

**Data Analytics that are Robust and Trusted (DART)
Research Seed Grant Program
Request for Proposals**



RFP Announcement Date: Monday, April 18, 2022

Proposal Submission Due Date: Tuesday, May 31, 2022

Overview:

The Arkansas National Science Foundation Established Program to Stimulate Competitive Research (AR NSF EPSCoR) Central Office is seeking research proposals to support the current NSF EPSCoR Track-1 Project: **Data Analytics that are Robust and Trusted (DART): From Smart Curation to Socially Aware Decision Making**. This RFP is supported by NSF award # OIA-1946391.

Program Name: DART Seed Grant Program Round 2

Program Director:

Jennifer Fowler
Director, Arkansas NSF EPSCoR
Arkansas Economic Development Commission
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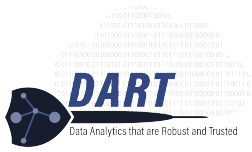
Purpose:

The DART Seed Grant Program invites researchers throughout Arkansas to propose small projects in emerging or transformative areas of research aligned with our current Track-1 project, DART. Proposals are highly encouraged from new investigators, early career faculty, non-tenured faculty, female and underrepresented minority investigators; and from rural, primarily undergraduate, or minority-serving institutions of higher education within Arkansas. This RFP has two main goals:

1. Build and foster sustainable research collaborations between novice investigators and current DART participants on novel research projects.
2. Provide professional development to novice investigators in Arkansas by simulating an NSF solicitation, with similar project management and reporting needs if awarded.

This RFP is seeking projects that:

- address unmet/unexpected research needs or otherwise support one or more of the six DART research teams;
- expand the state's research capacity in DART related fields;



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- significantly contribute to education, student training, and broadening participation in DART related fields;
- provide new collaborative research opportunities with investigators at two or more campuses in DART related fields; and/or
- expand access to and awareness of existing research computing resources or other relevant infrastructure to Arkansas participants.

Seed grant **proposals must align with, but not overlap, existing research** being conducted in one or more of the following six project components: Cyberinfrastructure (CI), Data Life Cycle and Curation (DC), Learning and Prediction (LP), Social Media and Networks (SM), Social Awareness (SA), Data Science Education (ED). Proposers may request a copy of the original DART proposal to better align submissions, and are highly encouraged to visit dartproject.org for more information about the project.

Eligibility:

Research or teaching faculty at any accredited Arkansas institution of higher education (including community colleges) are eligible to receive funds under this program. Currently funded DART participants are not eligible to receive funding under this program, but optionally may be included as unfunded mentors on proposals with novice principal investigators. Each proposal may include one PI and up to four Co-PIs.

Restrictions:

There are no restrictions or limits on the number of proposals that an institution can submit. Each applicant may only submit one proposal as PI, but may be included as a Co-PI on one additional proposal. Each applicant can only be named as PI, Co-PI, or Senior Personnel in a total of two proposal submissions. Awardees named as investigators on more than one project will not receive more than 1-month total salary support combined per project year. In the case that an investigator is named on two projects and requested 1 month salary on both, AEDC will negotiate and adjust the project budgets accordingly.

DART Summary:

The vision of DART is to improve research capability and competitiveness in Arkansas by creating an integrated statewide consortium of researchers working to establish synergistic excellence in both data analytics and data science education. The overall goals of DART are to develop the means to increase the speed and efficiency of data curation, techniques to protect privacy and impartial content, methods for harnessing the predictive power of machine learning while increasing the interpretability of the predictions, and data science curricula that are inclusive and better prepare students for a data-centric future.

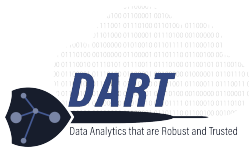


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DART research will systematically investigate key aspects of the following four focus areas and develop novel, integrated solutions to address their accompanying concerns:

1. **Big data management:** Before data streams and datasets can be used in the many kinds of learning models, they are often manually curated, or at the least, curated for a specific problem. We still rely on hosts of analysts to assess the content and quality of source data, engineer features, define and transform data models, annotate training data, and track data processes and movement.
2. **Security and privacy:** Government agencies and private entities collect and integrate large amounts of data, process it in real-time, and deliver products or services based on these data to consumers and constituents. There are increasing worries that both the acquisition and subsequent application of big data analytics are not secure or well-managed. This can create a risk of privacy breaches, enable discrimination, and negatively impact diversity in our society.
3. **Model interpretability:** Machine learning models often sacrifice interpretability for predictive power and are difficult to generalize beyond their training and test data. But interpretability and generalizability of trained models is critical in many decision-making systems and/or processes, especially when learning from multi-modal and heterogeneous big data sources. There is a continuing need to better balance the predictive power of complex machine learning models with the strengths of statistical models to better configure deep learning models to allow humans to see the reasoning behind the predictions.
4. **Data Science Education:** Our vision is to create a model Data Science and Analytics program for colleges and universities in Arkansas to promote problem-based and experiential-based pedagogy in critical thinking and analysis, technology familiarity, and foundation in math and statistics. This will form the basis of an educational ecosystem where learners receive a designed, consistent, sequenced, scaffolded, and modular education in data science with further educational and/or job opportunities available at appropriate points in their careers. The DART education efforts aim to significantly increase and diversify students matriculating through the K20 education system with skills in data, math, computing, and related fields.



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Required Letter of Support:

All proposals must include a letter of support from a DART Scientific Steering Committee (SSC) member from the relevant team(s) that the proposal is aligned with. If a project is proposing alignment with two or more teams, the letter of support must be signed by an SSC member from each team. A template for the letter of support is included in the solicitation documentation. The SSC Members are listed below:

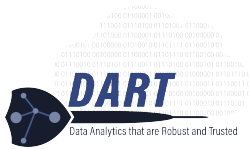
- Cyberinfrastructure (CI):
 - Dr. Jack Cothren (jcothre@uark.edu)
 - Dr. Fred Prior (fwprior@uams.edu)
 - Dr. Jan Springer (jpspringer@ualr.edu)
- Data Curation & Life Cycle (DC):
 - Dr. John Talburt, UALR (jrtalburt@ualr.edu)
 - Dr. Dave Ussery, UAMS (dwussery@uams.edu)
 - Dr. Edi Tudoreanu, UALR (metudoreanu@ualr.edu)
- Social Awareness (SA):
 - Dr. Xiuzhen Huang, A-State (xhuang@astate.edu)
 - Dr. Xintao Wu, UARK (xintaowu@uark.edu)
- Social Media & Networking (SM):
 - Dr. Nitin Agarwal, UALR (nxagarwal@ualr.edu)
 - Dr. Justin Zhan, UARK (jzhan@uark.edu)
- Learning & Prediction (LP):
 - Dr. Chase Rainwater, UARK (cer@uark.edu)
 - Dr. Heather Nachtmann, UARK (hln@uark.edu)
 - Dr. Md Karim, SAU (mdkarim@saumag.edu)
 - Dr. Emre Celebi, UCA (ecelebi@uca.edu)
- Data Science Education (ED):
 - Dr. Karl Schubert, UARK (schubert@uark.edu)
 - Dr. Steve Addison, UCA (saddison@uca.edu)

Award Amount and Duration:

Proposed budgets **should not exceed a total budget of \$100,000** (including an effective indirect cost of no more than 8%) for a total project duration of **6-24 months**. Larger projects (up to \$150,000 total involving two or more campuses) will be considered but special justification will be required in the proposal.

Allowed Budget Items:

Awards may be used to cover the costs of research such as faculty or student salary support and fringe, domestic travel, training, equipment usage fees, dissemination or



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publication costs, consumables, and/or software licenses to support remote data analysis. Participant support costs, foreign travel, and equipment or instrumentation purchases are not allowed under this program.

Preferences:

In alignment with the stated program goals, preference will be given to submissions from new investigators, early career faculty, non-tenured faculty, and postdoctoral associates; and submissions from minority-serving institutions. Furthermore, preference will be given to proposals that broaden student and faculty participation and foster new collaborations. For example, if a proposal from a new investigator and a tenured faculty member are ranked equally and both recommended for funding, the award will likely go to the new investigator.

Application Procedure:

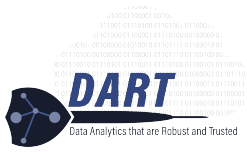
To be considered for funding, proposals must be submitted electronically no later than 5:00PM Central Time on the submission due date (prepared as described in the supplements below) attached to an email to JFowler@ArkansasEDC.com. Proposers are encouraged to combine the proposal files, with the exception of the budget spreadsheet, into a single PDF. The Program Director will notify proposers whose projects do not meet the stated criteria.

Relevant Dates:

April 18, 2022 – Solicitation Announced
May 31, 2022 – Proposals Due to AEDC
June 3, 2022 – Proposals Meeting Basic Requirements Distributed to Review Panel
July 29, 2022 – Acceptance and Rejection Notices Sent
August 12, 2022 – Project Plans & Award Letters Finalized
September 1, 2022 – Anticipated Award Start Date

Review Process:

Proposals submitted in response to this RFP will be reviewed by a panel that will include members of the DART External Advisory Board, the DART Industry Advisory Board, and the DART Management Team as well as experts in the relevant fields from academic and research institutions outside the state as needed. The review panel will make recommendations on each proposal which will be submitted to the Program Director. Once a decision has been made, submitters may request redacted copies of the reviews. In all cases, reviews are treated as confidential documents. In addition, the proposer may request an explanation of the decision to award or decline funding.



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Merit Review Principles and Criteria:

All proposals are evaluated through use of the two National Science Board-approved merit review criteria:

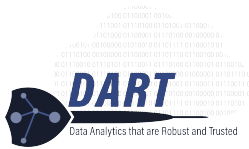
1. **Intellectual Merit:** The Intellectual Merit criterion encompasses the potential to advance knowledge in the area of data analytics; and
2. **Broader Impacts:** The Broader Impacts criterion encompasses the potential to benefit society while also contributing to the achievement of specific, desired outcomes of enhanced collaboration. Additionally, reviewers will be asked to place special consideration on the likelihood that the proposed project will contribute to the broader goals of the DART project.

The following five elements will also be considered in the review for both criteria:

1. What is the potential for the proposed activity to:
 - a. Advance knowledge and understanding in the areas of data analytics and across different fields;
 - b. Benefit society or advance desired societal outcomes; and
 - c. Enhance collaboration with and among DART participants?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or organization to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Additional review criteria include the following:

1. Is the assembled team of partner organizations and personnel appropriate and essential for the planned project? Are the partner organizations and participants meaningfully integrated?
2. Do the proposed goals and objectives promote training and professional development? Does the team include any postdoctoral associates, early career faculty, and/or tenure-track faculty?
3. Does the proposal promote student participation and collaboration among Arkansas institutions?
4. Does the proposal broaden participation in DART and/or the Arkansas STEM community?



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Reporting & Dissemination

Arkansas EPSCoR must comply with Federal NSF EPSCoR reporting requirements. Therefore, each investigator awarded funding will be required to report specific information in the DART Reporting Website by established deadlines. Investigators will attend a mandatory training session on reporting that goes over this requirement in more detail. Required information to report will include, but not be limited to:

- a. The number and de-identified demographic information of all project participants and others engaged via outreach activities;
- b. Project-related products and outputs such as additional proposals submitted to any funding source, publications, presentations, patents, students receiving degrees, and other research outcomes.

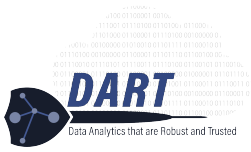
The principal investigator and/or other project team members will be expected to attend the DART Annual All-Hands Conference and may be asked to give a presentation about the awarded project.

All publications resulting from the award must include the following acknowledgement of NSF Support/Disclaimer (which can also be found on dartproject.org):

This material is based upon work supported by the National Science Foundation under Award No. OIA-1946391. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

General Conditions of the Award / Award Administration Information:

1. Seed Funding Awards are made in the form of a standard grant to the submitting institution. The Arkansas EPSCoR Office/AEDC reserves the right to negotiate the budget and the terms of the award. Awards will be issued based on the understanding that all state and local rules, regulations, and procedures governing the project will be followed. AEDC, in funding this project, does not assume responsibility for any violations of such requirements.
2. In the event of changes to contact information or employment status of any named investigator or senior personnel, the PI or administrative contact must notify AEDC within 30 days of the change.
3. AEDC may request additional information from any awarded institution, such as audit findings or copies of relevant policies and procedures.



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In support of the second stated goal of this RFP to provide professional development to novice investigators in Arkansas by simulating an NSF solicitation, the following submission guidelines are modeled after standard NSF proposal guidelines.

Submission Checklist

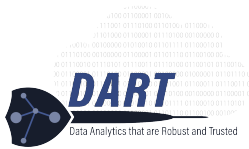
This checklist is only a guide and does not replace any portion of the RFP.

- _____ Cover Page*
- _____ Project Summary
- _____ Project Description
- _____ References Cited
- _____ Letter of Support*
- _____ Seed Grant Program Contact Sheet*
- _____ De-identified Investigator Demographic Information*
- _____ NSF Current and Pending forms for each PI, Co-PI, and named Senior personnel*
- _____ NSF Biosketch for each PI, Co-PI, and named Senior personnel*
- _____ Facilities, Equipment, and Other Resources*
- _____ Completed Excel Budget (one page per project year and cumulative)*
- _____ Budget Justification*
- _____ Timeline and Milestones*

** Template provided in solicitation documents*

Additional things to consider:

- Does the proposal title include a prefix that identifies the two-letter abbreviation of the research theme followed by a colon?
- Does your cover sheet have signatures from all PI, Co-PI(s), and Authorized Organizational Representatives (AORs)?
- Is the project description self-contained without URLs?
- Has each PI and Co-PI submitted an NSF-approved biosketch?
- Has each PI and Co-PI submitted an NSF-approved current and pending support document?
- Is salary support for PI and Co-PI(s) limited to one-month per person per year?
- Have you provided a budget for each year of support requested?
- Have you provided a cumulative budget for all years (and institutions, if applicable)?
- If your budget exceeds \$100,000, have you sufficiently documented all collaborations and institutions within the project description and budget justification?

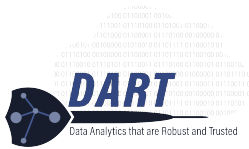


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Proposal Preparation and Submission Instructions

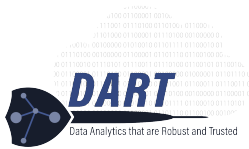
1. **Pagination:** Each section should be paginated prior to submission.
2. **Proposal Font, Spacing, and Margin Requirements:** The proposal should conform to the following requirements:
 - a. Use one of the following fonts identified below:
 - Arial (not Arial Narrow), Courier New, or Palatino Linotype at a font size of 10 points or larger;
 - Times New Roman at a font size of 11 points or larger; or
 - Computer Modern family of fonts at a font size of 11 points or larger.
 - A font size of less than 10 points may be used for mathematical formulas or equations, figures, tables or diagram captions and when using a Symbol font to insert Greek letters or special characters. Other fonts not specified above, such as Cambria Math, may be used for mathematical formulas, equations, or when inserting Greek letters or special characters. PIs are cautioned, however, that the text must still be readable.
 - b. No more than six lines of text within a vertical space of one inch.
 - c. Margins, in all directions, must be at least an inch. No proposer-supplied information may appear in the margins.
 - d. Paper size must be no larger than standard letter paper size (8 1/2 by 11").
 - e. These requirements apply to all uploaded sections of a proposal, including supplementary documentation.
3. **Page Formatting:** The guidelines specified above establish the minimum font size requirements; however, PIs are advised that readability is of paramount importance and should take precedence in selection of an appropriate font for use in the proposal. Use of a small font size makes it difficult for reviewers to read the proposal; Adherence to font size and line spacing requirements also is necessary to ensure that no proposer will have an unfair advantage, by using smaller font or line spacing to provide more text in the proposal. Proposers are strongly encouraged to use only a standard, single-column format for the text.
4. **Cover Page** (page limit: 1): Cover sheet should be completed with signatures from all PI, Co-PI(s), and Authorized Organizational Representatives (AORs) (template provided with solicitation documents). For proposals including two or more campuses, please duplicate the signature page as appropriate so that an OSP Director or AOR from each institution has signed the proposal.



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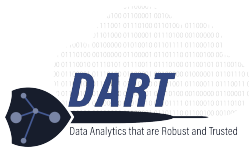
5. **Proposal Title:** The title of the proposal should begin with the two-letter abbreviation of the applicable DART research theme(s) followed by a colon. The rest of the title of the proposal should describe the project in concise, informative language so that a technically literate reader can understand what the project is about. For example, a proposal being submitted to the Data Life Cycle and Curation research theme should begin with “DC:” followed by the project title. Proposals submitting to two or more teams should list them together, “DC/LP/SA:” followed by the project title.
6. **Project Summary** (page limit: 1): The one-page Project Summary consists of an overview, a statement on the intellectual merit of the proposed activity, and a statement on the broader impacts of the proposed activity. The overview includes a description of the activity that would result if the proposal were funded and a statement of objectives and methods to be employed. The Project Summary should be written in the third person, informative to other persons working in the same or related fields, and, insofar as possible, understandable to a scientifically or technically literate lay reader. It should not be an abstract of the proposal. The statement on intellectual merit should describe the potential of the proposed activity to advance knowledge. The statement on broader impacts should describe the potential of the proposed activity to benefit society and contribute to the achievement of specific, desired societal outcomes.
7. **Project Description** (page limit: 5): Project descriptions are limited to 5 pages in length and must include the following clearly labeled sections:
 - a. **Grand Challenge:** Describe the societal and/or scientific grand challenge being addressed, including its urgency, as well as a brief description of what is already known. Discuss the potential for sustaining research beyond project duration.
 - b. **Research Plan:** Frame the problem in the context of the existing scientific body of knowledge. Detail research questions, hypotheses, and gaps in science, engineering and/or education knowledge that the proposal is addressing. Provide a project plan and discuss the proposed approaches that will be utilized. This section should include clearly delineated goals and objectives, as well as resources needed to accomplish stated objectives.
 - c. **Rationale:** Provide a rationale explaining proposal suitability for this solicitation and explain the proposal’s potential to advance knowledge in data analytics and science. Specify what creative, original, and/or potentially transformative elements will address DART’s four main topics.



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8. **Page Limitations and Inclusion of Uniform Resource Locators (URLs) within the Project Description:** Brevity will assist reviewers in dealing effectively with proposals. Therefore, the Project Description may not exceed four pages. Visual materials, including charts, graphs, maps, photographs and other pictorial presentations are included in the five-page limitation. PIs are cautioned that the Project Description must be self-contained and that URLs must not be used because:
 - a. the information could circumvent page limitations,
 - b. the reviewers are under no obligation to view the sites; and
 - c. the sites could be altered or deleted between the time of submission and the time of review.
9. **References Cited** (no page limit): Reference information is required.
 - a. Each reference must include the names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication (see also Chapter II.C.2.d.(iii)(d)). If the proposer has a website address readily available, that information should be included in the citation. Inclusion of a website address is optional.
 - b. Proposers must be especially careful to follow accepted scholarly practices in providing citations for source materials relied upon when preparing any section of the proposal. While there is no established page limitation for the references, this section must include bibliographic citations only and must not be used to provide parenthetical information outside of the 5-page Project Description.
10. **Letter(s) of Support** (1 per proposal): A letter of support from a current DART Scientific Steering Committee member is required to ensure that consideration has been given to how the proposed project would be integrated with, and complementary of, DART goals and objectives (template provided with solicitation documents). The letter should be signed by one SSC member from each relevant DART team that the proposal is aligned with.
11. **Seed Grant Program Contact Sheet** (2 pages): The contact sheet should be completed including contact information for the institution's administrative representative, the PI, and each Co-PI.
12. **Demographic Information** (1 page): De-identified demographic information is requested for the PI and each Co-PI using the provided template.



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13. **Current and Pending Support Document(s):** An NSF-style current and pending support document from each investigator requesting salary support must be included (template provided with solicitation documents). The seed grant proposal being submitted should be included on the form, including a description of any potential overlap with other current support.
14. **Biographical Sketch(es):** An NSF-style biographical sketch for each named investigator and senior personnel must be included with the proposal (template provided with solicitation documents).
15. **Facilities, Equipment, and Other Resources** (page limit: 2): This document should address the availability and adequacy of institutional resources available to conduct the proposed activities. Proposers should describe only those resources that are directly applicable. The description should be narrative in nature and should not include financial information (template provided with solicitation documents).
16. **Budget** (no page limit) and **Budget Justification** (page limit: 2 per collaborating campus): Each proposal must contain a budget for each year of support requested, as well as a cumulative budget for all years. An excel spreadsheet template is provided that contains three tabs- Year 1, Year 2, and Cumulative budget pages. The cumulative budget page will auto-populate based on entries in the Year 1 and Year 2 pages. The amounts for each budget line item requested must be documented and justified in the budget justification. The proposal may request funds under any of the categories listed so long as the item and amount are considered necessary, reasonable, allocable, and allowable under 2 CFR §200, Subpart E, NSF policy. Amounts and expenses budgeted also must be consistent with the proposing organization's policies and procedures and cost accounting practices used in accumulating and reporting costs. Proposals that include a budget exceeding \$100,000 should demonstrate diverse collaborations across multiple institutions and be evidenced within the project description and budget justification.
17. **Timeline and Milestones** (page limit: 1): The one-page timeline should include milestones for completing the work described in the project description, as well as a timeline for expending requested funds (template provided with solicitation documents).



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Additional Budgetary Information

1. **Cost Sharing:** Inclusion of voluntary committed cost sharing is prohibited.
2. **Indirect Cost (F&A) Limitations:** Indirect cost (F&A) should not exceed 8% in accordance with NSF award conditions for this program. AEDC does not charge any F&A on these funds.
3. **Budget Preparation Instructions:** Each proposal must contain one completed budget page for each year (12 months) of support requested. The amounts for each budget line item requested must be documented and justified in the budget justification. The budget and budget justification should be prepared using the templates included in this document. The cumulative budget page will populate automatically from the Year 1 and Year 2 pages. Proposals that involve more than one campus should submit a separate budget and budget justification for each Institution, in addition to a cumulative project budget.
4. **Eligible expenses:** Awards may be used to cover the costs of research such as faculty or student salary support and fringe, domestic travel, training, equipment usage fees, dissemination or publication costs, consumables, and/or software licenses to support remote data analysis.
5. **Ineligible expenses:**
 - a. Subawards are not permitted.
 - b. Participant support costs, foreign travel, and equipment or instrumentation purchases are not allowed under this program.
6. **Authorized Organizational Representative (AOR):** The cover page must include the signature of an AOR from the PI's Sponsored Programs Office, or equivalent. Collaborative proposals that include multiple institutions must include cover pages with required signatures from each Institution's Sponsored Programs Offices. Proposals that do not include the signature of an AOR from the PI's sponsored programs office(s), or equivalent, will NOT be accepted.

END OF RFP GUIDELINES