

Federal Register Notice 86 FR 46278, <https://www.federalregister.gov/documents/2021/08/18/2021-17737/request-for-information-rfi-on-an-implementation-plan-for-a-national-artificial-intelligence>, October 1, 2021.

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# Request for Information (RFI) on an Implementation Plan for a National Artificial Intelligence Research Resource: Responses

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September 1, 2021

Dr. Lynne Parker

Director

National Artificial Intelligence Initiative Office, White House Office of Science and Technology Policy

Re: Implementation Plan for a National Artificial Intelligence Research Resource (Docket Number: 2021-15660)

Dear Dr. Parker,

Accenture is pleased to provide input on the implementation plan for the National Artificial Intelligence Research Resource (NAIRR).

As a leading global professional services company, Accenture provides a broad range of services and solutions in strategy and consulting, technology, interactive, and operations, that span all industries. We combine artificial intelligence (AI) with deep industry and analytics expertise to help our clients embrace these emerging, intelligent technologies confidently and responsibly.

At Accenture Labs and Accenture Federal Services, we incubate new concepts and apply the latest technologies to design and deliver breakthrough solutions for business, government, and society. In addition, Accenture's Applied Intelligence practice delivers AI applications at scale, underpinned by our Responsible AI focus on the ethical, transparent, and accountable use of AI technologies in a manner consistent with user expectations, organizational values, and societal laws and norms.

As the National Artificial Intelligence Research Resource (NAIRR) Task Force develops the implementation plan for the NAIRR, Accenture believes that the Task Force should closely coordinate with the National Science Foundation (NSF) and its National Artificial Intelligence Research Institutes. Accenture is a proud sponsor of one of these institutes – the NSF AI Institute for Adult Learning and Online Education – and believes deeply in the need for public-private collaboration on AI research.

Thank you for your work on the NAIRR, and we look forward to further participation in its development.

Sincerely,

Robert Cresanti

Government Relations Executive Director and Head of Global Government Relations Network  
Accenture

## **Request for Information on an Implementation Plan for a National Artificial Intelligence Research Resource**

1. *What options should the Task Force consider for any of roadmap elements A through I above, and why?*
  - A. *Goals for establishment and sustainment of a National Artificial Intelligence Research Resource and metrics for success*

The primary goal for the NAIRR should be to serve as a champion for the sharing of data. The field of AI research would make tremendous advances if private industry and government agencies shared more data and if needed protections and systems were in place to allow for such sharing to occur. The Task Force should consider ways to incentivize increased data sharing.

Additionally, the NAIRR should endeavor to provide scalable computing resources and to create a benchmarked marketplace to advance the state of the art in AI research. When evaluating the computing resources that the NAIRR should make available to researchers, the Task Force should first seek to understand the current state of existing efforts in this space, given the fact that other government agencies like the National Laboratories already make computing resources available to researchers.

Finally, the NAIRR should seek to promote a multifaceted and multimodal approach towards AI. Recently, deep learning, or representation learning more generally, have comprised a majority of academic and industry focus. This will ultimately reach a limit. In addition to machine learning, the NAIRR should encourage researchers to focus on other areas of AI, such as:

- Decisioning and Contextual Adaptation
- Probabilistic and Symbolic Reasoning
- Causal Inferencing
- Generative Learning
- Data Efficient Learning
- Privacy Preserving Data Design and Learning
- System Engineering and Cybernetics

Some metrics that the NAIRR could use to measure success include:

- How much data is shared with the NAIRR that wasn't previously available to researchers
- How many new researchers use the advanced computing resources provided by the NAIRR and the demographic diversity of AI researchers
- How many researchers test against the NAIRR benchmarks or use their data sets

- E. *An assessment of, and recommended solutions to, barriers to the dissemination and use of high-quality government data sets as part of the National Artificial Intelligence Research Resource;*

Some potential incentives that the Task Force could consider to encourage additional sharing of data range from support for AI-related budget requests to leadership roles in government decision-making processes. Accountability could include regular reporting requirements such as publication and promotion of statistics for leading organizations.

One potential barrier to the sharing of “high-quality” data is a lack of agreement on what exactly makes data “high quality.” When Accenture talks about “data quality,” we look at a combination of factors such as completeness, accuracy, lack of bias that negatively impacts society, relevance, and timeliness of data in relation to the insights we are trying to generate.<sup>1</sup> A combination of clear ownership and data lineage is how data quality is maintained and trust is built over time, and the Task Force should consider processes and frameworks around storage, management, and transfer of data that are needed to ensure “high-quality” data.

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2. *Which capabilities and services provided through the NAIRR should be prioritized?*

The top priority for the NAIRR should be to increase access to data through the provision of high-quality, curated data sets. Of particular importance is the provision of data related to climate, healthcare, and economics – three critical fields of study that would benefit greatly from increased AI-related research.

While increasing access to advanced computing resources is a laudable goal, the National Laboratories have made considerable progress in this space. Instead of duplicating efforts, the NAIRR Task Force should work with the National Laboratories to evaluate their progress, identify gaps, and work collaboratively to complement their work.

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3. *How can the NAIRR and its components reinforce principles of ethical and responsible research and development of AI, such as those concerning issues of racial and gender equity, fairness, bias, civil rights, transparency, and accountability?*

We believe strongly in the importance of the ethical, equitable, and fair use of technology. To reinforce these principles in the research and development of AI, organizations should adapt a two-pronged strategy:

1. **Humans in the Loop:** Participation in the NAIRR, should only be allowed after:
  - Appropriate terms and conditions have been attested and signed to.
  - Participants have taken mandatory training from approved providers on responsible and ethical use of the NAIRR.
  - The participating entities have a strong operational charter to mandate responsible use of data and models.

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<sup>1</sup> “How to build a data strategy to scale AI.” Millman, Nick. May 15, 2020. <https://www.accenture.com/us-en/insights/applied-intelligence/build-data-strategy>

- Accountability from a legal and liability standpoint is established.

## 2. Work Products and Outputs

- The process and outputs from NAIRR research, as well as training data sets, should be auditable. Model research and development should be chronicled and available for review.
- The NAIRR should provide certain automated testing frameworks to back test the AI models against benchmarked compliance policies.
- Significant results should be reproducible.

The NAIRR can reinforce principles of ethical and responsible research and development of AI by coordinating with the National Institute of Standards and Technology (NIST). NIST has hosted numerous workshops on AI issues, such as mitigating bias in AI, and recently published a draft document titled, “A Proposal for Identifying and Managing Bias in Artificial Intelligence.”<sup>2</sup> Additionally, the Task Force should ensure that data sets have the appropriate governance in place to reduce representation bias and that all data collected from individuals should be submitted with the associated consent forms that were used to obtain informed consent and that specify the scope of the consent. For universities, this means ensuring that data sets were collected in accordance with institutional review board (IRB) criteria. For private companies that don’t have to undergo IRB, the government should ensure that data sets have been collected with documented reasonable governance with policies and processes that include informed consent.

Another approach the NAIRR could take to drive ethical behavior would be to create a robust regime analogous to the “open source” principles found in software development. The Task Force should consider requiring users who transform, add to, or modify NAIRR data to contribute such modifications back to the NAIRR. Users would have broad rights to use the data and share their use cases (models) to enhance global learning, while encouraging a community (as in open source) to contribute data updates that reduce bias and drive ethical behavior.

Finally, a way to reinforce ethical and responsible AI for deep learning (DL) models in particular is to ensure that they do not propagate negative stereotypes. This can be done by testing predictions against benchmark data or by providing a report on their testing and predictions if benchmark data does not exist. This would help address ecological fallacies, among other things.

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#### 4. *What building blocks already exist for the NAIRR, in terms of government, academic, or private-sector activities, resources, and services?*

The Department of Energy’s National Laboratories should serve as a crucial building block for the NAIRR, as they are already focused on advanced technology research and are providing

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<sup>2</sup> “A Proposal for Identifying and Managing Bias in Artificial Intelligence.” Schwartz, Reva; Down, Leann; Jones, Adam; and Tabassi, Elham. June 2021. <https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.1270-draft.pdf>

researchers with access to advanced computing resources. For example, the Argonne Leadership Computing Facility (ALCF) provides researchers with access to supercomputers, visualization clusters, advanced data storage systems, and high-performance networking capabilities. According to the Department of Energy, “One important reason for establishing America’s national laboratory system immediately after World War II was to provide a home for large-scale, costly scientific facilities that universities could not afford.” Given the National Laboratories’ work in this space, the Task Force should engage extensively with the National Laboratories to determine ways to best help researchers and ensure minimal duplication of efforts.

Another effort that the NAIRR Task Force can build upon is the Coleridge Initiative’s Administrative Data Research Facility (ADRF). The ADRF is a cloud-based platform that provides secure access to government data sets that have historically been unavailable to researchers. Currently, the ADRF provides access to over 100 confidential government datasets from more than 50 different agencies. The NAIRR should consider ways to encourage government agencies to contribute more data resources to efforts like the ADRF. By leveraging an existing resource like ADRF, the Task Force can increase the speed and decrease the costs of implementing the NAIRR.

Finally, the Task Force should coordinate closely with the National Science Foundation’s AI Research Institutes. NAIRR, in concert with the NSF’s recently launched institutes, can serve as a marketplace to cross fertilize ideas across the seven research domains identified by the AI Research Institutes. This would not only accelerate research and development in AI, but it will help develop robust data sets that can be used as benchmarks for different industrial use cases.

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5. *What role should public-private partnerships play in the NAIRR? What exemplars could be used as a model?*

The Task Force should consider public-private partnerships a crucial component of the NAIRR, and one model they should be considered is the aforementioned NSF AI Research Institutes. These Institutes bring together academia, industry, and government to work together and advance AI research in ways that would be impossible separately. Accenture is a major partner of NSF in these efforts, having partially funded the establishment of the NSF AI Institute for Adult Learning and Online Education. Led by the Georgia Research Alliance, this institute will seek to enhance the quality of adult online education and make education more available, affordable, and equitable. The NAIRR could follow a similar model of working with specific research institutions and industry partners to identify key areas where the NAIRR could advance AI-based fields of study.

Another model that the Task Force should examine while developing a plan for the NAIRR is the Human Genome Project which ran from 1990 to 2003. Through its sequencing of DNA, the Human Genome Project advanced a variety of scientific fields including anthropology,

biotechnology, and biofuels. The NAIRR should strive to bring together a similarly impressive group of stakeholders to advance AI research.

A final model that the Task Force should consider is the European Commission’s Destination Earth (DestinE), an effort to create a “digital twin of Earth.” This effort is intended to improve digital modelling of Earth’s physical resources, allowing researchers to simulate natural phenomena more precisely, continuously monitor the health of the planet and model the effects of climate change. DestinE will be a cloud-based modelling and simulation platform, where users will be able to access data, advanced computing infrastructure, software, AI applications, and analytics. Given the similarities between DestinE and NAIRR, the Task Force would be well-served by closely examining DestinE’s design and implementation.

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6. *Where do you see limitations in the ability of the NAIRR to democratize access to AI R&D? And how could these limitations be overcome?*

One of the major challenges that the NAIRR will face is the question of liability. If NAIRR succeeds in encouraging federal agencies, private companies, non-profit organizations, and others to provide data to this effort, NAIRR will need to provide clear guidance on the potential liability concerns surrounding shared data. Without clarity and confidence, non-government entities will be reticent to participate, potentially creating a significant limitation on the potential for NAIRR’s success.

The Task Force will need to consider how best to prevent the unethical use and sharing of data collected from individuals both for its own altruistic merits and as an incentive for responsible entities to participate. Relatedly, the NAIRR will have to negotiate difficult questions around the extent to which consumers can demand recourse.

A final limitation that NAIRR will face in democratizing access to AI research and development is the overall lack of diversity within the AI field. From race and gender to academic training and vocational background, AI, and the technology field more generally, has a well-documented diversity problem. Organizations like Girls Who Code and AI4ALL have been founded to help close various diversity gaps and increase representation in the technology field. In developing a plan for the NAIRR, the Task Force should ensure that diversity and inclusion are at the center of their efforts.