDMM may require the Proposer to participate in negotiations and to submit such monetary, technical, or other revisions of its proposals that may result from preliminary review and negotiations.

5.8 Anticipated Number of Projects

The number of applied research project awards and government funding amount allocated to this Project Call will be determined based on the quality and quantity of proposals received.

5.9 Notice America Makes Sub-recipient Agreement

NCDMM/America Makes has attached with the Project Call the standard sub-recipient agreement that will be utilized in conjunction with these projects. The purpose of this notice is to advise Lead Proposers that Article 7 Intellectual Property and Article 9 Publications are non-negotiable and by submitting a proposal for this project call you and your team agree to the language as outlined below and found in the sub-recipient agreement. Please note that Article 7 and Article 9 in the sub-recipient agreement mirrors Section 4 and Section 6 of the America Makes membership agreement. The Lead Proposer on winning proposals should be expected to sign the sub-recipient agreement within 90 days, if the Lead Proposer fails to sign the sub-recipient agreement within 180 days the NCDMM/America Makes reserves the right to cancel the award.

ARTICLE 7. INTELLECTUAL PROPERTY

7.1 Background Intellectual Property. Each Sub-Recipient/Sub-Recipient/Member shall retain all rights to its Background Intellectual Property; and the decision to make available any such Background Intellectual Property for use in a Sub-Recipient/Member's sub award project shall be at the sole discretion of each Sub-Recipient/Member and in accordance with DOD regulations with respect to identification of all such Background Intellectual Property. No license or rights are granted to a Sub-Recipient/Member's Background Intellectual Property under this Agreement.

7.1.1 In the event that one Sub-Recipient/Member may require use of another Sub-Recipient/Member's Background Intellectual Property that has been disclosed by a Sub-Recipient/Member as part of the Consortium Research in order to successfully commercialize any CDIP then the Sub-Recipient/Members agree to discuss potential licensing terms and conditions in a separate legally binding agreement between the Sub-Recipient/Members, separate from this Agreement. Sub-Recipient/Member(s) are not required to license any such originating Sub-Recipient/Member(s) Background Intellectual Property.

7.2 Consortium Developed IP shall be owned by the respective inventing or creating organizations, subject to any government rights and/or any pre-existing rights of any third party and subject to the following conditions:

7.2.1 If a Party solely or jointly creates CDIP, the Party must disclose the creation of such CDIP to its technology transfer office, licensing office or other similar department ("Party's TechTransfer Office"). A non-confidential summary of

the CDIP disclosed to the Party's TechTransfer Office shall be sent to NCDMM as soon as practicable so that NCDMM can maintain a list of CDIP. Sub-Recipient/Members owning CDIP shall grant upon request to NCDMM and Sub-Recipient/Members-In-Good-Standing at the time of creation a limited, non-exclusive, royalty-free license to use the CDIP for the Sub-Recipient/Member's internal procedures, research or development purposes (but not to make, use, or sell products or external processes for commercial purposes, with the exception of licenses granted pursuant to Section 7.2.3). Such licenses shall be granted to interested Sub-Recipient/Members upon request in a separate legally binding mutually agreeable license agreement between the Sub-Recipient/Members. Payment of patent expenses may be required of Parties granted non-exclusive, royalty-free commercial licenses by universities and other non-profit institutions. Such licenses for Sub-Recipient/Members shall be without the right to grant sublicenses to third parties, except for any Sub-Recipient/Member-designated agents, contractors and non-employee students ("Permitted Third Parties") performing work for the benefit of such Sub-Recipient/Member. Under these circumstances the Sub-Recipient/Member is responsible for having any and all appropriate written agreements with such Permitted Third Parties to enable Sub-Recipient/Member's compliance with this Agreement and is responsible for such parties' use of the CDIP in the same manner Sub-Recipient/Member is responsible for its own use of such CDIP (e.g., violation of the license parameters set forth in this section by a Sub-Recipient/Member's Permitted Third Parties shall be considered a breach of this Agreement by Sub-Recipient/Member).

- 7.2.2 Sub-Recipient/Members are strongly encouraged to seek legal protection in the form of patents as soon as is reasonably possible following disclosure of all CDIP to NCDMM. Protection of a Sub-Recipient/Member's solely developed CDIP shall be done at Sub-Recipient/Member's own expense and through use of their respective Party's TechTransfer Office. Each Sub-Recipient/Member agrees to notify in writing NCDMM in a timely manner of all such actions in which legal protection is or has been sought so that NCDMM can enter such information in its invention disclosure database. With respect to jointly developed CDIP the relevant Sub-Recipient/Members agree to negotiate a separate legally binding agreement encompassing those terms and conditions to be used to govern the manner in which jointly developed CDIP will be owned, administered, protected, and licensed. NCDMM will be notified in writing in a timely manner of the existence of these agreements between Sub-Recipient/Members and NCDMM shall maintain pertinent information in its invention disclosure database. In the event that a single Sub-Recipient/Member for solely developed CDIP, or all Sub-Recipient/Members with an ownership right for jointly developed CDIP choose not to seek legal protection and thereby elect not to file a patent application on any CDIP, then Sub-Recipient/Member(s) agree to notify NCDMM in writing of its intent and must

report any pending publication or presentation to NCDMM at the time of this notification. NCDMM may negotiate to obtain such protection at its own expense where Sub-Recipient/Member(s) choose not to seek legal protection. Ownership of CDIP shall remain with the originating Sub-Recipient/Member(s).

7.2.3 It is anticipated that one of the outcomes of an active IP licensing and commercialization plan is the generation of royalty income by a respective Sub-Recipient/Member. It is acknowledged that Sub-Recipient/Members of academic, government, and industry sectors will manage the disposition and reporting requirements of all royalties received in accordance with their institution's existing policies, through their Party's TechTransfer Office. To the extent it may legally do so, Sub-Recipient/Members owning CDIP shall grant NCDMM and Lead Sub-Recipient/Members-In-Good-Standing a limited, non-exclusive, royalty-free license to use the CDIP for commercial purposes and Full Sub-Recipient/Members-In-Good-Standing shall be granted such licenses at a fair market value royalty rate. Such licenses shall be granted to interested Sub-Recipient/Members upon request in a separate legally binding mutually agreeable agreement between the Sub-Recipient/Members. Such licenses for Sub-Recipient/Members shall be without the right to grant sublicenses to third parties, except for any Sub-Recipient/Member-designated agents, contractors and non-employee students performing work for the benefit of such Sub-Recipient/Member, provided, however, the Sub-Recipient/Member is responsible for having any and all appropriate written agreements with such parties to enable Sub-Recipient/Member's compliance with this Agreement and is responsible for such parties' use of the CDIP in the same manner Sub-Recipient/Member is responsible for its own use of such CDIP (e.g., violation of the license parameters set forth in this section by a Sub-Recipient/Member's contractor shall be considered a breach of this Agreement by Sub-Recipient/Member). In addition, sublicensing shall be permitted to the licensee's direct customers.

7.3 Licenses granted under this Section 7 shall be subject to these additional terms:

Any licenses granted to a Sub-Recipient/Member through a separate document as specified in this Section 7 shall become a royalty bearing license at fair market value for such a Sub-Recipient/Member who is designated a Withdrawn Sub-Recipient/Member.

It is understood that the United States Government (through any of its agencies or otherwise) may provide use of its facilities or equipment and / or may provide funds for Consortium Research. As a result this Agreement, any and all rights and obligations of the Sub-Recipient/Members to any CDIP resulting from use of any United States Government's facilities, equipment or funds are subject to any and all applicable rights of the United States Government.

Notwithstanding anything to the contrary in this Agreement, certain laws, regulations and/or policies may prevent and/or limit certain Sub-Recipient/Members' ability to offer royalty-

bearing licenses to CDIP that has previously been licensed by such Sub-Recipient/Members on a royalty-free basis. Therefore, the ability to charge royalties to Full Sub-Recipient/Members, Supporting Sub-Recipient/Members, and/or third parties is subject to the granting Sub-Recipient/Member's ability to do so in light of then-existing contractual obligations, legal and regulatory requirements, and policies of the granting Sub-Recipient/Member.

ARTICLE 9. PUBLICATIONS

9.1 The Parties agree and expect that results of Consortium Research associated with this agreement shall be published or otherwise made publicly available and that Parties engaged in Consortium Research shall be permitted to present at symposia, national or regional professional meetings and to publish in journals, theses or dissertations, or by other means of their own choosing, the results of their research, provided that nothing will be done which could bar the availability of patent protection with respect to CDIP of a Sub-Recipient/Member or America Makes invention or which would disclose Proprietary Information of any Sub-Recipient/Member or of America Makes or disclose information in violation of the applicable U.S. laws and regulations (e.g., the International Traffic in Arms Regulations (“ITAR”) and the Export Administration Regulations (“EAR”) that govern the export of specific technical data and technologies, including software, prototypes and other intellectual property, to foreign countries and foreign nationals (“Export Control Laws”).

9.1.1 A Party will not make a public disclosure without a review of the full text of the proposed publication, presentation or other form of public disclosure by the Sub-Recipient/Member(s) involved, the America Makes Director and Government PM as described below. The Sub-Recipient/Member(s) involved, the America Makes Director and Government PM shall be provided a copy of the proposed public disclosure at least forty-five (45) days in advance of the submission of such proposed public disclosure and shall have two (2) weeks after receipt of said proposed disclosure to respond in writing to the submitting Party to identify Proprietary Information and/or to identify any potentially patentable CDIP and/or to identify any CDIP in which the submitting Party does not have an ownership interest. A submitting Party agrees to remove any identified Proprietary Information, potentially patentable CDIP and/or CDIP in which the submitting Party does not have an ownership prior to public disclosure (or, for potentially patentable CDIP in which the submitting Party does have an ownership interest, delay public disclosure for a period of sixty (60) days from the date of the response).

9.1.2 Notwithstanding anything to the contrary above, student theses and dissertations shall be subject to a separate review and comment process wherein the student shall submit such student thesis or dissertation in draft form at least sixty (60) days in advance of the date of their final defense in order to afford an opportunity to identify Proprietary Information and/or identify any potentially patentable CDIP and/or any CDIP in which the Party’s student does not have an ownership interest.

9.1.3 America Makes and/or America Makes Sub-Recipient/Members may negotiate and implement a more restrictive public disclosure agreement than defined in paragraphs 9.1.1 and 9.1.2 for a specific America Makes project based on the need for extended non-disclosure of CDIP by the project participants.

9.1.4 An acknowledgment of funding and a disclaimer shall appear in the publication of any material, whether copyrighted or not, resulting from an America Makes project

incorporating U.S. Government funds granted in support of the America Makes Consortium. The acknowledgement shall read:

“This material is based on research sponsored by Air Force Research Laboratory under agreement number FA8650-12-2-7230. The U.S. Government is authorized to reproduce and distribute reprints for Governmental purposes notwithstanding any copyright notation thereon.”

The disclaimer shall read:

“The views and conclusions contained herein are those of the authors and should not be interpreted as necessarily representing the official policies or endorsements, either expressed or implied, of Air Force Research Laboratory or the U.S. Government.”

6 EXHIBITS

The exhibits are required as part of the proposal submittal and do not count towards the page limit.

6.1 Exhibit I. Identification of Background Intellectual Property

Project Title	
Organization	
Principal Investigator	

List all known background intellectual property to be used in the conduct of this project or for which access may be required to implement project results:

Inventor / Owner	Title	Patent or Disclosure I.D.

If controlled by a project participant, I understand that a “good faith” commitment to enter into negotiations for a license of this background intellectual property to America Makes or the project partners may be required.

OR

I am unaware of any background intellectual property to be used in the conduct of this project or that may be required for implementation of project results.

Intellectual Property Rights Policy & Confidentiality Statement

As the Principal Investigator at _____ (Member) participating in this project, I agree to accept and abide by the Intellectual Property Rights Requirements of the America Makes Membership Agreement, as approved by the Governance Board, dated _____. I understand that I may be the recipient from time to time of information of a confidential and proprietary nature belonging to another America Makes participating organization. I have read and explicitly agree to abide by the provisions Section 5 of the America Makes Membership Agreement with respect to proprietary information.

I further agree to assist the project participants in their obligation of implementing America Makes’ intellectual property requirements for funded projects. I will do this by encouraging the timely submission of invention disclosures by project participants to their appropriate Intellectual Property Office, clearly identifying such disclosures as relating to this project, and by providing any supporting documentation and information that may be requested from time to time for the purpose of filing patent applications under America Makes and/or the Inventing Organization(s).

Principal Investigator

Signature	
Printed Name	DATE:

NCDDMM/America Makes reserves all rights in connection with this document and in the subject matter represented therein. The recipient hereby acknowledges these rights and shall not, without permission in writing, disclose or divulge this document in whole or in part to third parties or use it for any purpose other than that for which it was delivered to recipient.

6.2 Exhibit II. Multiple Submissions Summary

America Makes recognizes that projects may be submitted to multiple sources of funding.

America Makes must be informed if other funding is secured and will work with the Principle Investigator (PI) to modify this project scope, as appropriate.

List all planned or submitted requests for additional funding of work in this project area from sources other than America Makes.

Date Submitted or Planned Submittal Date	Organization	Decision Date

Principal Investigator

Signature	
Printed Name	
Date	

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6.3 Exhibit III. Letters of Commitment

6.4 Exhibit IV. Acknowledgement of Consortium Developed Intellectual Property and Disclosure of Planned Publications

- As the Principal Investigator at _____ (Member), I agree that results from this project will be considered consortium-developed intellectual property (CDIP) and will be shared amongst the membership according to the consortium-developed intellectual property (CDIP) structure in the Membership Agreement, with exceptions made for any ITAR/Export Control information.
- As the Principal Investigator at _____ (Member) participating in a funded Project, I project the following publications of the results from this project. In addition, I agree that all publications will be approved through the AFRL Technical POC 45 days prior to public dissemination.

Summary of Planned Publications from Project Team	

Principal Investigator

Signature	
Printed Name	DATE:

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America Makes Project Call

Organization	
Address	
Principal Investigator	

Overall Requested Funding

America Makes	\$	Duration	(in months)
Cost Share	\$		
Project Total	\$		

Lead Organization

Name		Phone	
Address		Fax	
Cost Share (\$)		Email	

Partner (Please identify additional partners using the same format)

Name		Phone	
Address		Fax	
Cost Share (\$)		Email	

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