



# Open Science: A Perspective

NSF CI4MF

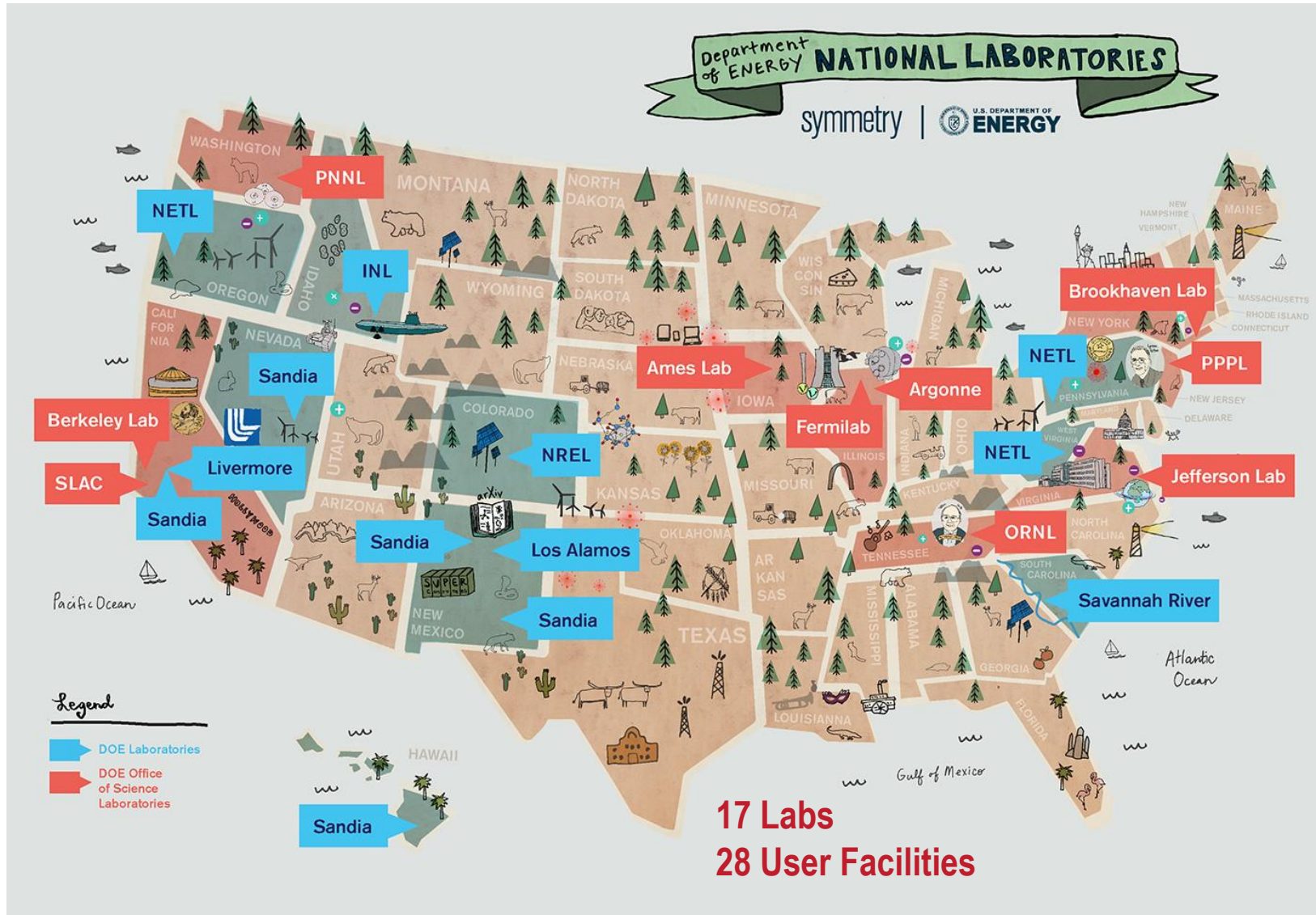
Amber Boehnlein, Jefferson Lab

January 17, 2024





# DOE Laboratories




# Open Science: DOE Public Access Policy

- The Department of Energy [Public Access Plan \(June 2023\)](#) describes how DOE-funded research and digital data will become more open and available to the public and how DOE will use persistent identifiers to help ensure scientific and research integrity. Building on the previous [DOE Public Access Plan \(July 2014\)](#), the new plan charts a path to:
  - Provide free, immediate access to peer-reviewed, scholarly publications
  - Provide immediate access to scientific data displayed in or underlying publications and increased access to other data
  - Use persistent identifiers (PIDs) for research outputs, researchers, organizations, and awards
  - Policy and implementation guidance related to the publications and data components of the plan will be issued by December 31, 2024, followed by policy and guidance for PID requirements

## [DOE Public Access Plan](#)

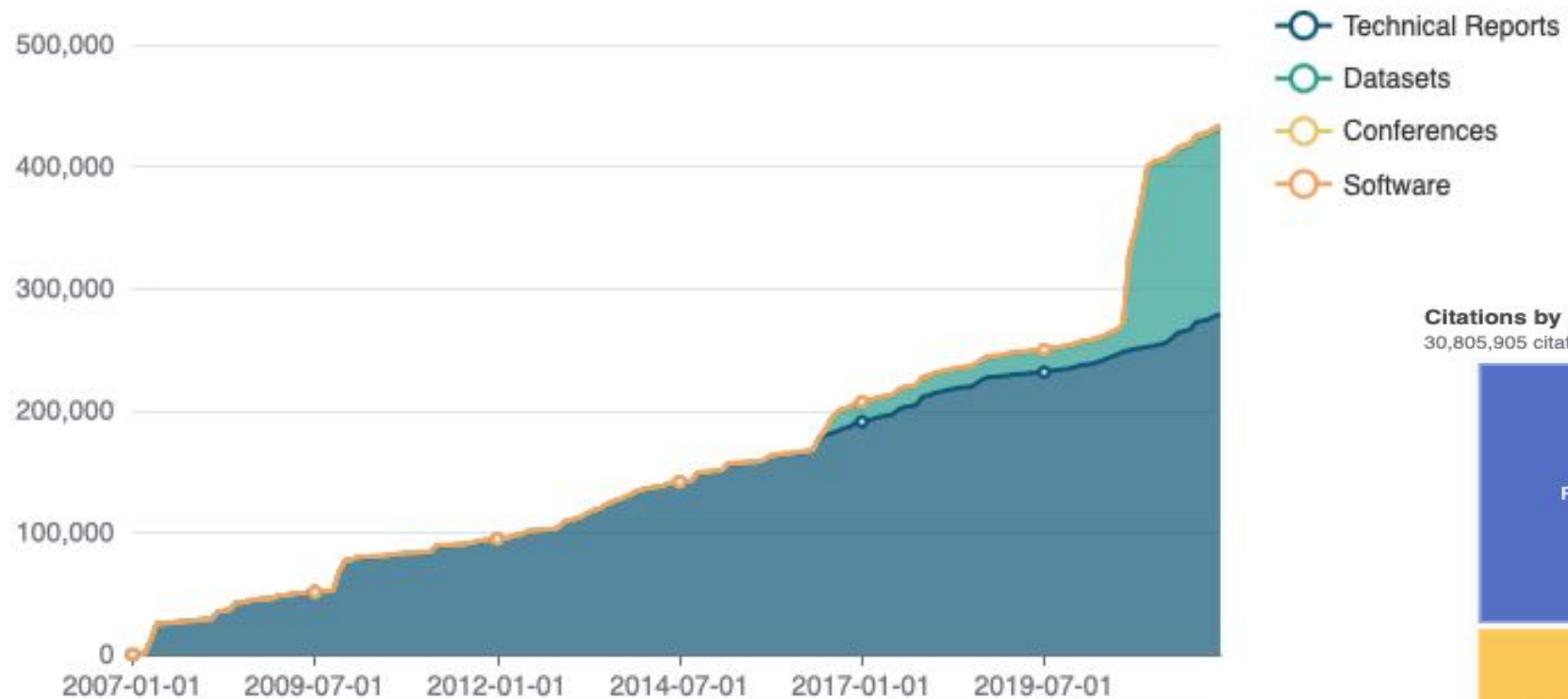
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## [DOE Public Access Plan](#)

# The Impact of Persistent Identifiers

## Total DOI Registration by Type



## Citations by Field (All Years)

30,805,905 citations



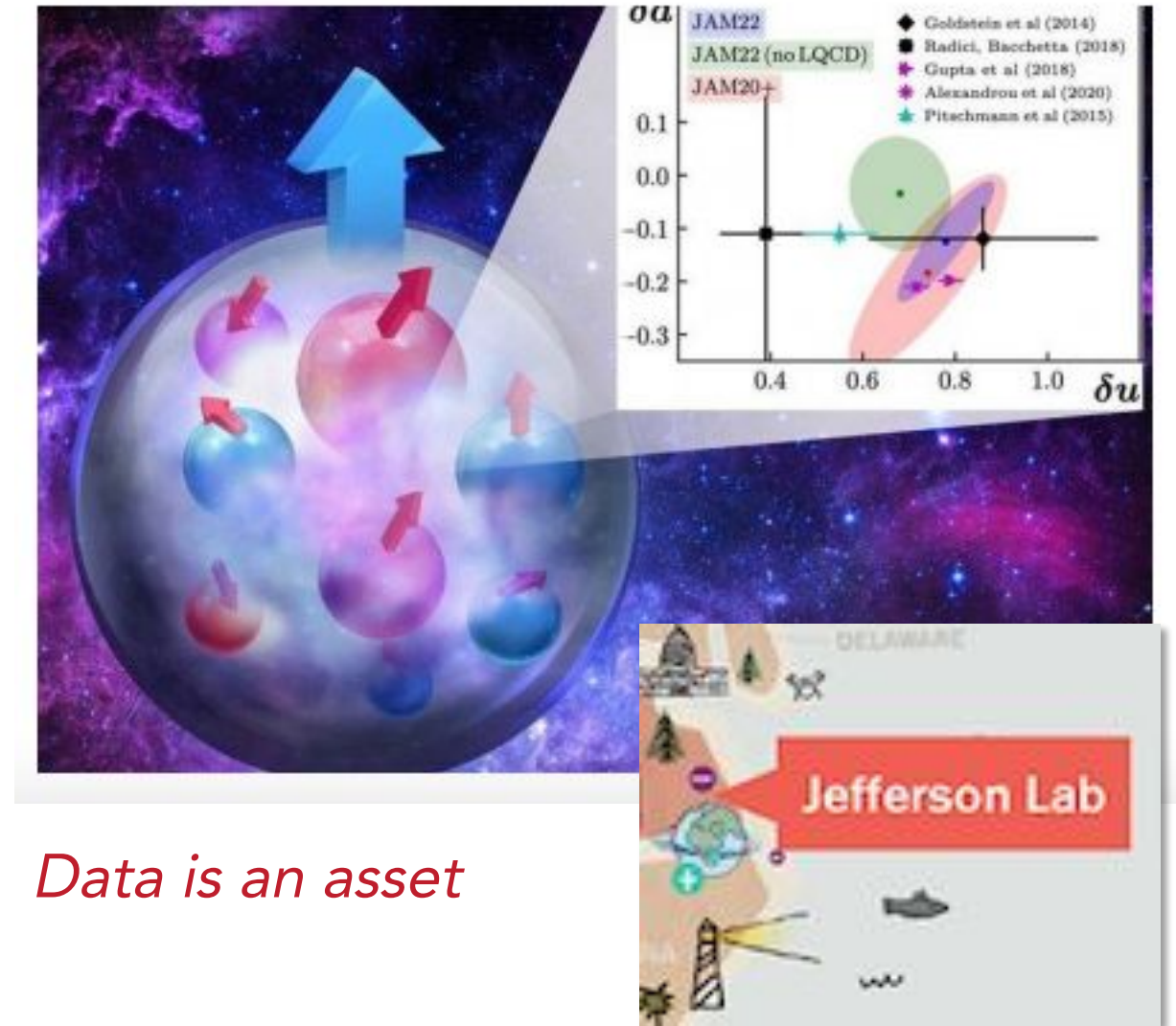
All Fields

Source:  
[OSTI.GOV](https://www.osti.gov)



# Nuclear Structure and Data

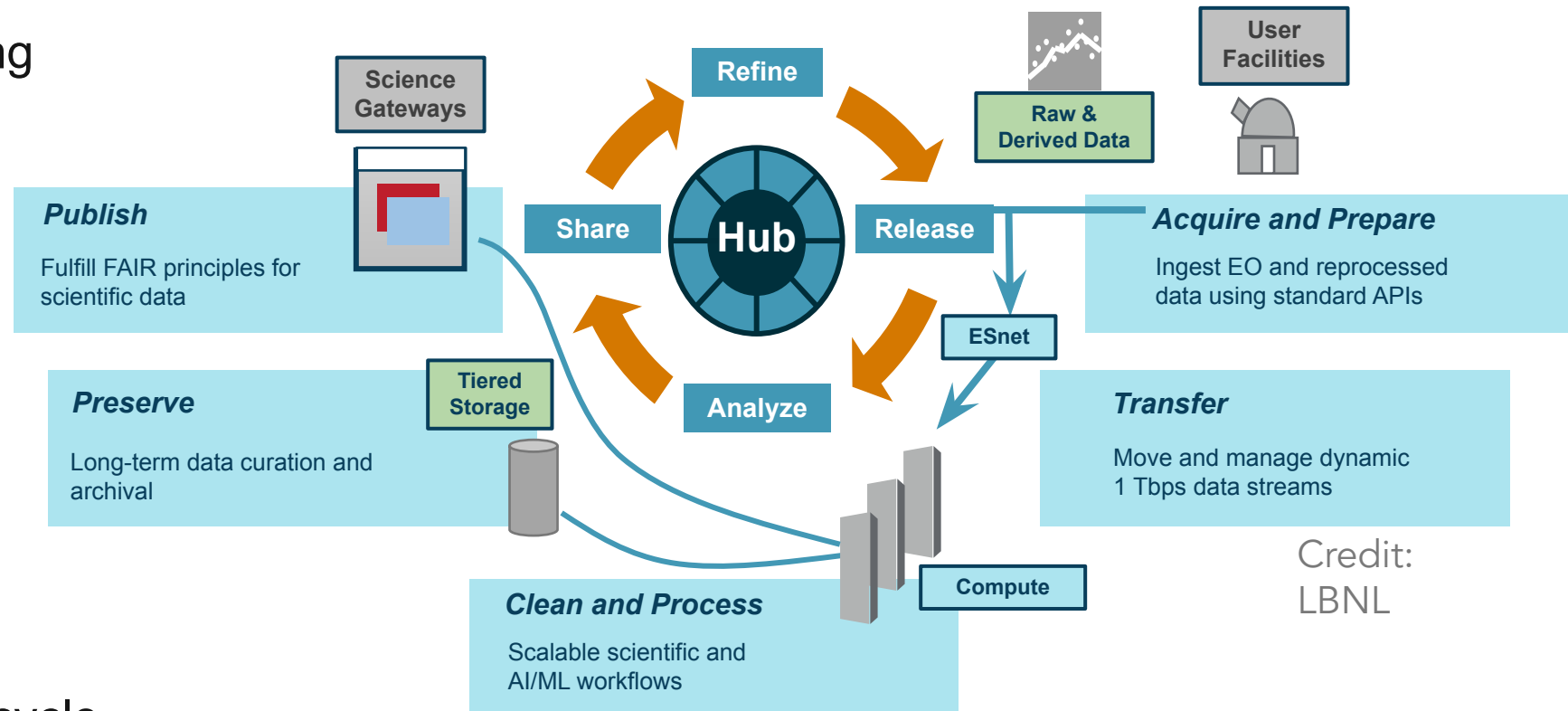
- Answering many scientific questions in Nuclear Physics is inherently integrative
- Quantum Chromodynamics is the fundamental theory describing the strong force
  - At the scale of a proton
    - Not analytically calculable
    - Not tractable by single experimental measurements
  - Extracting information is an inverse problem over multiple data sources
- Growing recognition in the NP science community of the importance of data management and stewardship



*Data is an asset*

# Path Forward: Data Life Cycle, IRI, and HPDF

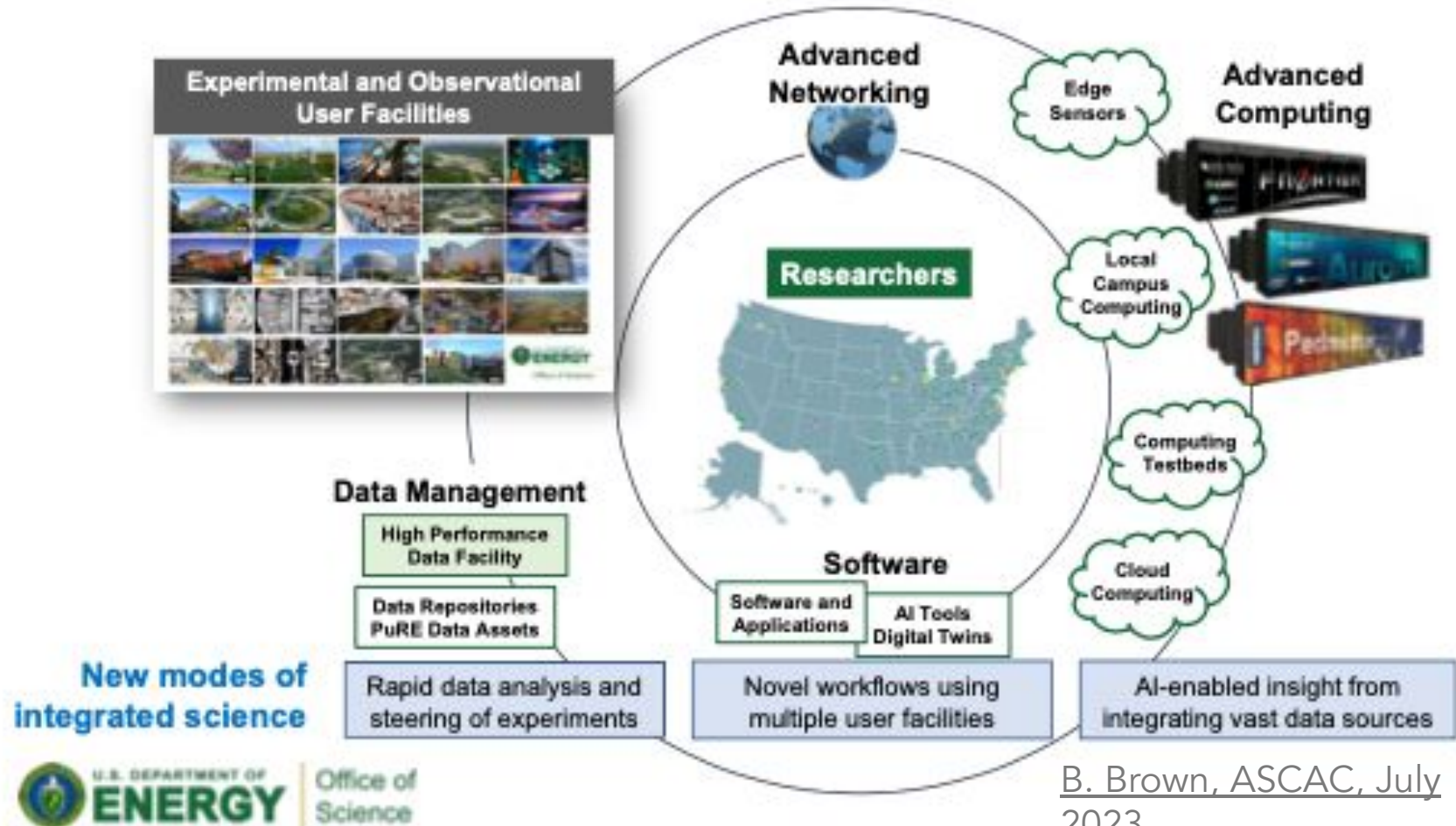
- Different scientific disciplines are in different places
  - Data policies concerning ownership of data
  - Open access (beyond publication datasets)
- DOE Labs focus on science and technology
  - Community recognition of value is critical for uptake
- Articulation of the data life cycle promotes consistency of approach



# Integrated Research Infrastructure

DOE's Integrated Research Infrastructure (IRI) Vision:

*To empower researchers to meld DOE's world-class research tools, infrastructure, and user facilities seamlessly and securely in novel ways to radically accelerate discovery and innovation*



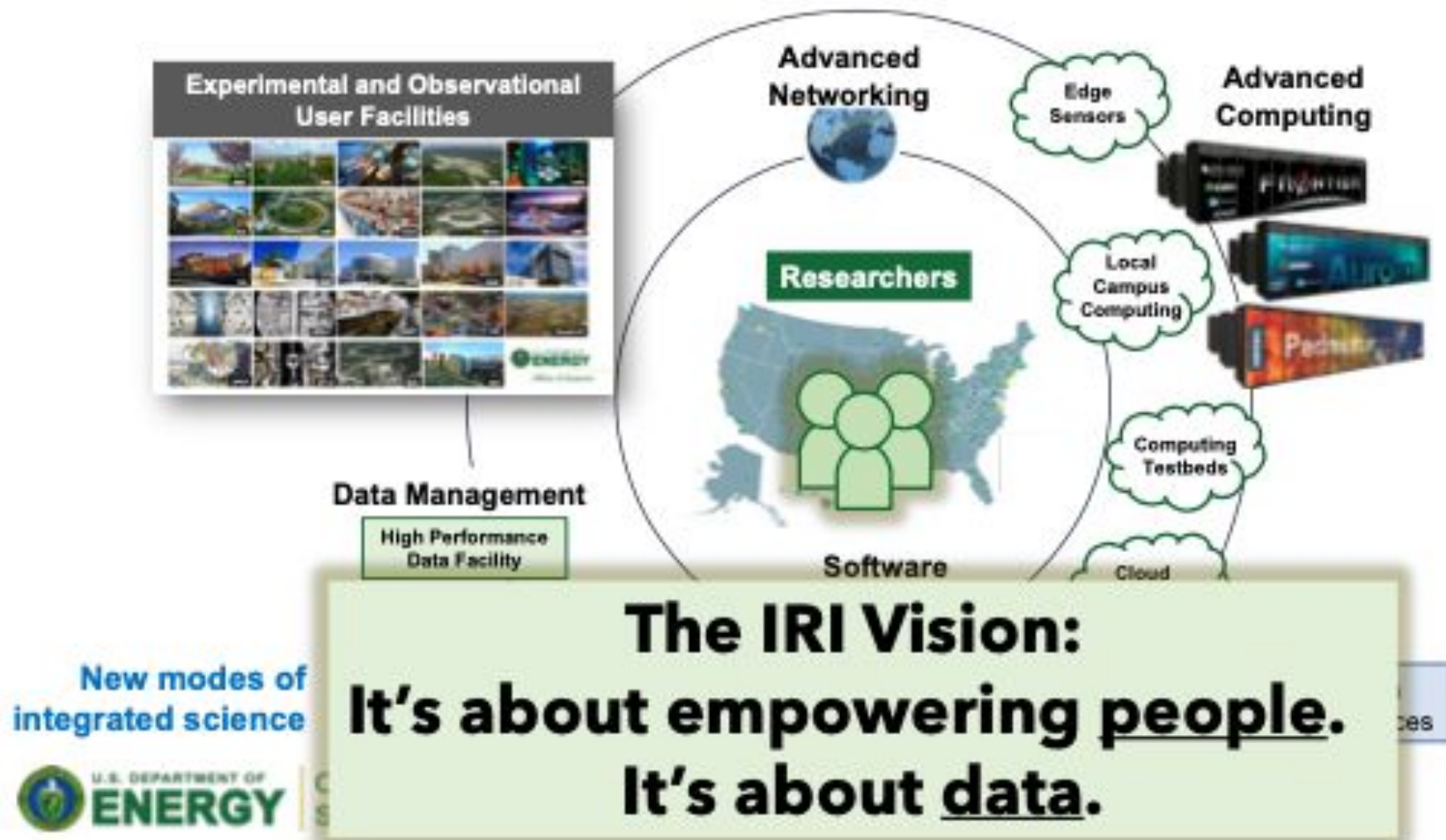
B. Brown, ASCAC, July 2023



# The IRI Vision

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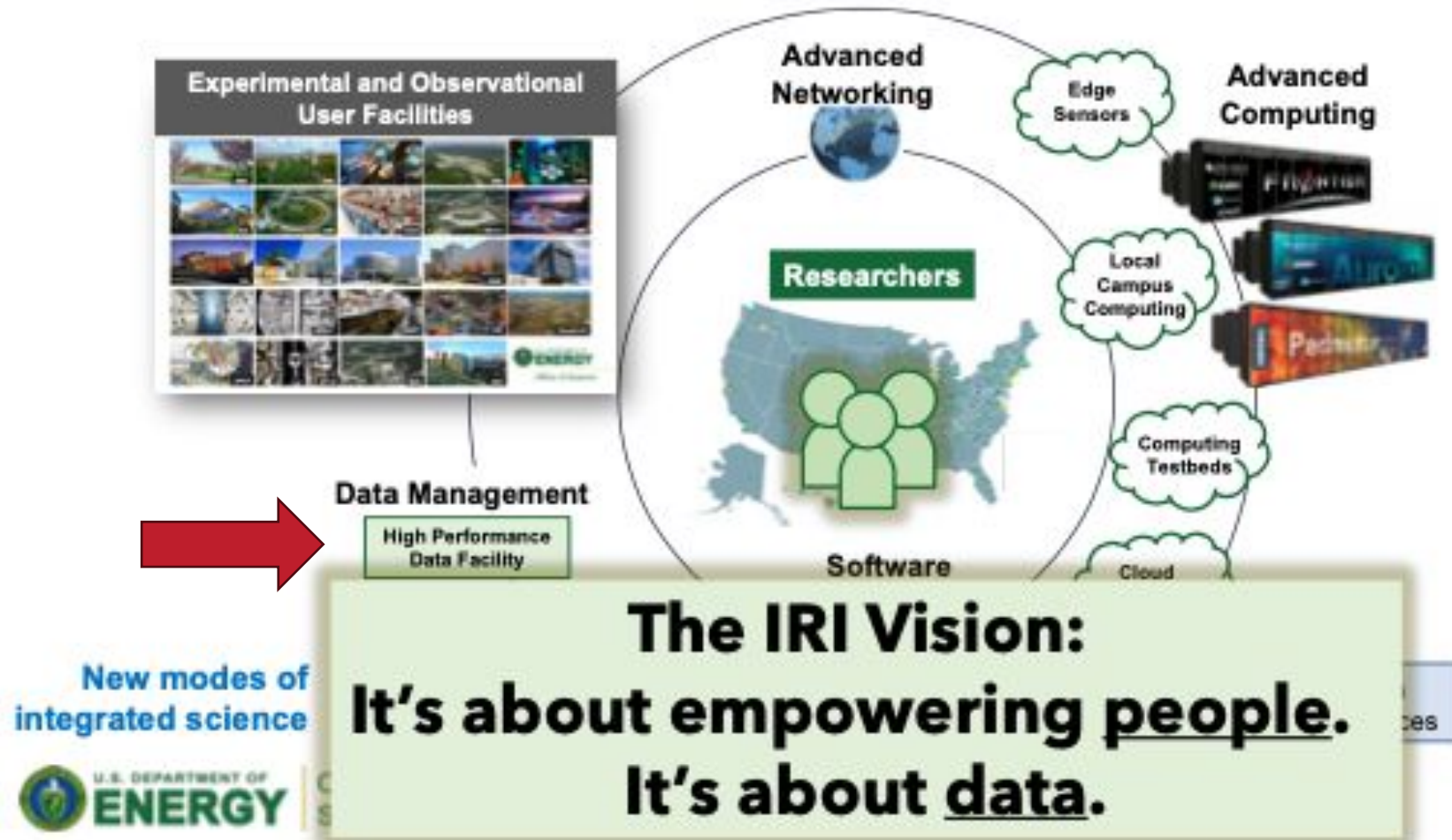
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# HPDF and the IRI

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# High Performance Data Facility

**HPDF is set to become the newest high-performance computing resource provided through the DOE's Advanced Scientific Computing Research program:**

- The HPDF project was announced Oct 16, 2023
- A distributed facility with a hub-and-spoke architecture that meets or exceeds the science-driven needs outlined in the 2023 DOE Integrated Research Infrastructure Architectural Blueprint and earlier ASCR reports
- A partnership between Thomas Jefferson National Accelerator Facility and Lawrence Berkeley National Laboratory. Jefferson Lab will be the HPDF director, with the lead infrastructure in Newport News



**The HPDF mission:** To enable and accelerate scientific discovery by delivering state-of-the-art data management infrastructure, capabilities, and tools. HPDF will provide leadership in the stewardship of the scientific data life cycle and will advance DOE's and [the Biden Administration's commitment to public access to scientific data](#) and FAIR data.