

Rules of the Road to Guide Our Digital Future



Guidance for Carbon Transport & Storage Unlimited Rights Data, AI EO, Data EO

Jessica Sinclair
NETL Support Contractor



FECM/NETL Carbon Management Research Project Review Meeting

Aug. 5, 2025

Disclaimer & Acknowledgment



Disclaimer: This project was funded by the United States Department of Energy, National Energy Technology Laboratory, in part, through a site support contract. Neither the United States Government nor any agency thereof, nor any of their employees, nor the support contractor, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Acknowledgement: This work was performed in support of the U.S. Department of Energy's (DOE) Office of Fossil Energy and Carbon Management's Geo-Analysis and Monitoring Team and was developed jointly through the U.S. DOE Office of Fossil Energy and Carbon Management's EDX4CCS Project, in part, from the Bipartisan Infrastructure Law.

Authors and Contact Information



Jessica Sinclair^{1,2}; Kelly Rose³

¹National Energy Technology Laboratory, 626 Cochran Mill Road, Pittsburgh, PA 15236, USA

²NETL Support Contractor, 626 Cochran Mill Road, Pittsburgh, PA 15236, USA

³National Energy Technology Laboratory, 1450 Queen Avenue SW, Albany, OR 97321, USA

Steps in the Data Digitalization Journey...



Science-Based AI/ML Institute's (SAMI) Mission



5 Key Emphasis Areas

- Science-based AI/ML Institute (SAMI) at NETL, founded in 2020
- Enabling AI-driven solutions
- Executing mission through five key areas
- For more information:
 - Website
 - edx.netl.doe.gov/sites/sami
 - AI4AE Update email
 - Register through the website
 - Email us at SAMI@netl.doe.gov



ADVANCE AI WORKFORCE

Foster multi-disciplinary AI research and cross-cutting collaborations to cultivate NETL's AI-ready workforce.



CATALYZE PARTNERSHIPS & COLLABORATIONS

Strengthen collaborations in research focus areas, within NETL and with external stakeholders to hasten the development of innovative applied-energy AI solutions.



MAKE DATA ACCESSIBLE

Support the entire lifecycle of data with secure, private, collaborative workspaces for research projects.



INFORM GOVERNANCE & STANDARDS

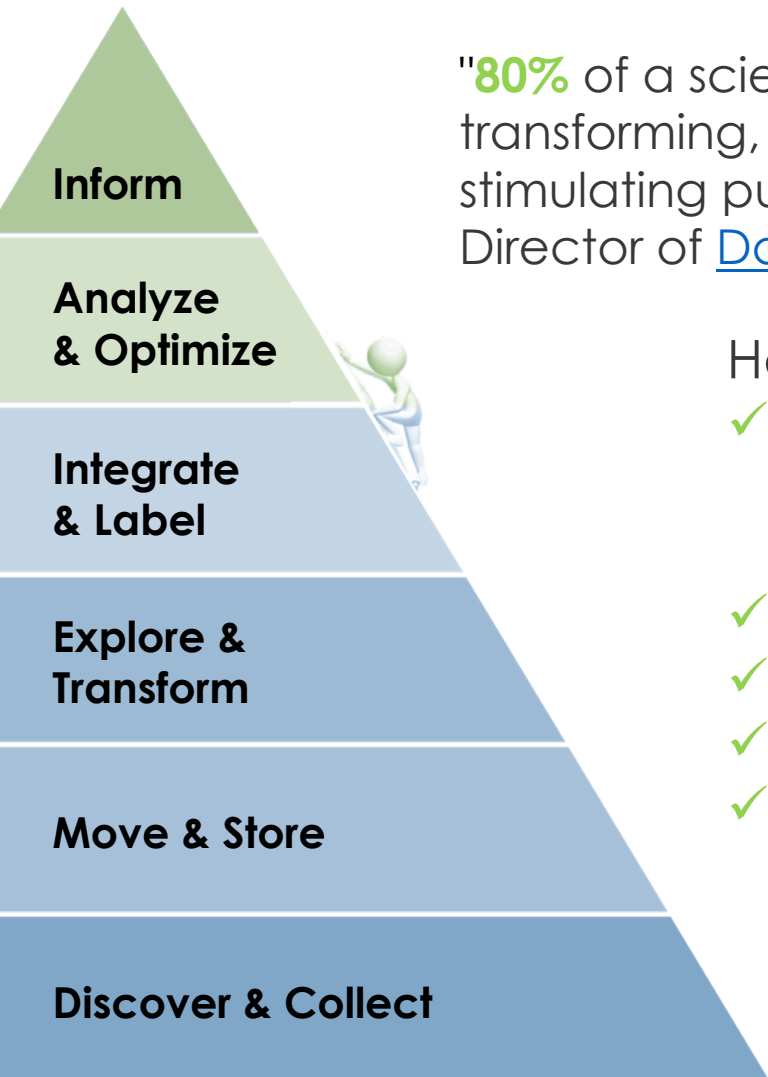
Ensure the use and development of safe and trustworthy AI.



ACCELERATE AI INNOVATION

Enable NETL to push the frontiers of AI technology and create the next generation architectures, tools and approaches

Data Lifecycle



"**80%** of a scientist's effort is spent discovering, acquiring, documenting, transforming, and integrating data...**20%**...is devoted to more intellectually stimulating pursuits such as analysis, visualization, and making new discoveries." – Director of [DataONE](#), Bill Michener

Having a data lifecycle model:

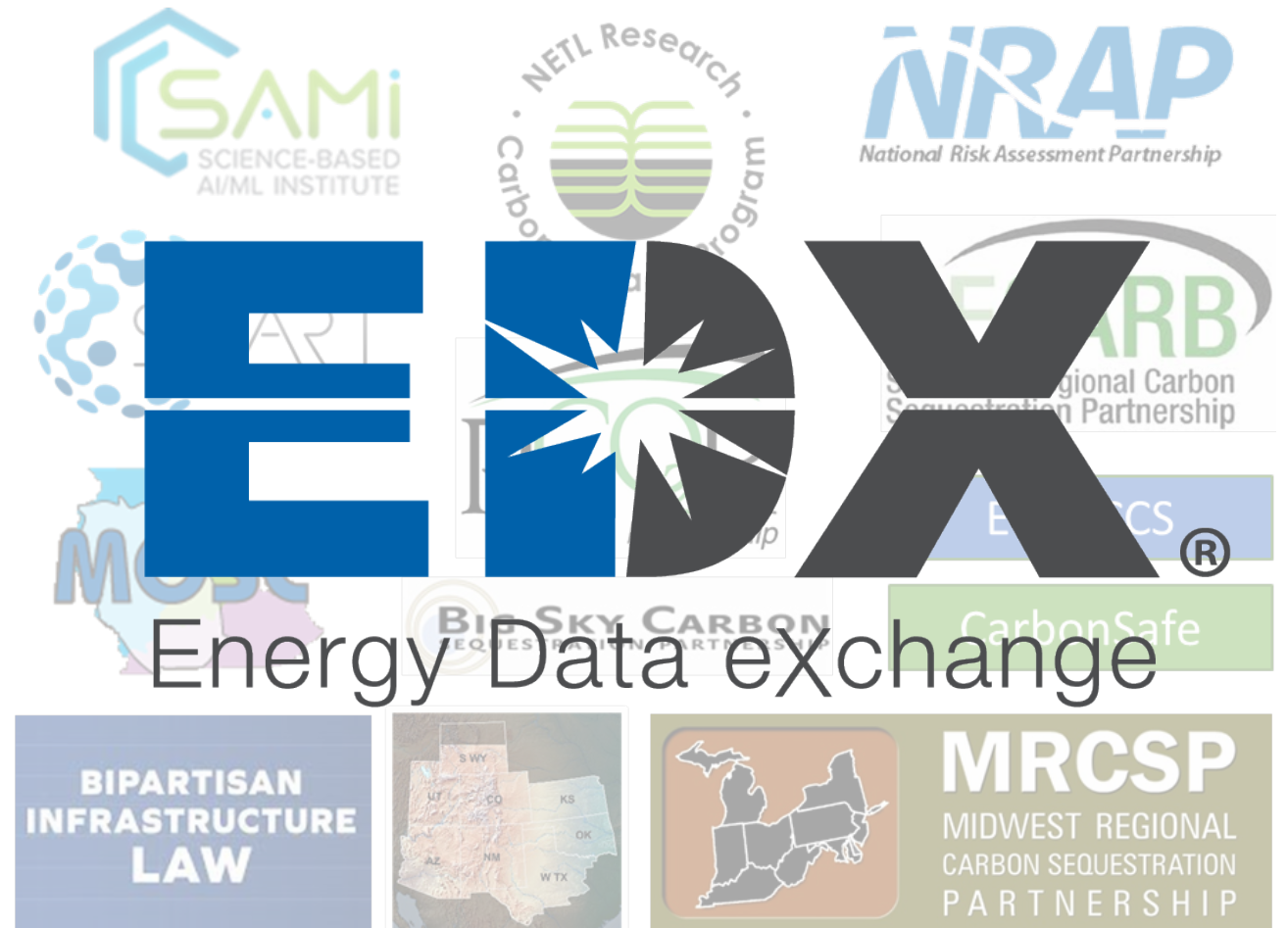
- ✓ Provides roles/responsibilities for researchers, data managers/stewards Facilitates the understanding of the steps to document, protect, and make data available
- ✓ Ensures data is available
- ✓ Helps manage data
- ✓ Makes data accessing and using data more efficient
- ✓ Helps document data

EDX® has been used by DOE Programs to reduce data access barrier/overhead, helping to flip the pyramid

EDX for R&D Data Product Curation and Reuse



- **One stop to:**
 - Find, access, and cite discoverable carbon storage R&D products
 - Optimize time spent
- **Data curation and access to:**
 - Millions of public data resources on EDX related to carbon storage
 - 200+TBs of carbon storage data
 - Tools, compute, and visualization

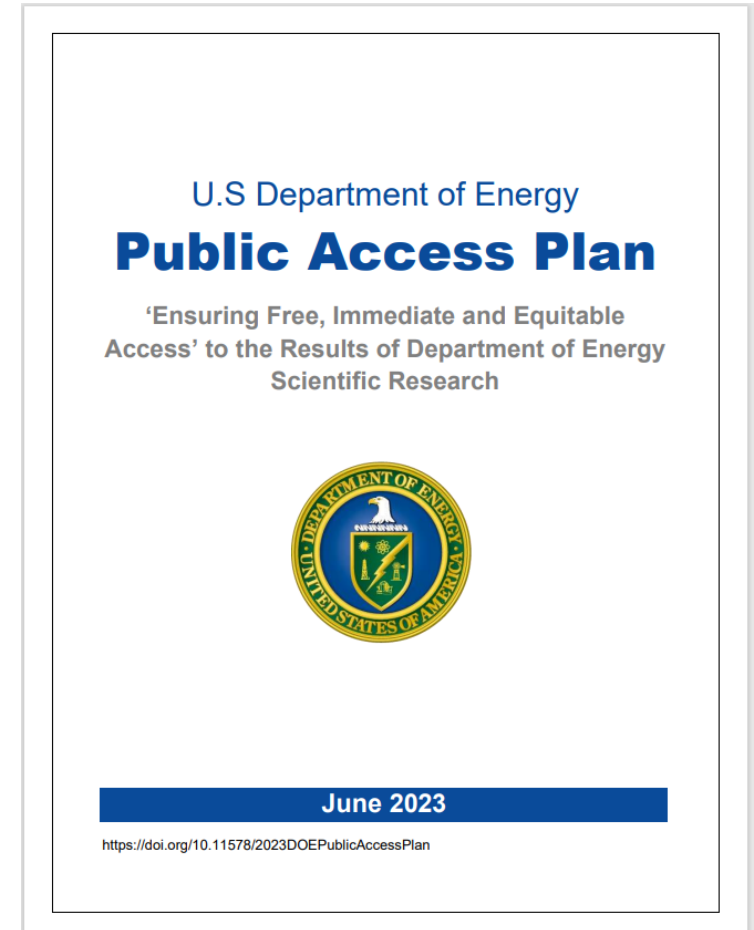


DOE Public Access Plan

Ensuring Free, Immediate, and Equitable Access to Federally Funded Research

- Provide free, immediate access to peer-reviewed, scholarly publications
- Provide immediate access to scientific data displayed in our underlying publications and increased access to other data
- Use persistent identifiers (PIDs) for research outputs, researchers, organizations, and awards
- Make available unclassified and otherwise unrestricted digital scientific data arising from research and development (R&D) activities funded by DOE
- New policy and implementation guidance will be issued by December 31, 2024

Replaces the DOE Public Access Plan of 2014



Limited and Unlimited Rights Data



Definitions

Classification	Open Data	Protected Data	
Type	Uncontrolled Unclassified Information (UUI) or Unlimited Rights	Limited Rights	Controlled Unclassified Information (CUI)
Definition	The rights of the government to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so	Data, other than computer software, that embody trade secrets or are commercial or financial and confidential or privileged, to the extent that such data pertain to items, components, or processes developed at private expense, including minor modifications	Information the government creates or possesses, or that an entity creates or possesses for or behalf of the government, that a law, regulation, or government-wide policy (LRGWP) requires or permits an agency to handle using safeguarding or dissemination controls. Other types of information have restrictions on their handling such as certain copyrighted material
EDX Info	EDX can accommodate Unlimited Rights Data by publishing data submissions	EDX can accommodate Limited Rights Data within private Workspaces using role-based security	EDX can accommodate CUI Data within private Workspaces using role-based security
Reference	52.227-14 Rights in Data-General. Acquisition.GOV	Submit Submitting STIP Protected STI (osti.gov)	Submit Submitting STIP Protected STI (osti.gov)

Data Life Cycle – Roles & Responsibilities



- For DOE-funded work, contractor must state if data protection, limited rights are desired
 - During proposal submission (mark pages)
 - During contract award negotiations
 - Limited rights can be selected when work is developed at “private expense”
- All digital products are now considered required deliverables
- At time of award:
 - Deliverable rights are negotiated
 - Negotiated between awardee and DOE
 - Unlimited vs. limited rights data
 - Publicly available unlimited, private (limited), working data (limited)
- It is the Federal Project Manager’s (FPM’s) responsibility to understand classification of technical data that is being delivered

Data Digitization Journey

Where else can you find assistance?

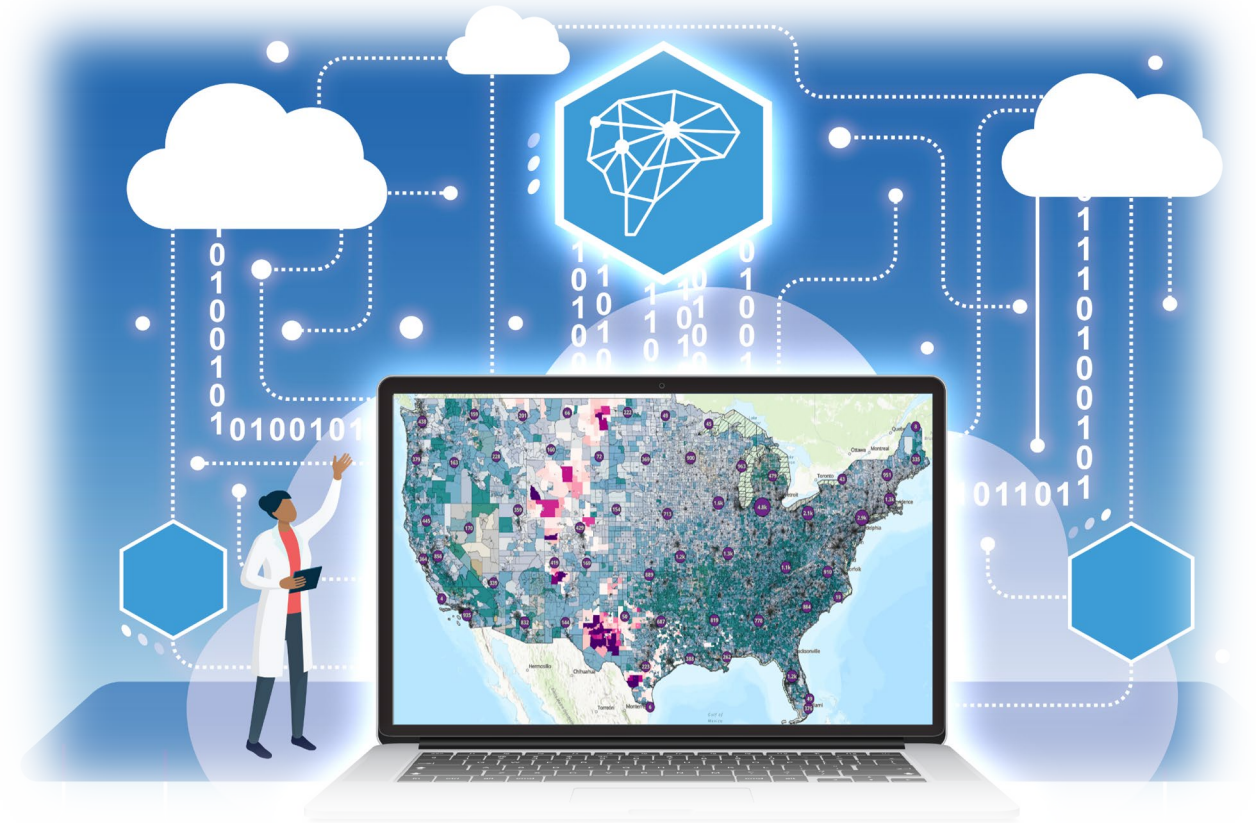
- EDX [Reference Shelf](#)
- [EDX Training](#)
- Focused training for research teams ([Request Training](#))
- EDX [Training Videos](#) (pre-recorded)
- Contact: EDXSupport@netl.doe.gov or SAMI@netl.doe.gov

Coming soon:

RIC Knowledge Product Disposition Guide

AI to Accelerate Innovation

- AI and ML are becoming ubiquitous in research
- EDX's migration to the cloud opens more doors for integrating AI/ML in research
- What do researchers need to know to be prepared for this digital AI future?
- How can researchers incorporate AI in research?
- How do we ensure safety and trustworthiness when using/developing AI?



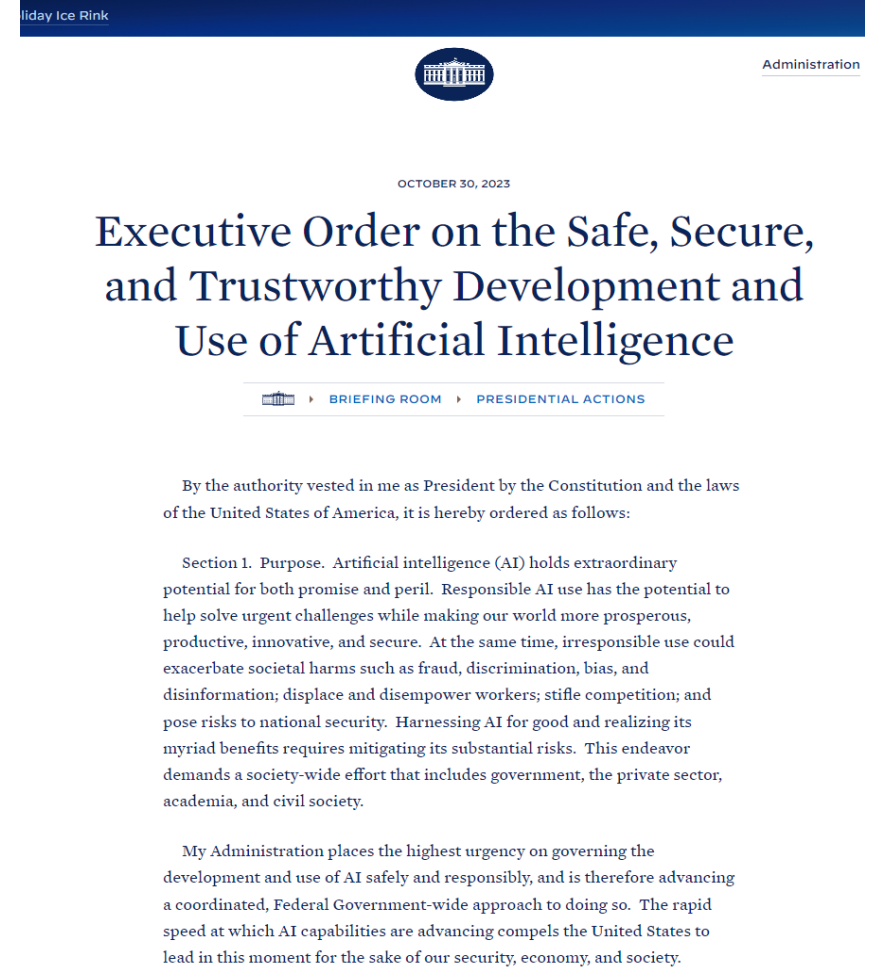
Executive Order 14110



Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence

Date signed: October 30, 2023

- To govern the development and use of AI safely and responsibly, through a coordinated, Federal Government-wide approach to doing so
- The rapid speed at which AI capabilities are advancing compels the United States to lead for the sake of security, economy, and society
- Ensure AI is safe and secure through robust, reliable, repeatable and standardized evaluations



Full text of the [Executive Order](#)

Actions Directed by the Executive Order



- New Standards for AI Safety and Security
- Protecting Americans' Privacy
- Advancing Equity and Civil Rights
- Standing up for Consumers, Patients, and Students
- Supporting Workers
- Promoting Innovation and Competition
- Advancing American Leadership Abroad
- Ensuring Responsible and Effective Government Use of AI

DOE Plays a Critical Role in **Highlighted** Sections



- New Standards for AI Safety and Security
- Protecting Americans' Privacy
- Advancing Equity and Civil Rights
- Standing up for Consumers, Patients, and Students
- Supporting Workers
- Promoting Innovation and Competition
- Advancing American Leadership Abroad
- Ensuring Responsible and Effective Government Use of AI

Partnerships – with other agencies, industry, academia, international partners – will be key to success.

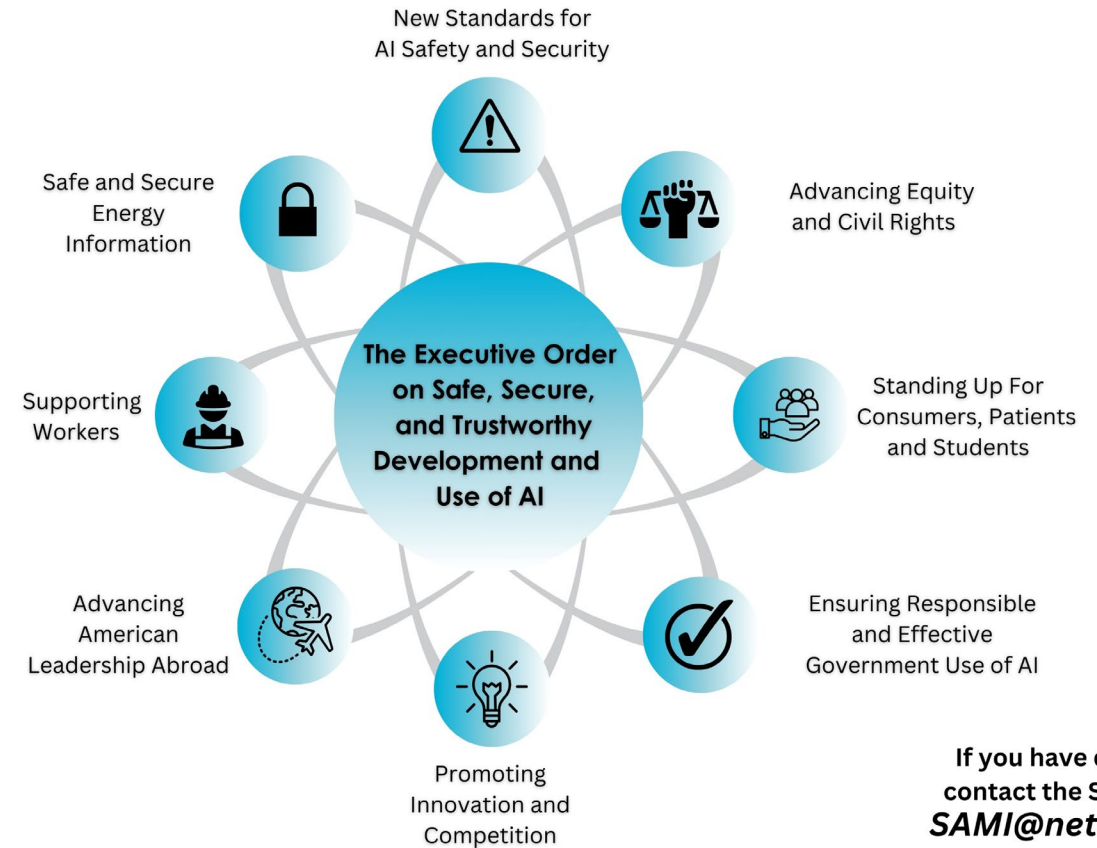
From: DOE SC ASCR

What Does This Mean?

- New Standards for AI Safety and Security - develop standards, tools, and tests to ensure AI systems are safe, secure, and trustworthy
- Protecting Americans' Privacy - prioritize privacy-preservation and develop guidelines for doing so
- Advancing Equity and Civil Rights
- Standing up for Consumers, Patients, and Students
- Supporting Workers
- Promoting Innovation and Competition - catalyze research through a competitive AI ecosystem
- Advancing American Leadership Abroad - work with other nations on accelerating AI while promoting standards
- Ensuring Responsible and Effective Government Use of AI - responsible government deployment and modernization of federal AI infrastructure

Implementation and SAMI's Role at NETL

- Timeline exists for coordination of activities
- Responsibility for implementation:
 - White House AI Council
 - Consists of heads of agencies, independent regulatory agencies, and executive offices
 - Directives to over 20 federal agencies
- DOE National Lab AI R&D advisory group
- SAMI/EDX are working to understand how to address compliance and will continue communicating as guidance emerges



If you have questions,
contact the SAMI Team!
SAMI@netl.doe.gov

Recent Updates Stemming from EO



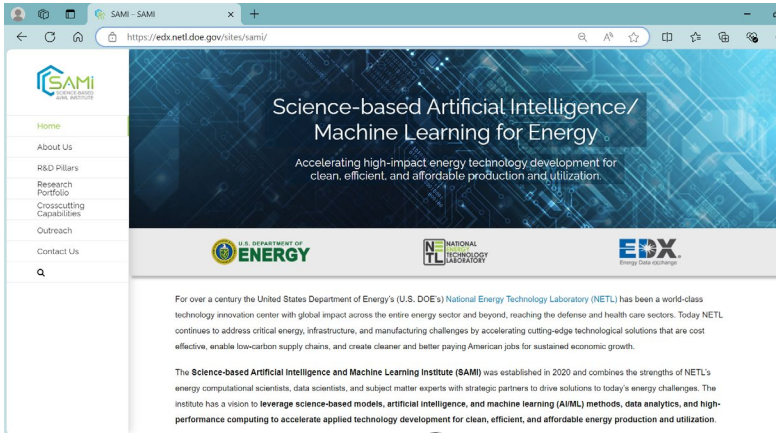
Currently just past the 270-day mark of the Executive Order

- **DOE GenAI Reference Guide Version 2**
 - Constructed by over 30 DOE offices, sites, and labs
 - Latest guidance on the responsible use of GenAI
 - Specific guidance for select tools will become available as those tools are authorized for DOE
 - Best practices come down to: people, the organization, and the technology
- Also Recently Released:
 - Draft from AI Safety Institute: Managing Misuse Risk for Dual-Use Foundation Models ([NIST AI 800-1](#))
 - Test Software for the Characterization of AI Technologies [GitHub - usnistgov/dioptra: Test Software for the Characterization of AI Technologies](#)
 - AI Risk Management Framework Generative AI Profile ([NIST AI 600-1](#))
 - Secure Software Development Practices for Generative AI and Dual-Use Foundation Models ([NIST Special Publication \(SP\) 800-218A](#))
 - A Plan for Global Engagement on AI Standards ([NIST AI 100-5](#))

AI/ML and the Executive Order

Where else can you find assistance?

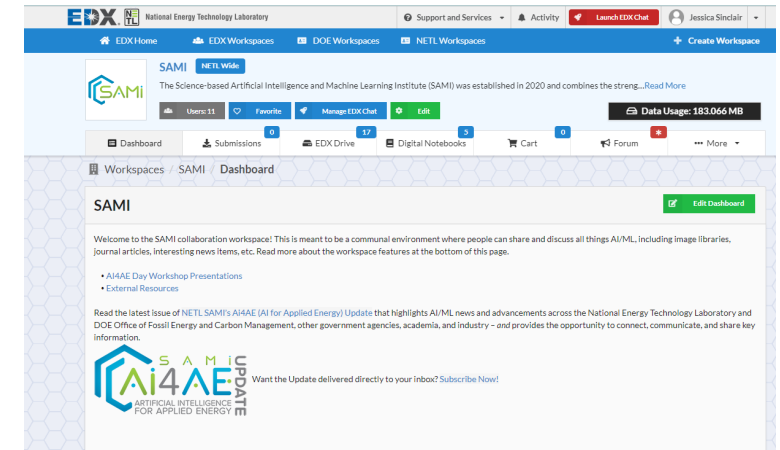
SAMI Website



AI4AE Update monthly email



EDX Workspace



Email us: SAMI@netl.doe.gov
Visit our booth
See us at the demo session

SAMI Tech Team



Questions?



DEMO & POSTER SESSION

TUESDAY, AUGUST 6, 2024

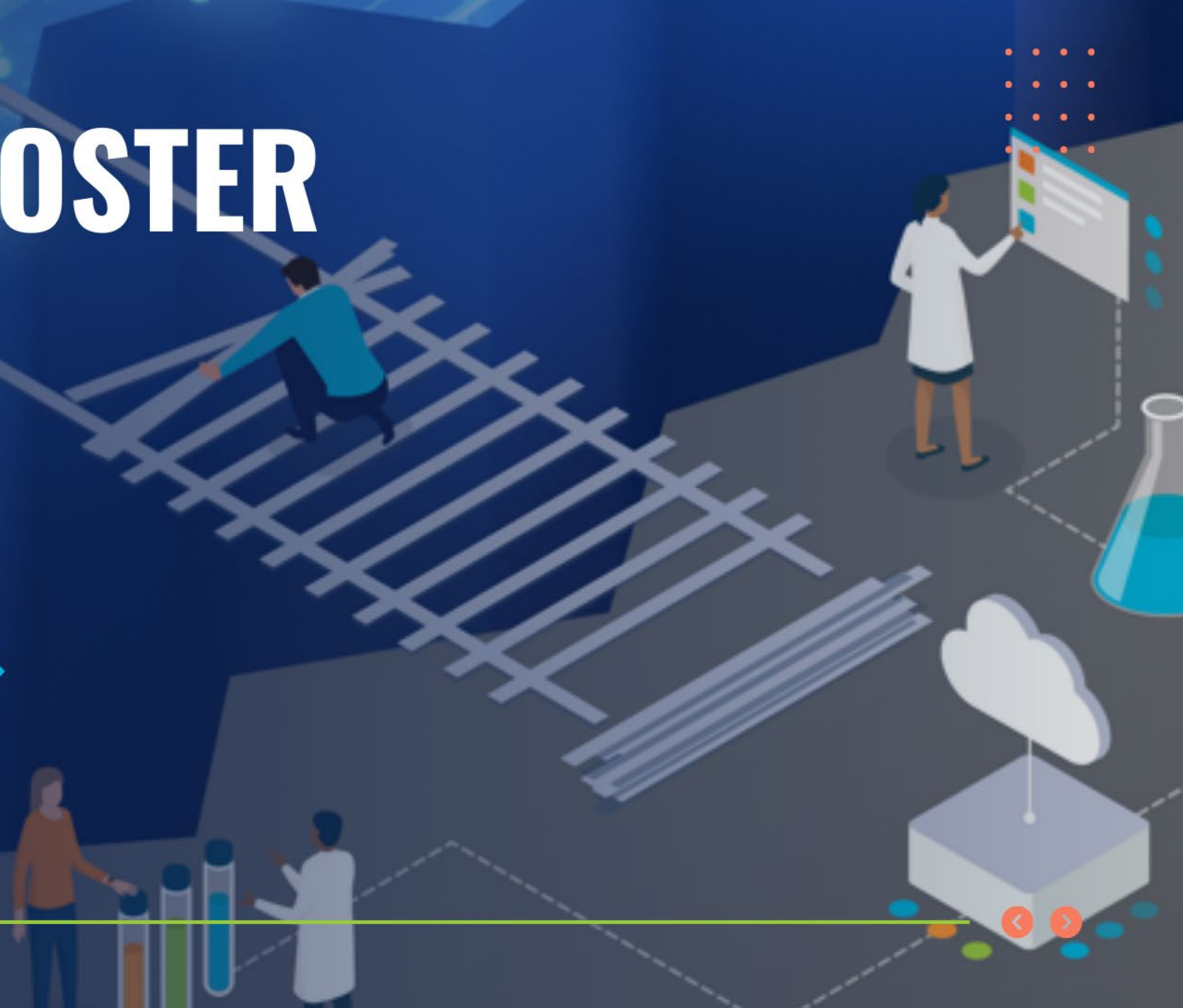
5:45 PM - 7:45PM

BALLROOM GALLERY

See you there!



CARBON TRANSPORT & STORAGE DATA AND
INNOVATION TO BRIDGE THE DIGITAL DIVIDE



NETL RESOURCES

VISIT US AT: www.NETL.DOE.gov

 @NETL_DOE

 @NETL_DOE

 @NationalEnergyTechnologyLaboratory

CONTACT:

Jessica Sinclair

jessica.sinclair@netl.doe.gov

