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

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## **NSF IAIFI Response to National AI Research Resource Task Force**

The NSF AI Institute for Artificial Intelligence and Fundamental Interactions (IAIFI, <http://iaifi.org/>) is supportive of the national AI Research Resource (NAIRR) task force effort as available computing resources are vital to the success of our Institute and of other AI research endeavors. Particular concerns of ours are whether a centralized resource would be equitably available to all AI researchers in a minimally bureaucratic manner. AI is a nascent field but it is also computationally intensive. It is therefore important that there is plenty of scope for exploratory types of research for which one cannot write the typical applications that are required for NSF XSEDE or DOE INCITE computing allocations. By its very nature, one doesn't know if these exploratory studies will lead to useful results, but it is only by exploring that advances will be made.

Some more specific responses to the listed questions are below.

1. *What options should the Task Force consider for any of roadmap elements A through I above, and why? [Please take care to annotate your responses to this question by indicating the letter(s) of the item (A through I in the list above) for which you are identifying options.]*

A) A NAIRR should aim to provide resources to all federally funded researchers in as simple, transparent, and equitable a manner as possible. Metrics should include delivered computing cycles as well as equity of access.

C) Funding agencies supporting the area should not separate research funding (e.g. NSF grants to support students) from the computational resources needed to undertake that research. Funding agencies should also be mindful of the exploratory, but computationally intense, nature of a lot of AI research and allow for a much more flexible allocation process than exists at current national computing facilities which are driven by proposals with formal milestones.

D) A central priority should be compute resources that are easy to access. There are already many avenues for education and training in AI that can be leveraged.

2. *Which capabilities and services (see, for example, item D above) provided through the NAIRR should be prioritized?*

The amount of computing that can be delivered and the availability of a variety of hardware (e.g. a balanced combination of CPUs, GPUs, TPUs, FPGAs) are important.

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?*

A critical point regarding equity and diversity is to note that a peer-reviewed, proposal-driven system will favor established researchers in the field. If there is a proposal-driven process, it

should have a “junior researcher” track (with a defined fraction of computing available through it, not resulting in average allocations that are far smaller than regular allocations). Requests for computing and eventual allocations should be monitored carefully with regard to diversity.

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

N/A

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

If public-private partnerships provide a cost effective means for stable and flexible resources, they should be encouraged.

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?*

Requiring additional proposals for science that has already been peer reviewed and funded is a limitation and is not democratic. A national facility, if set up in the right way, could help democratize access by facilitating exploratory AI research in directions that the community has already identified as having strong scientific potential.