MEETING SUMMARY
National Artificial Intelligence Research Resource Task Force
Meeting #8

July 25, 2022

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The eighth meeting of the National Artificial Intelligence Research Resource (NAIRR) Task Force (TF) was held online via Zoom on July 25, 2022, 11:00 AM–5:30 PM EDT.

Welcome and Administrative Remarks

The meeting started at 11:10 AM EDT.

Dr. Manish Parashar, NAIRR TF Co-Chair, opened the meeting. Dr. Parashar called for a motion to approve the summary from the seventh NAIRR TF meeting held on May 20, 2022; the motion passed.   Dr. Parashar then introduced the agenda, noting that time would be reserved at the end of the meeting for public questions, and that no questions had been held over from the previous meeting.

The meeting had four objectives:

1. Explore opportunities to learn from international initiatives related to the NAIRR and facilitate international collaboration through the NAIRR.
2. Deliberate on proposed plans for the NAIRR roadmap, governance, and resource integration.
3. Discuss an approach to a logic model for the NAIRR.
4. Consider the question of authorities needed to realize the NAIRR vision.

Dr. Lynne Parker, NAIRR TF Co-Chair, provided a summary of the stakeholder engagements undertaken by the TF Co-Chairs since the publication of the NAIRR TF interim report on May 25, 2022, which included a public listening session, a public request for information, and an interagency meeting.

The session ended at 11:16 AM EDT.

Panel: International Perspectives on the NAIRR

The session started at 11:16 AM EDT.

Dr. Parker introduced the panel. The panel comprised the following speakers:
- Karine Perset, Head, AI Unit, Division for Digital Economy Policy, OECD
- Mark Leggott, Director of International Relations, Digital Research Alliance of Canada
- Renaud Vedel, Chief of Staff to the Minister for the Digital Economy, France
- Kazuyuki Takada, Director, Industrial Science and Technology Project Promotion Office, Ministry of Economy, Trade and Industry (METI), Japan
- Alison Kennedy, Strategic Advisor, Science and Technology Facilities Council, UK Research and Innovation.

- Eliana Cardoso Emediato de Azambuja, General Coordinator of Digital Transformation, Department of Science, Technology and Digital Innovation, Secretariat of Entrepreneurship and Innovation, Ministry of Science, Technology and Innovation, Brazil

Each panelist provided comments on how their own national or multinational initiatives to support AI research could inform the TF's work and how they could envision international collaboration being facilitated through a NAIRR. Key takeaways include:

- International cooperation on AI research is necessary; one possibility is an organization that serves a role for AI analogous to that of CERN in the field of high energy physics;
- Two avenues for supporting AI research include (1) providing necessary resources and (2) developing AI research methods that are less data- and compute-intensive;
- National AI development requires long-term investment and broad participation;
- Many countries have launched national AI initiatives in the last 5–10 years;
- Some national AI research resources are dedicated to the production of open access scientific research, while others are focused primarily on the development of commercially relevant research;
- Some countries have developed publicly funded computing facilities for use by AI researchers, while others have partnered with private industry through cost sharing mechanisms; and
- Some efforts have faced challenges balancing AI-specific computing needs with more traditional supercomputing needs.

Following remarks from each panelist, Dr. Parker moderated a discussion with TF members. TF members asked panelists about recommendations that might inform NAIRR governance. These suggestions include:

- Consider international collaboration and cooperation in the design of the NAIRR;
- Engage all appropriate stakeholders in designing and operating the NAIRR, including those from outside the high-performance computing community;
- Support a balance of research on both fundamental research and solving real world problems;
- Programs should provide support for AI research or applications that may result in benefits across industries and regions;
- Support both building AI capacity and providing high-end capabilities;
- Build capabilities for measuring performance and prediction of future needs into the design of the NAIRR;
- Build energy sustainability and efficiency into NAIRR from the beginning;
- Provide access to AI resources that is fast, inexpensive, and flexible enough to accommodate many different kinds of users;
- Make ease of use a key goal—for example, NAIRR staff should help researchers use the facility without the need to develop special competencies or expertise;

- Emphasize equality, diversity, and inclusion in workforce development programs;
- Provide opportunities to early career researchers via the NAIRR; and
- Encourage the participation of small- and medium-sized businesses in national AI development programs.

The session ended at 12:37 PM EDT.

Readout and Discussion of Proposed Plans: Roadmap for Startup, Funding, and Sustainment

The session started at 12:37 PM EDT.

Dr. Dan Stanzione, NAIRR TF member, led a discussion on the findings and draft recommendations of the working group (WG) charged with developing proposed recommendations for the establishment and sustainment of the NAIRR, including funding requirements and the role for partnerships. The WG suggested that starting up the NAIRR should take a phased approach, with staggered rounds of solicitations to assemble the resources needed to form and operationalize the NAIRR. Solicitations for both open and sensitive data should be released at the same time, with the expectation that it will take longer to make sensitive data available to vetted users.

The WG suggested an initial budget level of $200 million per year over 5 years, with approximately half spent on operational costs and half awarded to resource providers via one or more solicitations. The WG argued that solicitations and funds should be coordinated by a single, lead agency with contributions from all stakeholder agencies. To best support the NAIRR's intended user base (students, researchers, and small businesses), Federal investment should be the primary means of sustainment for the resource, with user fees to scale to additional users outside that intended user base. The WG also recommended the NAIRR utilize partnership mechanisms to extend the scope and user base to include both public and private sectors. Access to NAIRR resources should be awarded directly to users (versus charging costs on grants).

During discussion of the proposed plans, TF members suggested that the initial budget should be higher than proposed, and that a cost-benefit analysis would be needed to make the case for the value of the investment. Partnerships and the types of resources that could be provided in-kind to the NAIRR were also discussed. Dr. Stanzione answered questions posed by members of the public related to the role of a NAIRR operational entity and timing of resource provider solicitations.

The session ended at 1:28 PM EDT.

Break: 1:28–2:00 PM EDT

Readout and Discussion of Proposed Plans: Ownership, Administration, and Ethical/Responsible Research Controls

Following a 30-minute break, the session started at 2:00 PM EDT.

Dr. Julia Lane, NAIRR TF member and leader of the WG focused on developing proposed plans for NAIRR ownership and administration, as well as responsible research controls. Dr. Lane emphasized the importance of a theory of change with clear goals in driving the governance structure and key performance indicators for the NAIRR.

The WG proposed a governance and organizational structure for the NAIRR. On the U.S. Government side, the WG recommended that a Steering Committee (SC) composed of principals from participating Federal agencies oversee the activity, with a dedicated government program management office (PMO) within a lead agency responsible for aggregating funding contributions from the multiple agencies and administering a contract to a non-government NAIRR operations entity (OE) under SC guidance. The WG proposed that the OE be led by a director with oversight from a Board of Directors (BOD), an independent Science and Technology Advisory Board, an Ethics Review Board, and other advisory boards to be added as needed.

The OE would provide resources to NAIRR users via contracts with resource providers, which could be government, private sector, or academic entities. The SC, PMO, and Boards would establish key performance indicators (KPIs), with the SC evaluating NAIRR performance annually and the PMO evaluating NAIRR execution quarterly. The SC would also monitor the broader impacts of the NAIRR, and assess the contracts every 5 years—including whether to renew or dissolve the NAIRR.

The WG concluded that the NAIRR will need to be proactive in addressing privacy, civil rights, and civil liberties (PCRCL) issues, including through an Ethics Review Board, establishing PCRCL-specific KPIs, designing KPI data collection mechanisms into the cyberinfrastructure, and conducting audits of NAIRR use. Dr. Lane emphasized the importance of transparency of the NAIRR's research, mission, metrics, and evaluations. In addition to SC and PMO oversight, the WG recommended that the BOD enlist an external evaluator to assess NAIRR OE performance against KPIs.

TF members discussed several topics related to the presentation, including the distinctions between the PMO and the BOD; balancing the authority of the SC, PMO, and BOD; the potential for international collaboration to establish AI ethical norms; and the importance of the theory of change for illustrating the NAIRR's value proposition to Congress and other stakeholders.

The session ended at 2:58 PM EDT.

Briefing: Creating a Logic Model for the NAIRR

The session started at 2:58 PM EDT.

Drs. Emily Grumbling, Lisa Van Pay, and Brian Zuckerman of the IDA Science and Technology Policy Institute, which provides research support to the TF, described example elements of a logic model for the NAIRR, noting its value for informing the TF's roadmap and implementation plan, supporting future NAIRR planning, and identifying evaluation metrics. This presentation aimed at informing the TF's future discussions on this topic as it develops the NAIRR implementation plan. STPI staff worked backwards from the four main NAIRR goals, identifying several concrete outcome statements for each. The speakers emphasized that the content presented was illustrative rather than final, inviting feedback from TF members on how these should be adapted to best illustrate the theory of change envisioned for the NAIRR. They also presented examples of metrics associated with these outcome statements and an example cross-section of the logic model focused on the NAIRR's compute resources. This illustrated how NAIRR inputs and activities can be mapped to near-term outputs and the longer-term outcomes desired. The speakers invited feedback on the examples presented and offered to support development of a logic model to inform TF efforts and include in the final report as appropriate.

The session ended at 3:20 PM EDT.

Break: 3:20-3:45 PM EDT

Readout and Discussion of Proposed Plans: Compute Resources, Data Resources, and Technical Integration

Following a short break, the session started at 3:45 PM EDT.

Dr. Michael Norman, NAIRR TF member, presented the findings and recommendations of the WG focused on compute resources, data resources, and technical integration. The WG had deliberated on how NAIRR resources—such as data, testbeds, tools, and access to computing facilities and algorithms—should be provisioned, curated, and managed. The WG recommended that solicitations fund the expansion of AI-capable compute and data resources, as well as the procurement of new AI-tailored resources. In addition, the lead agency for the NAIRR should negotiate one or more public cloud contracts at discounted rates to provide NAIRR researchers access to the latest technologies and cloud-resident datasets.

The WG also recommended the creation of a NAIRR technical advisory board to establish an initial framework for the base NAIRR infrastructure, set user requirements, and review and approve the addition of resources to the NAIRR cyberinfrastructure. The NAIRR should adopt and encourage use of open source approaches, and the technical advisory board should periodically specify the standard software for a

NAIRR-defined virtual machine (VM). All resource providers would be required to install and maintain the VM for their user base. The NAIRR should also establish acceptance criteria for datasets targeted for integration into the NAIRR infrastructure, and publish interoperability standards for existing or new data repositories.

Following the presentation, TF members discussed how a marketplace for data curation might be encouraged, as well as the importance of identifying which software and tools should be included on "day one." TF members also discussed the need for a flexible process to develop resource acceptance criteria and standards.

The session ended at 4:49 PM EDT.

Briefing: Authorities and Legal Questions Related to the NAIRR

The session started at 4:49 PM EDT.

Drs. Grumbling and Zuckerman presented on potential authorities necessary for the implementation of the NAIRR, motivated in part by the opportunity for the TF to include draft legislative language in its final report. Depending on the specific activities and implementation mechanisms recommended by the TF, new legislative language could be useful for providing new and required statutory authorities, establishing interagency collaborations or processes that might not organically occur, and/or clarifying the applicability of existing authorities. At the same time, caution is also warranted—for example, over-prescription of NAIRR requirements in law could inhibit the agility of the NAIRR should adjustments to the original plans be required.

Following this presentation, several TF members expressed an interest in exploring options on this front, including to establish necessary funding levels and set out the interagency participation and collaboration for the NAIRR.

The session ended at 5:15 PM EDT.

Questions from Public and Meeting Close

The session started at 5:15 PM EDT.

Dr. Parashar moderated a discussion among TF members addressing questions submitted by attendees via Zoom's Q&A portal, discussing the role for the NAIRR in educational issues and the process of the NAIRR TF working groups.

Dr. Parashar concluded the session, thanking members of the TF, NSF, OSTP, STPI, and the public. Meeting summaries, slide presentations, and details about upcoming meetings can be found at https://www.ai.gov/nairrtf/.

The next meeting is scheduled for Monday, September 12, 2022, from 11:00 AM to 5:00 PM EDT. Details will be posted in the Federal Register.

The meeting adjourned at 5:23 PM EDT.

Appendix I: Attendance for NAIRR TF Meeting 8

<u>TF Members Present</u>:
Manish Parashar, National Science Foundation (Co-Chair)
Lynne Parker, White House Office of Science and Technology Policy (Co-Chair)
Daniela Braga, Defined.ai
Mark Dean, retired (formerly IBM and University of Tennessee, Knoxville)
Oren Etzioni, Allen Institute for AI
Julia Lane, New York University
Fei-Fei Li, Stanford University
Michael Norman, University of California, San Diego
Dan Stanzione, University of Texas, Austin
Frederick Streitz, Lawrence Livermore National Laboratory
Elham Tabassi, National Institute of Standards and Technology

<u>TF Members Absent</u>:
Andrew Moore, Google

<u>Other Contributors</u>
Tess deBlanc-Knowles, White House Office of Science and Technology Policy
Erwin Gianchandani, National Science Foundation

<u>Science and Technology Policy Institute Staff Present</u>:
Emily Grumbling
Lisa Van Pay
Brian Zuckerman
Matt Ishimaru
Matt Christman

<p style="text-align:center; color:red;">DRAFT – SUBJECT TO TASK FORCE APPROVAL ON SEPTEMBER 12, 2022</p>