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National Artificial Intelligence Initiative

Dr. Lynne Parker, Director of the National AI Initiative Office, Deputy United States Chief Technology Office

June 29, 2022

Artificial Intelligence and Emerging Technology Inaugural Stakeholder Meeting

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National AI Initiative Act of 2020 (NAIIA)

- Became law on January 1, 2021
  - As part of the "William M. (Mac) Thornberry
  - National Defense Authorization Act for
  - Fiscal Year 2021", H.R. 6395, Division E.

DIVISION E—NATIONAL ARTIFICIAL INTELLIGENCE INITIATIVE ACT OF 2020

SEC. 5001. SHORT TITLE.

This division may be cited as the "National Artificial Intelligence Initiative Act of 2020".

- Bipartisan legislation defining National AI Initiative, with purpose of:
  - Ensuring continued U.S. leadership in AI research and development (R&D);
  - Leading world in development and use of trustworthy AI systems in public and private sectors;
  - Preparing present and future U.S. workforce for integration of AI systems across all sectors of economy and society; and
  - Coordinating AI research, development, and demonstration activities among civilian agencies, Department of Defense, and Intelligence Community to ensure that each informs work of the others.

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National AI Initiative

Prioritize AI R&D
Grow and sustain U.S. research leadership and capacity

Strengthen AI Research Infrastructure
Enhance access to high quality data, models, and computing resources

Advance Trustworthy AI
Modernize governance and technical standards for AI-powered technologies, protecting privacy, civil rights, civil liberties, and other democratic values

Leverage AI for Government and National Security
Apply AI to improve provision of government services and national security

Promote International AI Engagement
Engage with like-minded allies to promote a global AI environment supportive of democratic values

Train AI-Ready Workforce
Provide AI-ready education at all levels: K-12, college, re-training, re-skilling, R&D workforce

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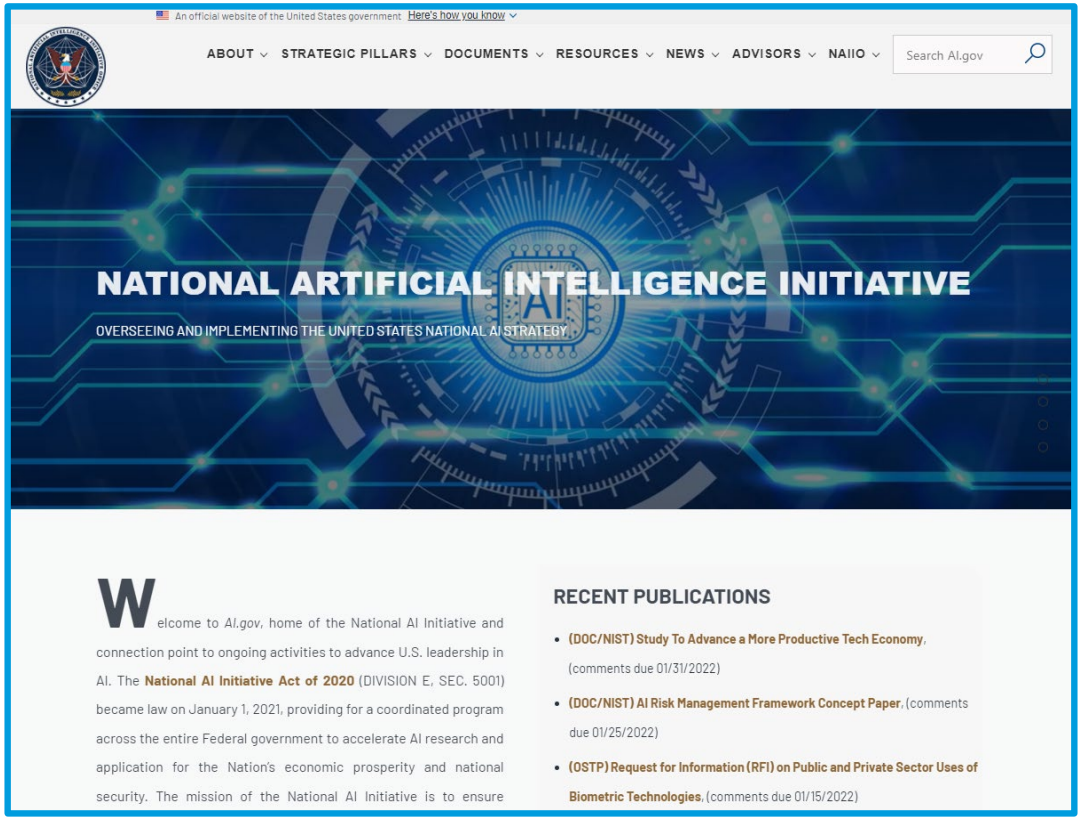
National AI Initiative Office – Central Hub for Coordinating Federal Activities, Outreach

- Launched January 2021, per NAII Act
- Charged with overseeing and implementing the National AI Initiative
- Serves as central hub for Federal coordination and collaboration in AI research, development, and demonstration, as well as with private sector, academia, and other stakeholders involved in the initiative
- Conducts regular public outreach
- Promotes access to the technologies, innovations, best practices, and expertise derived from the National AI Initiative to agency mission and systems across the Federal Government

AI.gov

Agencies Coordinate AI Programs and Activities

AI.gov: Hub to communicate Federal AI efforts



National AI Initiative – AI R&D

Prioritize AI R&D

Prioritize AI Research and Development

Grow and sustain U.S. research leadership and capacity

- Sustained investment in AI R&D is needed to maintain U.S. leadership in AI.
- Investments generate technological breakthroughs, which can be rapidly transitioned into capabilities.
- New AI capabilities contribute to economic and national security, as well as improved quality of life.

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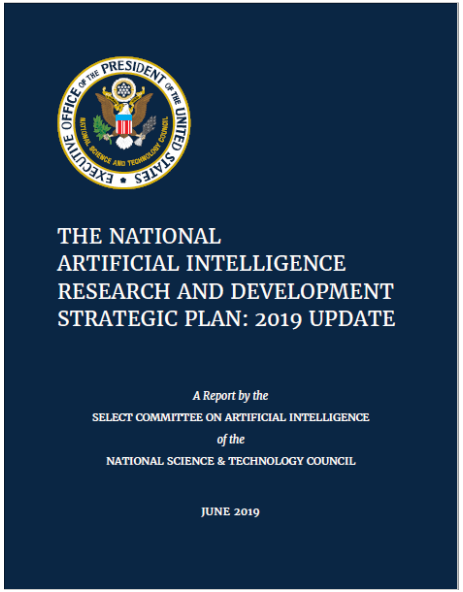
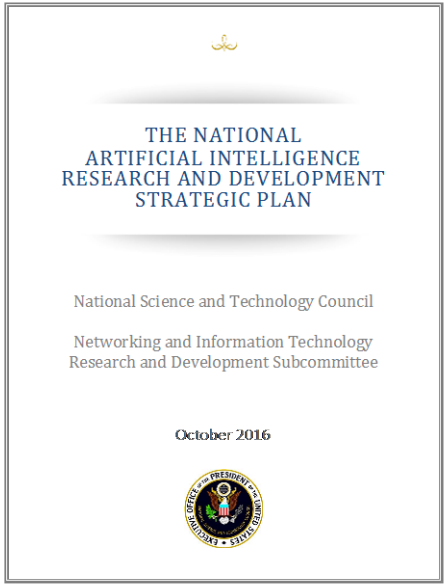
Guiding AI R&D Investments – *National AI R&D Strategic Plan: 2019*



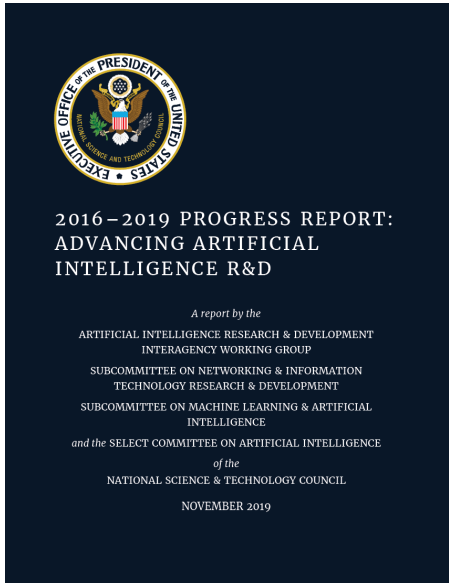
- Builds upon first version (2016) of the R&D Strategic Plan
- 2019 update keeps 7 strategies of 2016 plan and adds new priority on partnerships
- New effort to update the plan is underway – anticipated release by December 2022
  - Taking into account input from March 2022 Request for Info.
- Will continue to be updated every 3 years



https://www.nitrd.gov/pubs/National-AI-RD-Strategy-2019.pdf

Also underway now – Updating Federal Progress Report on R&D

- Federal government invests in considerable breadth and depth of innovative AI concepts that are transforming state of the field.
- The U.S. benefits significantly from broad spectrum of Federal agencies that invest in AI from their unique mission perspectives, consistent with the national AI R&D strategy.
- Federal investments have generated impactful breakthroughs that are revolutionizing our society for the better.

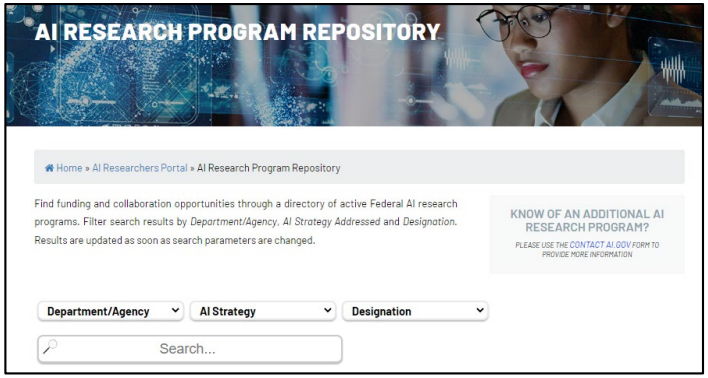


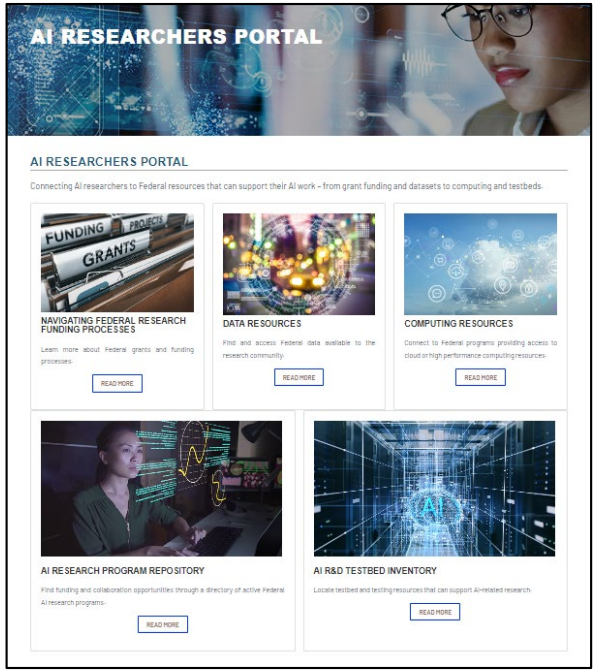
November 2019
(new report due by end of 2022)

https://www.nitrd.gov/pubs/AI-Research-and-Development-Progress-Report-2016-2019.pdf

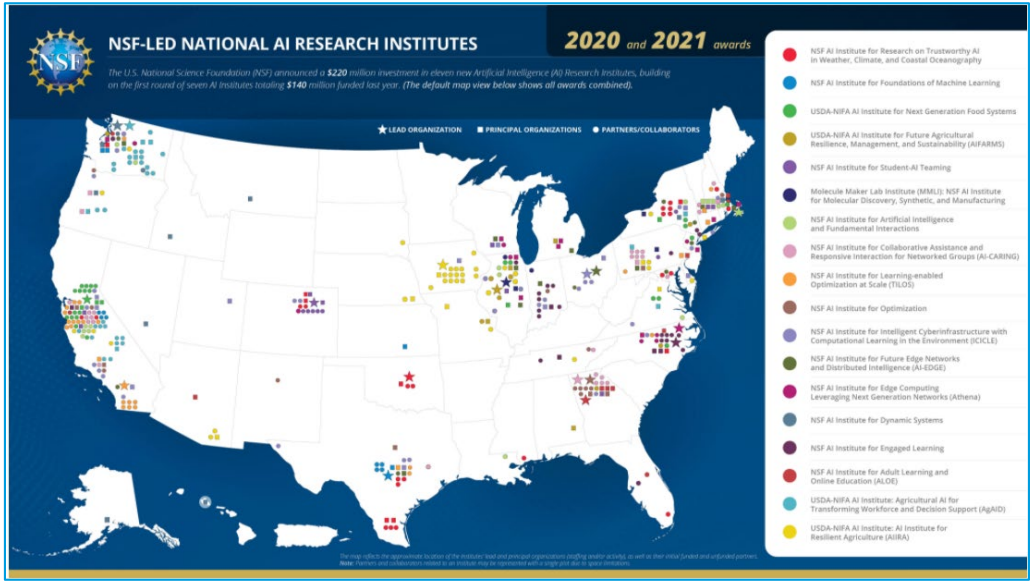
AI Researcher's Portal – AI.gov/ai-researchers-portal

- Launched Dec. 2021
- Connects AI researchers to Federal resources that can support their research:
  - Data
  - Computing
  - Testbeds
  - AI-relevant grant programs





National AI Research Institutes



https://www.nsf.gov/cise/ai.jsp

- **Currently, 18 National AI Institutes**
- **Many funding partners:**
  - *Federal:* NSF, USDA/NIFA, DoD, DHS, Dept. of Educ., DOT, VA, NIST
  - Private sector: IBM, Accenture, Amazon, Google, Intel
- **Wide range of topics:**

  Foundational AI:
  - Trustworthy AI
  - Neural and cognitive foundations
  - Decision making
  - Human-AI interaction and collaboration
  - Advances in optimization
  - Advances in dynamic systems
  - Foundations of machine learning

  Use-inspired AI:
  - Science domains of agriculture, biology, chemistry, physics
  - Cybersecurity, cyberinfrastructure, computer and network systems
  - Education

National AI Initiative – AI Research Infrastructure

Strengthen AI Research Infrastructure

Strengthen AI Research Infrastructure

Enhance access to high quality data, models, and computing resources

- Broadening access to cutting edge computational resources and high-quality datasets for AI will advance AI R&D, support more equitable growth, expand AI expertise, and enable application to broader range of fields.
- Increased AI infrastructure access must be done while maintaining safety, security, privacy, and confidentiality protections.

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National AI Research Resource (NAIRR) Task Force

- **Objective:** to investigate the feasibility and advisability of establishing and sustaining a National Artificial Intelligence Research Resource; and to propose a roadmap detailing how such resource should be established and sustained.
- **Membership:** The Task Force is composed of 12 members selected by the co-chairpersons of the Task Force (NSF, OSTP) from among technical experts in artificial intelligence or related subjects, of whom—
  - 4 are representatives from government
  - 4 are representatives from institutions of higher education
  - 4 are representatives from private organizations
- **Deliverables:** Reports due to Congress and POTUS – Interim Report in May 2022, Final Report by Dec. 2022

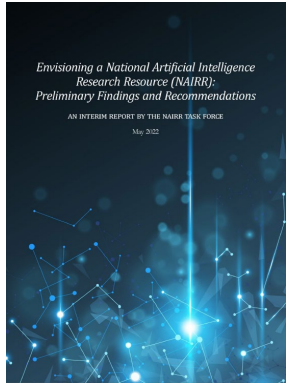
THE WHITE HOUSE

BRIEFING ROOM

The Biden Administration Launches the National Artificial Intelligence Research Resource Task Force

JUNE 10, 2021 • PRESS RELEASES

Task Force members will help develop a roadmap to democratize access to research, tools that will promote AI innovation and fuel economic prosperity


Envisioning a National Artificial Intelligence Research Resource (NAIRR): Preliminary Findings and Recommendations

AN INTERIM REPORT BY THE NAIRR TASK FORCE

May 2022

What is a National AI Research Resource?

- **Vision**: A shared and federated computing and data infrastructure that would provide AI researchers and students across scientific fields with access to a holistic advanced computing ecosystem. This would include:
  - Secure, high-performance, privacy-preserving computing frameworks;
  - High-quality, representative datasets;
  - AI testbeds, and
  - Appropriate educational tools and user support mechanisms.
- **Why**: democratize access to the cyberinfrastructure that fuels AI research and development, enabling all of America's diverse AI researchers to participate in exploring innovative ideas for advancing AI, including communities, institutions, and regions that have been traditionally underserved.
- **Implication:** Could offer many more resources for AI-related research, both foundational and use-inspired, and including educational opportunities

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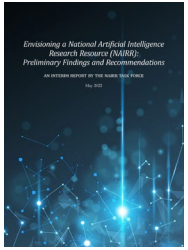
NAIRR TF Reports: Interim and Final



Interim Report

- The "what"
- The TF vision for a NAIRR
- A preliminary set of findings and recommendations for the design of the NAIRR architecture, resources, capabilities, and uses.
- New RFI open until June 30 requesting input on interim report
- *Released: May 25, 2022*

Final Report

- The "how"
- More detailed implementation plan for the NAIRR
- Refined set of findings and recommendations for the design of the NAIRR architecture, resources, capabilities, and uses
- *Anticipated release: Dec. 2022*

For more information: AI.gov/nairrtf

National AI Initiative – Trustworthy AI

Advance Trustworthy AI

Advance Trustworthy AI

Modernize governance and technical standards for AI-powered technologies, protecting privacy, civil rights, civil liberties, and other democratic values

- The United States must foster public trust and confidence in AI in order to fully realize AI's potential.
- Fundamental to public trust is the development of appropriate AI technical standards and risk management frameworks.
- When considering AI regulations or policies, Federal agencies should continue to promote innovation while protecting privacy, civil rights, civil liberties, and other democratic values.

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NIST Developing AI Risk Management Framework

- NIST work is underway to develop foundations for risk management framework (RMF) for trustworthy AI
- Substance of risk management framework for trustworthy AI:
  - Common definitions and characterizations for trustworthiness, including explainability, transparency, safety, privacy, security, robustness, fairness, bias, ethics, validation, verification, interpretability, another properties
  - Standards, guidelines, best practices, methodologies, procedures, and processes for developing trustworthy AI; assessing trustworthiness of AI; and mitigating risks from AI systems.
  - Alignment with international standards, as appropriate.
  - Incorporates voluntary consensus standards and industry best practices.
  - Case studies of framework implementation.
  - Technology agnostic – Does not prescribe/require use of specific information or communications technology products or services.
- AI RMF v1.0 anticipated to be published in Winter 2022/2023

https://www.nist.gov/itl/ai-risk-management-framework

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Emphasis on Privacy-Enhancing Technologies (PETs)

- Accelerate advances in privacy-enhancing technologies (PETs) to foster data sharing and analytics while preserving data security, privacy, IP protections, etc.
  - "Data sharing without showing"
- U.S.-UK Prize Challenge – Privacy-Enhancing Technologies (announced Dec. 2021)
- NSTC/NITRD Fast Track Action Committee on Advancing Privacy-Enhancing Technology (launched Jan. 2022)
  - Open RFI on ideas for national PETs strategy – closes on July 7, 2022

THE WHITE HOUSE

BRIEFING ROOM

US and UK to Partner on Prize Challenges to Advance Privacy-Enhancing Technologies

DECEMBER 08, 2021 • PRESS RELEASES

FEDERAL REGISTER

The Daily Journal of the United States Government

Notice

Request for Information on Advancing Privacy-Enhancing Technologies

A Notice by the Science and Technology Policy Office on 06/09/2022

This document has a comment period that ends in 14 days. (07/08/2022)

SUBMIT A FORMAL COMMENT

PUBLISHED DOCUMENT

AGENCY:

Office of Science and Technology Policy (OSTP).

ACTION:

Notice of request for information on Advancing Privacy-Enhancing Technologies.

DOCUMENT DETAILS

Printed version: PDF

Publication Date: 06/09/2022

Agency: Office of Science and Technology Policy

Summary: National AI Initiative

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Apply AI to improve national security and provision of government services

Promote International AI Engagement
Engage with like-minded allies to promote a global AI environment supportive of democratic values

Train AI-Ready Workforce
Provide AI-ready education at all levels: K-12, college, re-training, re-skilling, R&D workforce

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Key Messages – U.S. National AI Initiative

- **AI R&D:** The U.S. will sustain investment in AI R&D to maintain U.S. leadership in AI.
- **AI Infrastructure:** The U.S. will broaden access to cutting edge computational resources and high-quality datasets to advance AI R&D.
- **Trustworthy AI:** The U.S. will lead the world in the development and use of trustworthy AI systems in the public and private sectors by supporting relevant research, technical standards, risk management frameworks, and guidance that protects privacy, civil rights, and civil liberties.
- **Education/workforce:** The U.S. will fill the AI talent gap and prepare U.S. workers for jobs of the future by implementing policies that ensure a diverse, inclusive, and knowledgeable workforce.
- **International engagement:** The U.S. will work with like-minded international allies to advance the development and use of AI in line with our shared democratic values.
- **AI in government:** The U.S. will promote the innovation and use of AI, where appropriate, to improve Government operations and ensure national security, consistent with established principles and ethics frameworks for trustworthy AI.

Thank you!

Lynne Parker, Ph.D.

Director, National Artificial Intelligence Initiative Office

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DEPARTMENT OF COMMERCE