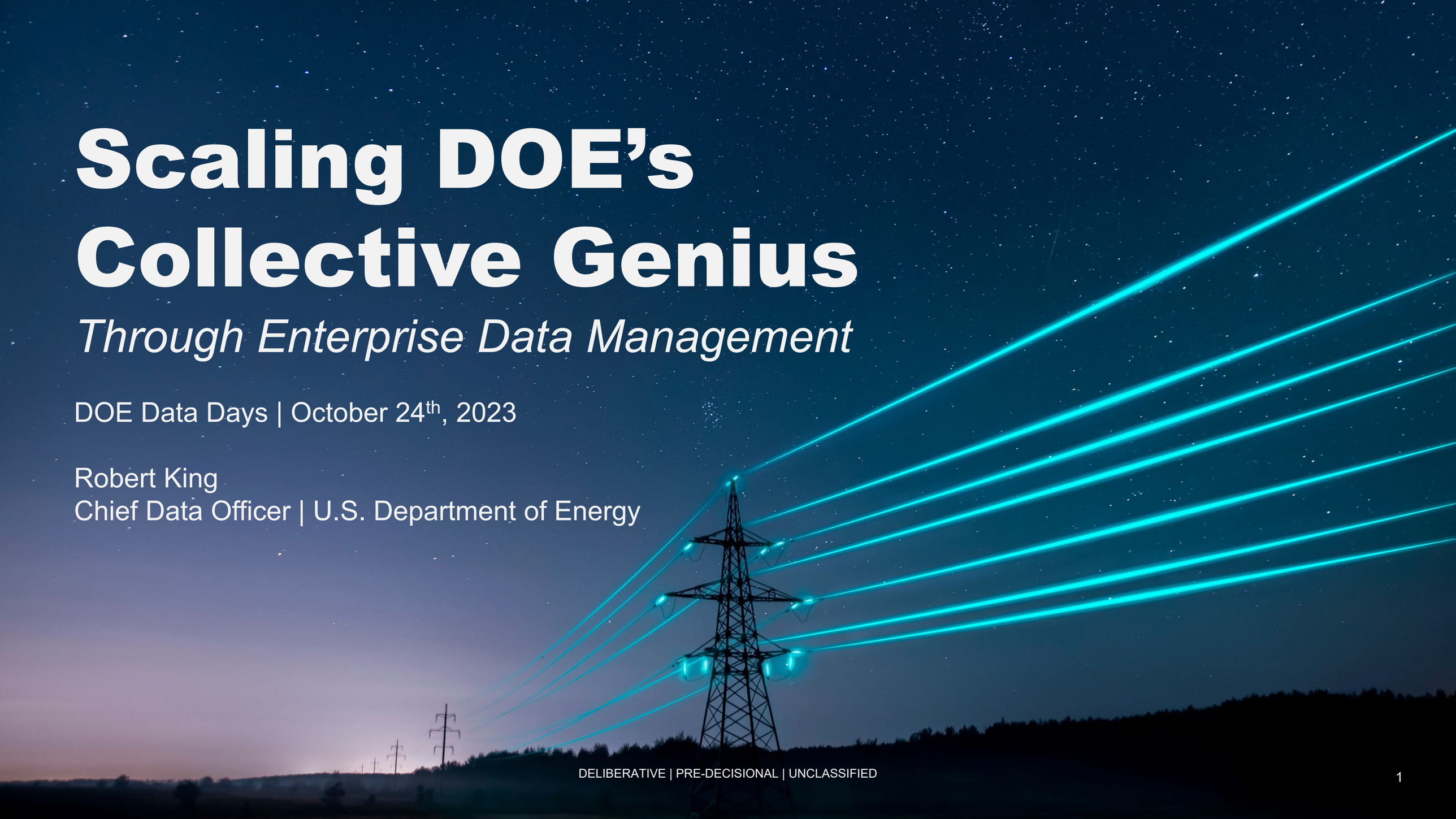
Scaling DOE's Collective Genius

Through Enterprise Data Management

DOE Data Days | October 24th, 2023

Robert King
Chief Data Officer | U.S. Department of Energy



Rob King, DOE Chief Data Officer

PREVIOUS ENTERPRISE DATA LEADERSHIP EXPERIENCE

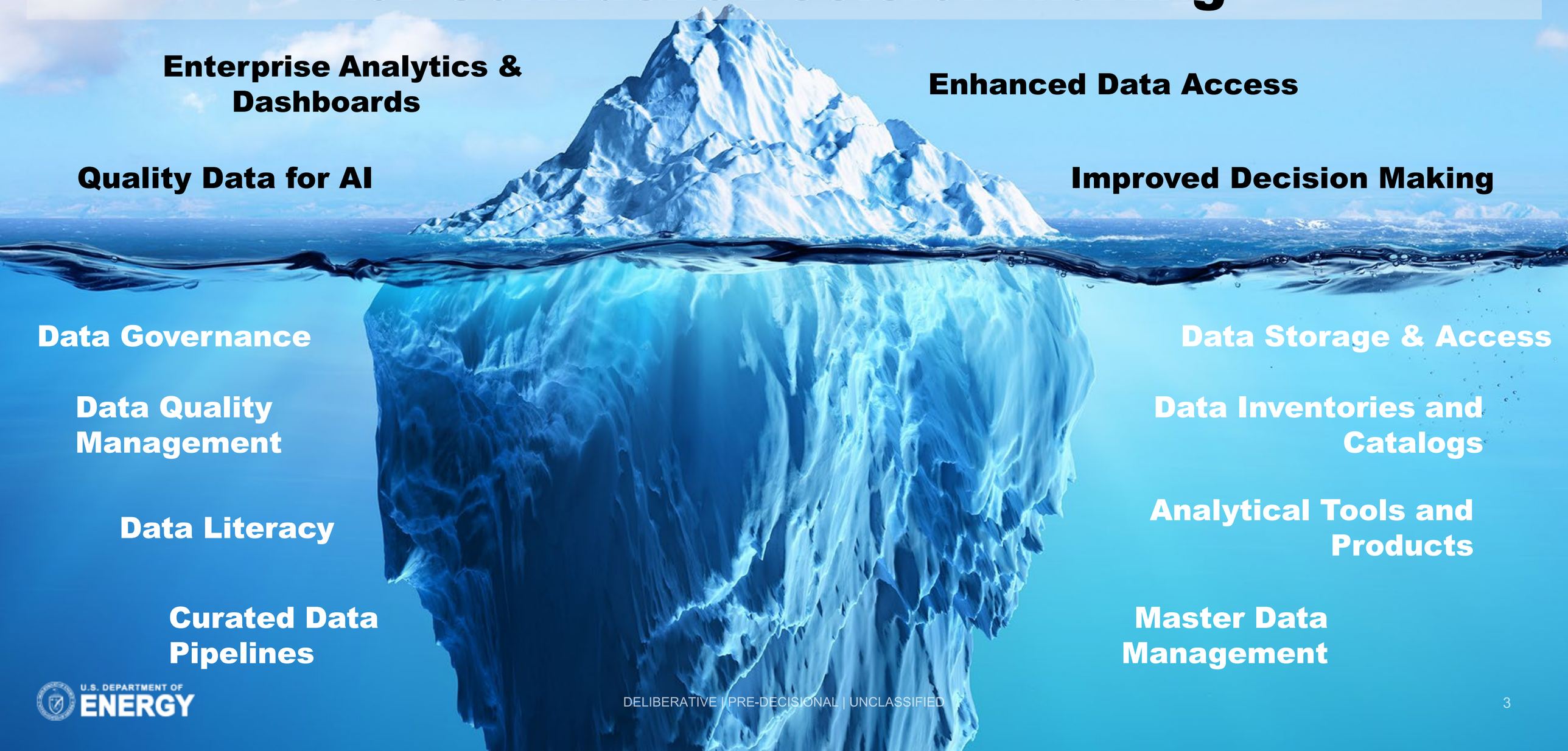
Inaugural CDO
(2020-2023)

Established a data-centric culture with an enterprise data strategy and related D&A ecosystem

Inaugural CDO for Mission Support
(2016-2020)

Consolidated and normalized data to drive advanced enterprise analytics & decision making

Focusing on “Below the Surface” Infrastructure for Confident Decision-Making



Enterprise Analytics & Dashboards

Enhanced Data Access

Quality Data for AI

Improved Decision Making

Data Governance

Data Storage & Access

Data Quality Management

Data Inventories and Catalogs

Data Literacy

Analytical Tools and Products

Curated Data Pipelines

Master Data Management

Value Proposition of Data Management

Data is not 0s and 1s, but a critical asset to the mission of every organization. We must prioritize data as a strategic asset, like our physical and financial assets, to better achieve our goals across DOE.

TODAY'S CHALLENGES

50%

of a data scientist's time is spent data wrangling

30%

of revenue lost because of poor data quality

TOMORROW'S OPPORTUNITIES

Prioritize value creation with DOE data

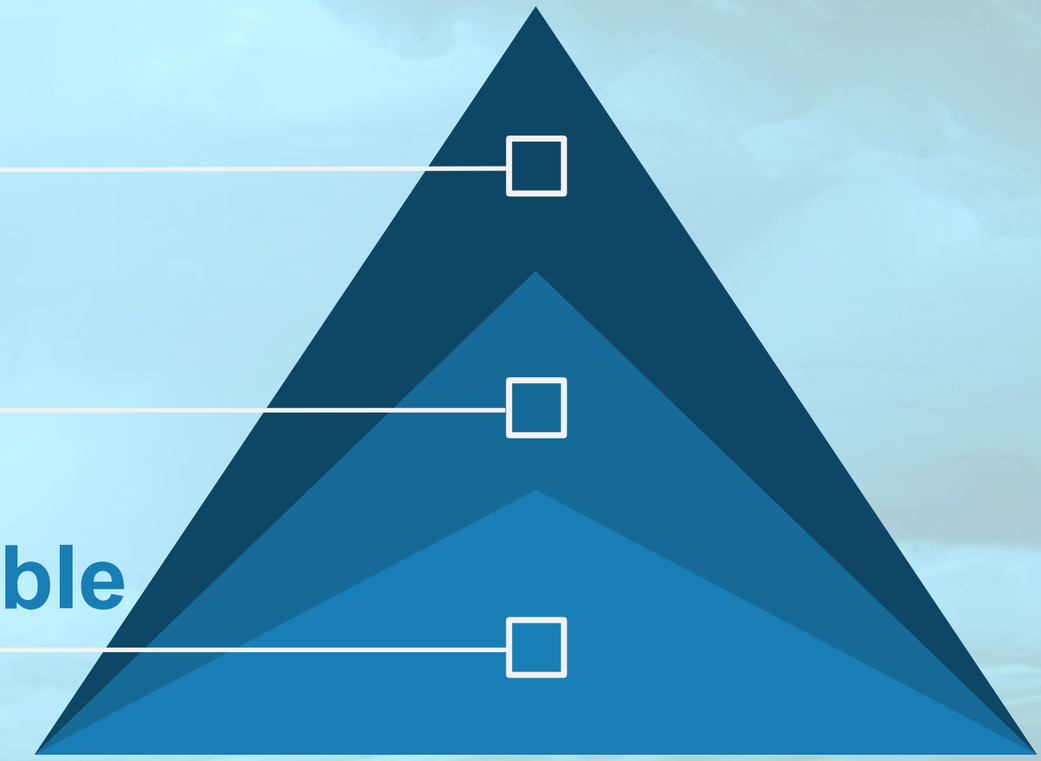
"Instant Impact – A Rapid Approach for Showcasing Data Value." Bugembe, Mike. Forbes, March 23, 2023. https://www.forbes.com/sites/mikebugembe/2023/03/23/instant-impacta-rapid-approach-for-showcasing-data-value/?sh=5b739ca174cb

Defining Value-Led Data Management

Data breaks down barriers

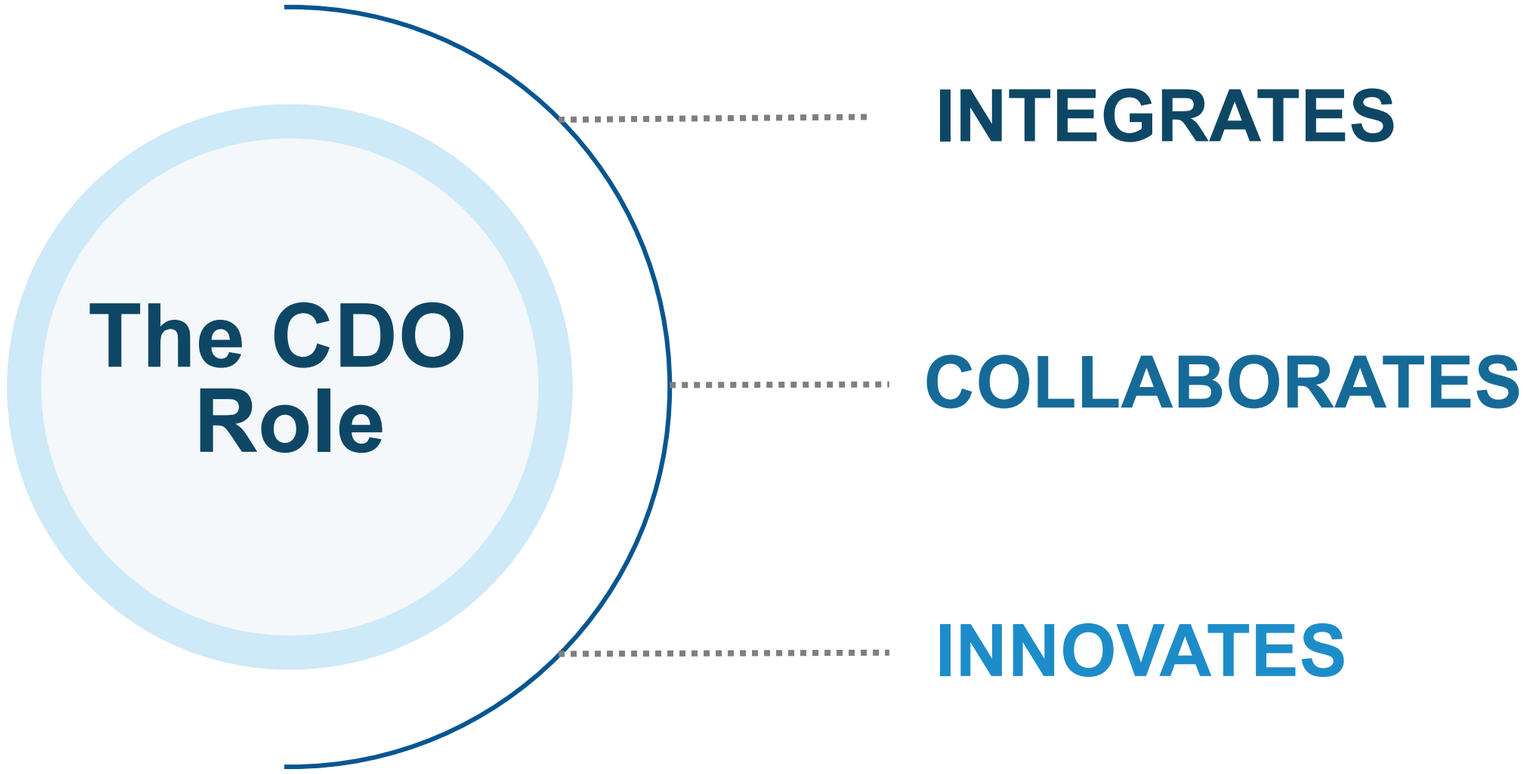
Data is a force multiplier

Data unlocks the art of the possible



How CDOs Deliver Value

CDOs must find opportunities to drive cross-organization partnerships, establish domain architectures, and identify opportunities that allow the entire organization to collaborate, integrate, and innovate in meaningful ways.



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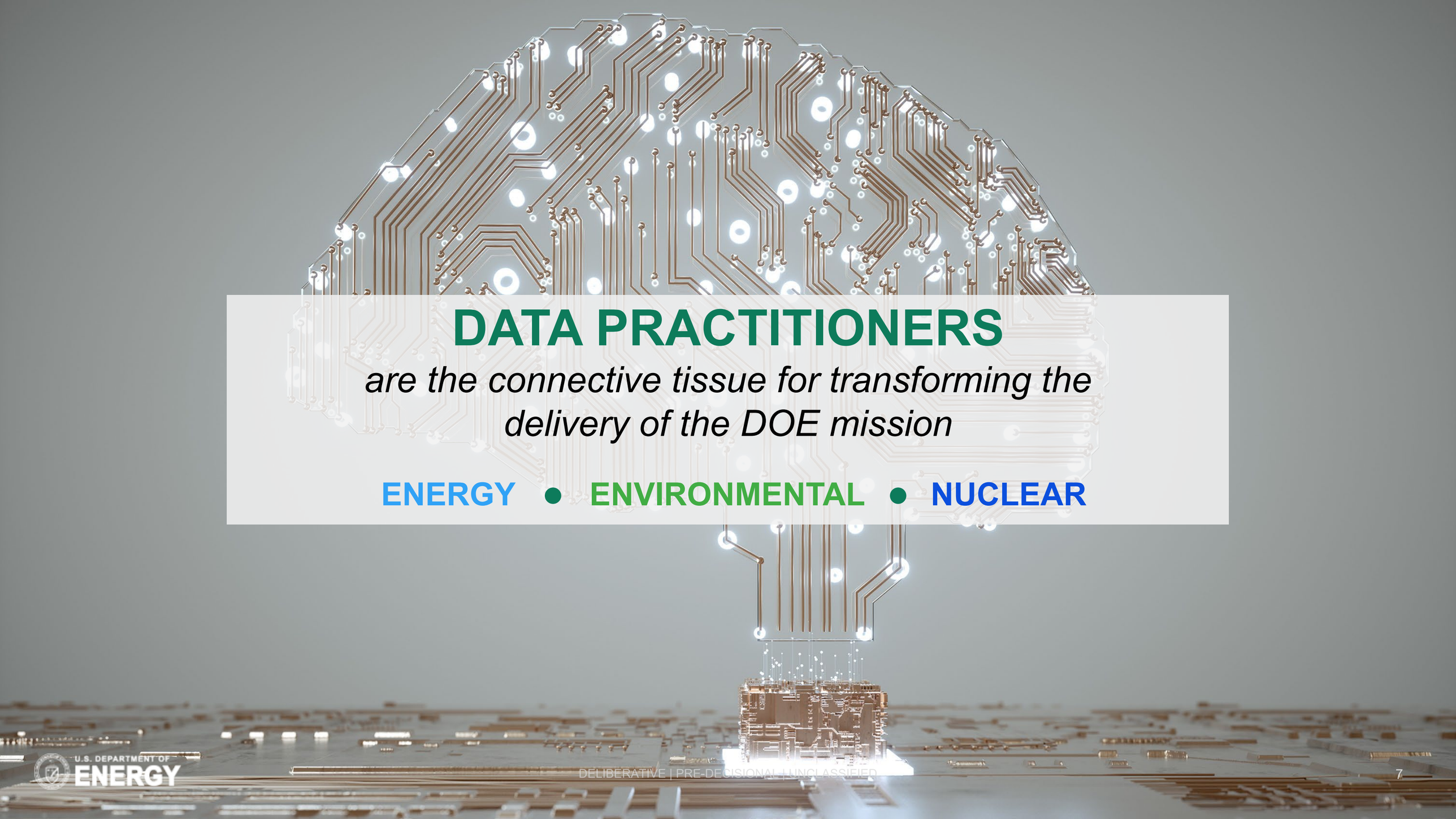


DATA PRACTITIONERS

are the connective tissue for transforming the delivery of the DOE mission

ENERGY ● ENVIRONMENTAL ● NUCLEAR

Data needs the same dedicated focus that technology has enjoyed, if we truly want it to achieve its full potential. Now is the time to embrace the next generation in the data journey that must be focused on how to best manage our abundance of data and put it to work for the business.

Cathryne Clay Doss, first appointed CDO at Capital One

In FY24, How Might We Drive Mission Value Through…

1. **Establishing foundations** for an enterprise data management program and related architectures

2. **Collaborating across DOE** to form coalitions with IT, mission, business and data partners to position data to scale our collective genius

3. **Conceptualizing innovative solutions** for data management & decision-making products

Early Observations as a New CDO: Insights from DOE Partners

- Centralizing Value-Add Data Capabilities
- Identifying Key Partners for Data Asset Solutions
- Streamlining Data Collaboration
- Launching Data Communities & Skill Development
- Optimizing Decision-Making Forums
- Clearer Definition of Data Roles

Scaling DOE's Collective Genius

1

Don't reinvent the wheel
We leverage & optimize what we have within DOE

2

Do no harm
We use data responsibly

3

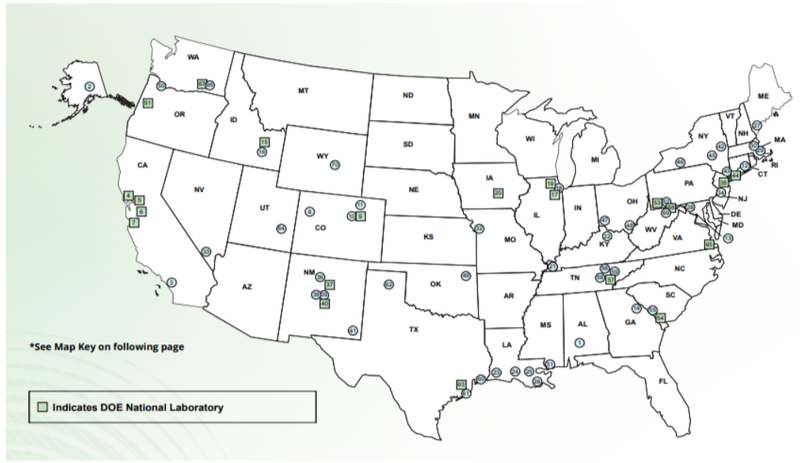
The whole is greater than the sum of its parts
We realize a collective impact

4

Measure what matters
We use strong data to drive our mission

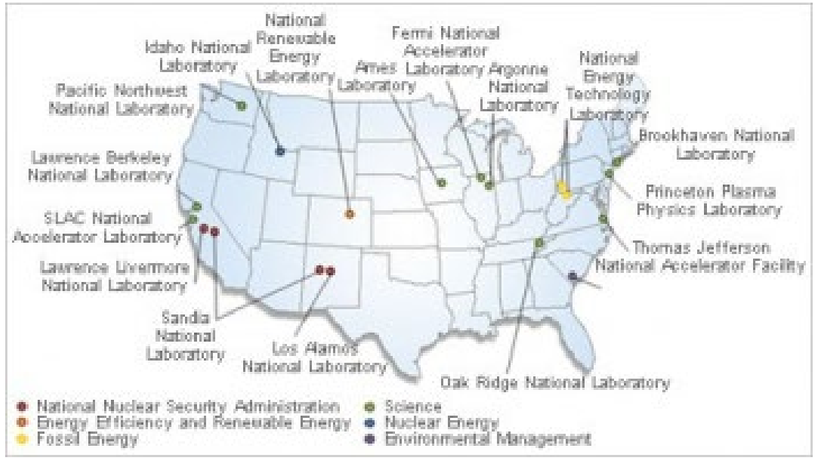
DOE's Data Community Spans Diverse Mission Areas & Operates Across the US

DOE Welcome Packet, May 2023

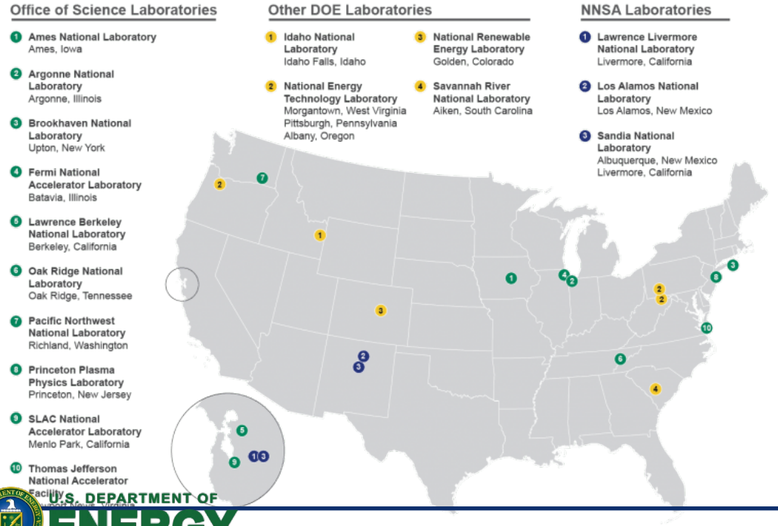


EM Sites

Office of Science Field Operations, June 2019

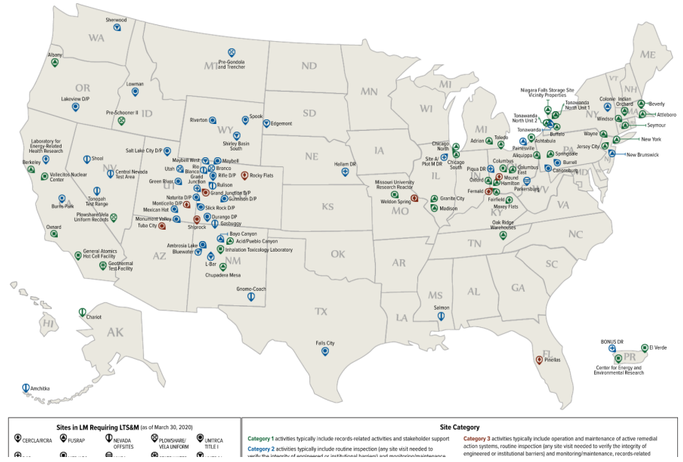


Office of Science Laboratories, Oct. 2011



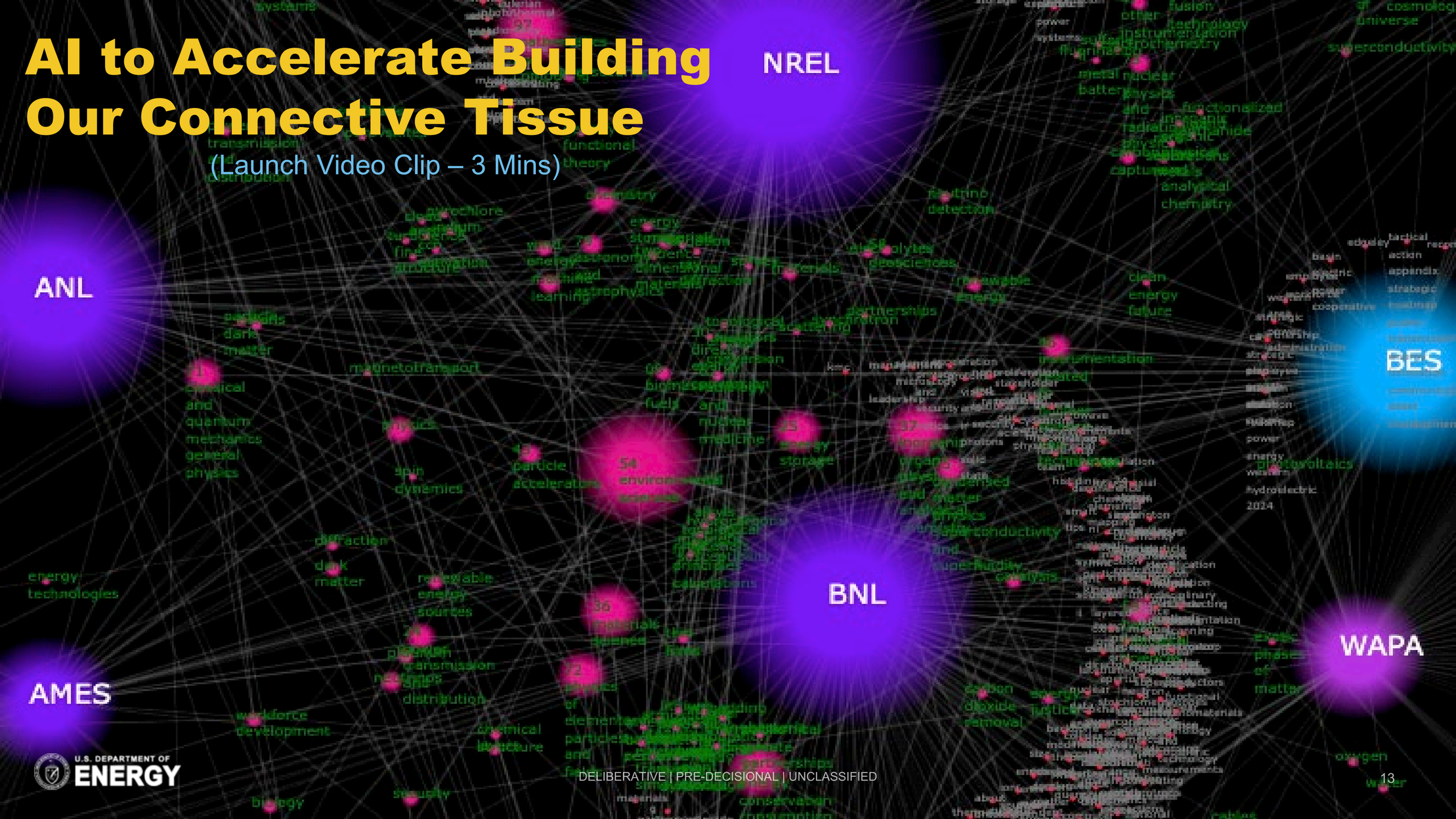
DOE, April 2021

LM Sites, March 2020



AI to Accelerate Building Our Connective Tissue

(Launch Video Clip – 3 Mins)



What Value-Led Data Management Can Deliver

Our enterprise data management program will (1) identify opportunities to facilitate meaningful collaboration opportunities across DOE and (2) support program CDOs in their roles, spurring DOE's data excellence, and (3) utilize data governance and stewardship to share data across the enterprise with defined controls.

Empower

Provide organizations with the necessary tools and resources to support a data-focused workforce across the whole of DOE.

Engage

Facilitate strategic partnerships among labs and HQ offices to identify and facilitate shared opportunities.

Elevate

Improve access to information sharing where data can be exchanged securely and efficiently.

Together, we will continuously scale DOE's Collective Genius

Thank You.

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DEMO

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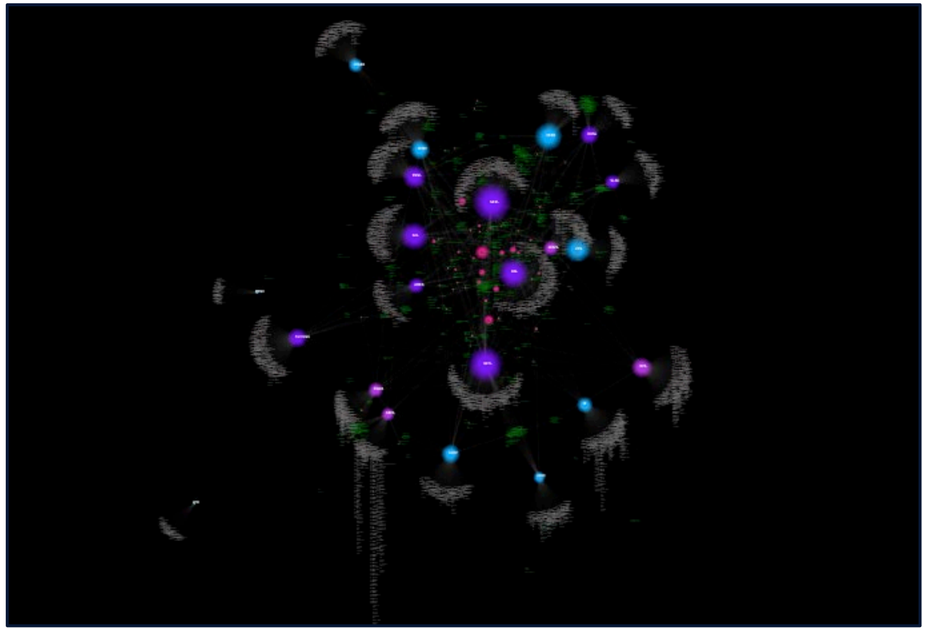

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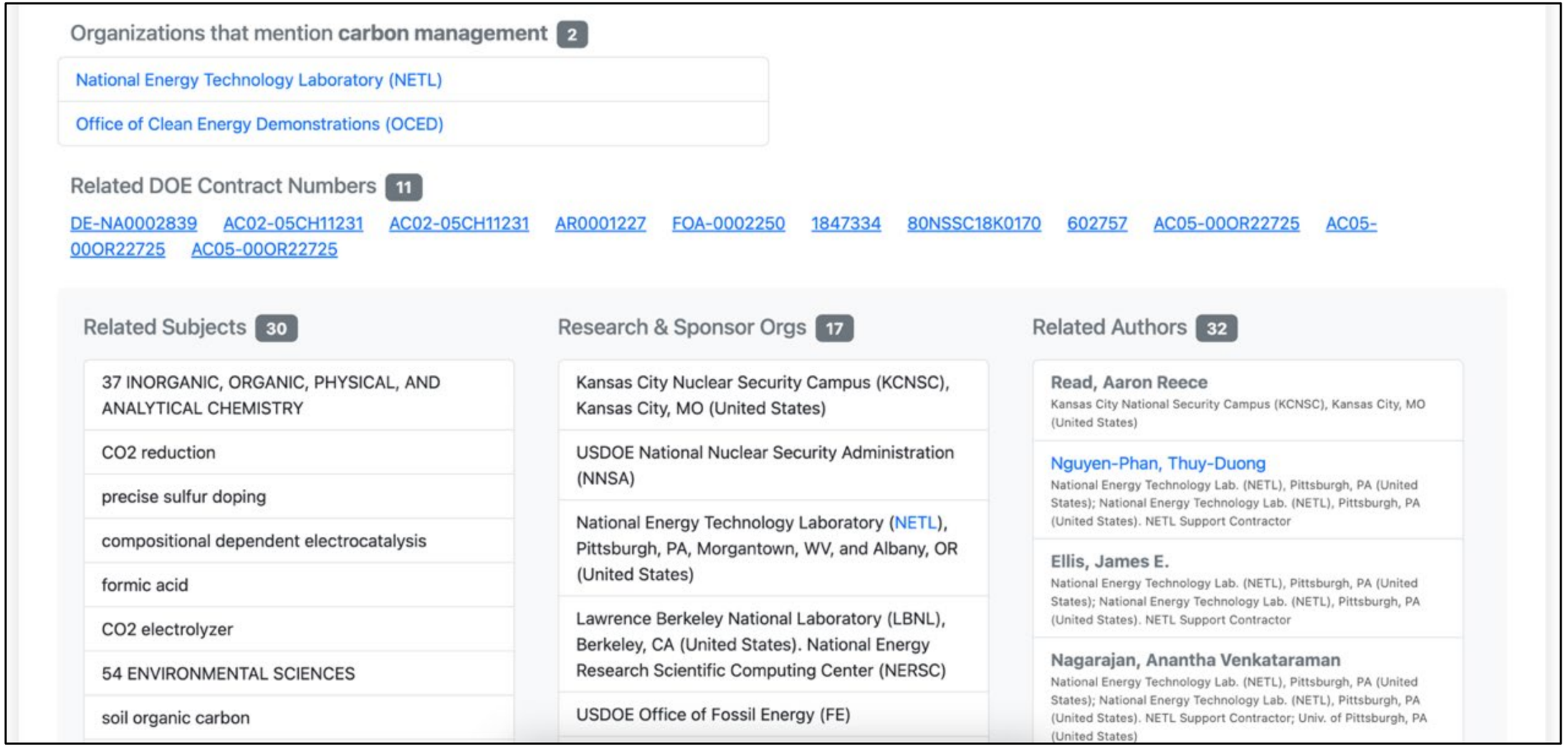

AI to Accelerate Building Our Connective Tissue

carbon management

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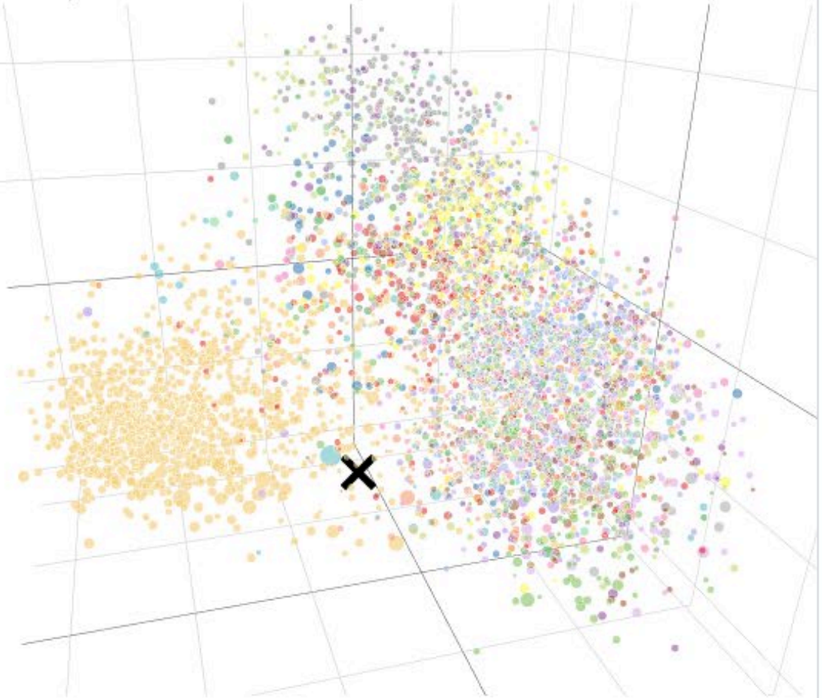
Search space



Top matches

Implications of "peak oil" for atmospheric CO2 and climate
P.A. Kharecha, J.E. Hansen (NASA GISS and Columbia Univ. Earth Institute)...
Unconstrained CO2 emission from fossil fuel burning has been the dominant cause of observed anthropogenic global warming. The amounts of "proven" an...
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Hydrocarbon anions in interstellar clouds and circumstellar envelopes
T. J. Millar, C. Walsh, M. A. Cordiner, R. N\'i Chuim\'in and Eric Herbst...
The recent detection of the hydrocarbon anion C6H- in the interstellar medium has led us to investigate the synthesis of hydrocarbon anions in a var...
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The unusual hydrocarbon emission from the early carbon star HD 100764: The connection between aromatics and aliphatics
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We have used the Infrared Spectrograph (IRS) on the Spitzer Space Telescope to obtain spectra of HD 100764, an apparently single carbon star with a ...
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M. Szymczak, A. Bartkiewicz, A.M.S. Richards...
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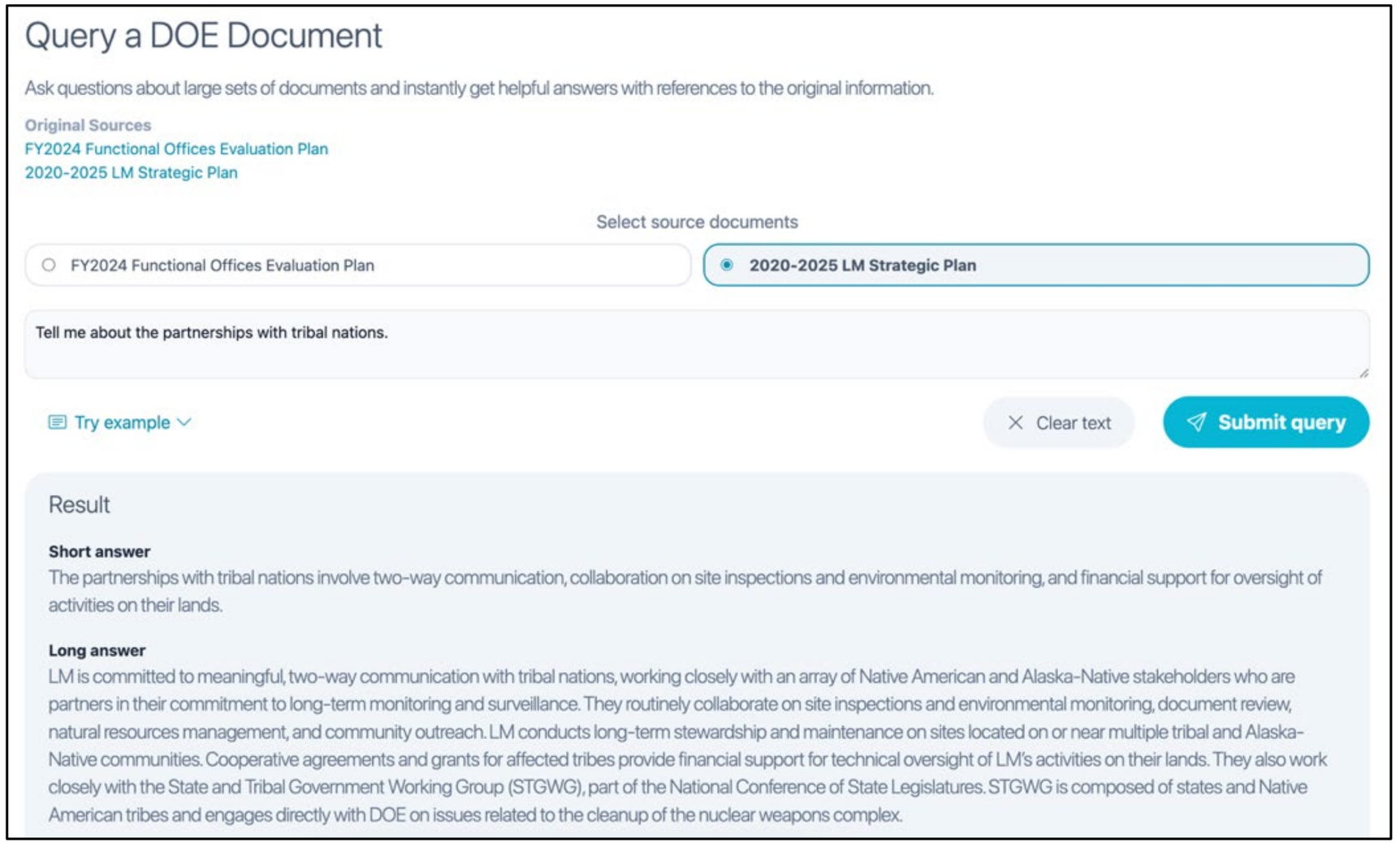
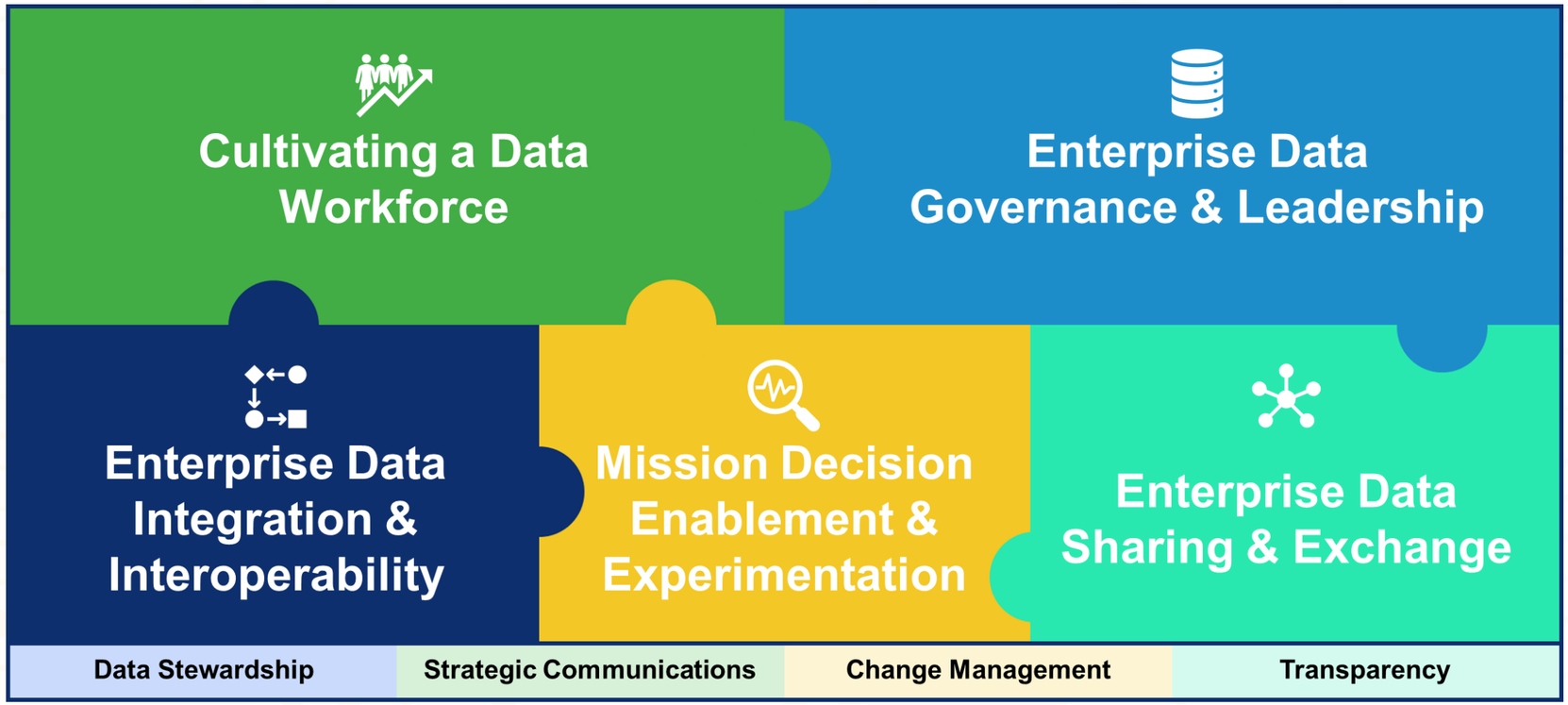


APPENDIX

Data Management for Our Common Mission

Primary Themes of an Enterprise Data Management Program



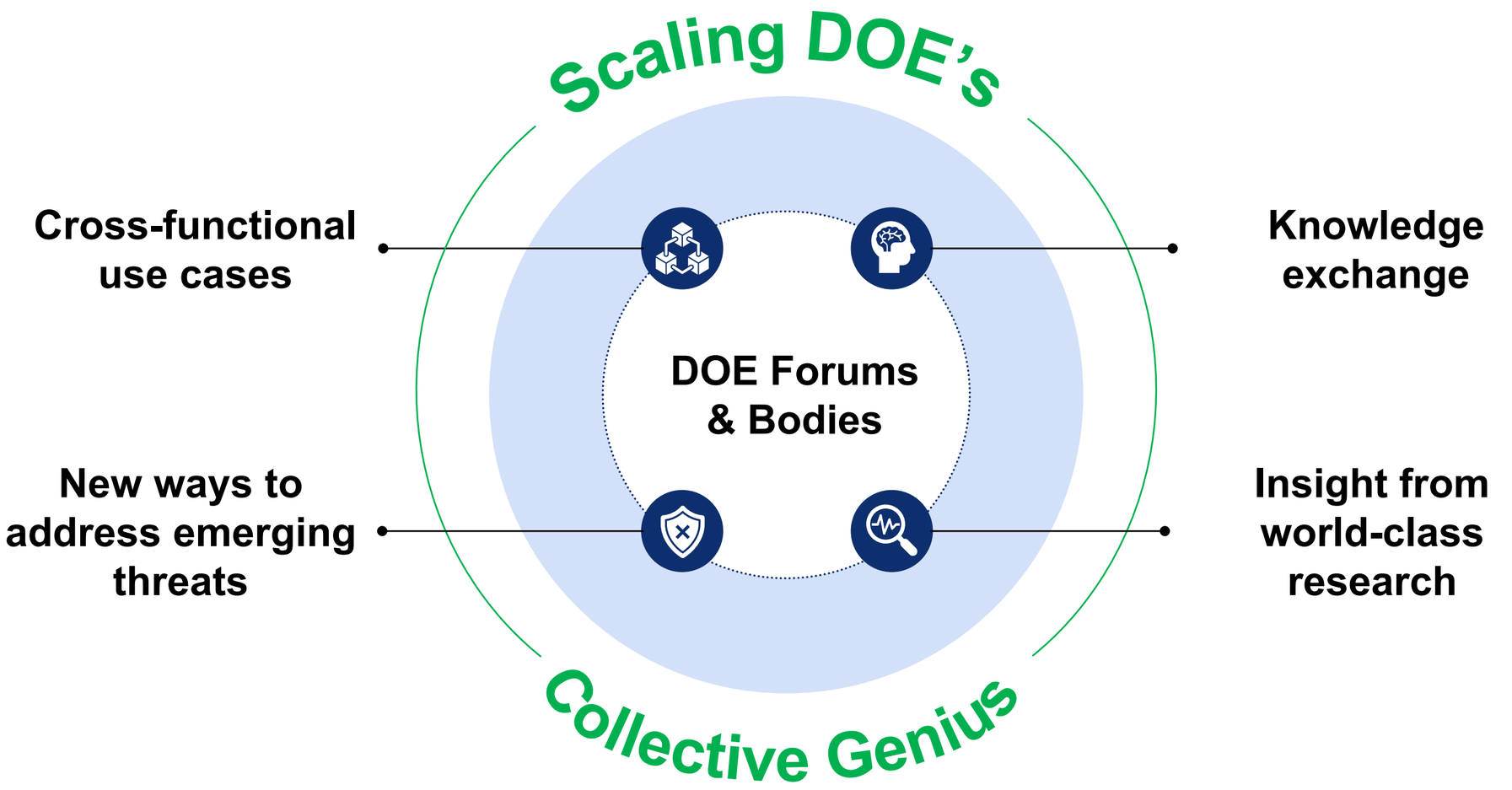
Foundations for Success

Value Proposition

1. Improved Decision-Making through Better Access to Data & Analytics Products
2. Usable Data to Drive Projects, Programs & Services
3. Reducing Data Calls & Associated Resources
4. Better Sharing of Data across DOE Organizational Siloes

Collaboration across DOE

In the face of many technological unknowns, one principle stays true: the power of collaboration lies not just in sharing knowledge, data, and resources, but in our collective wisdom to face today's challenges.



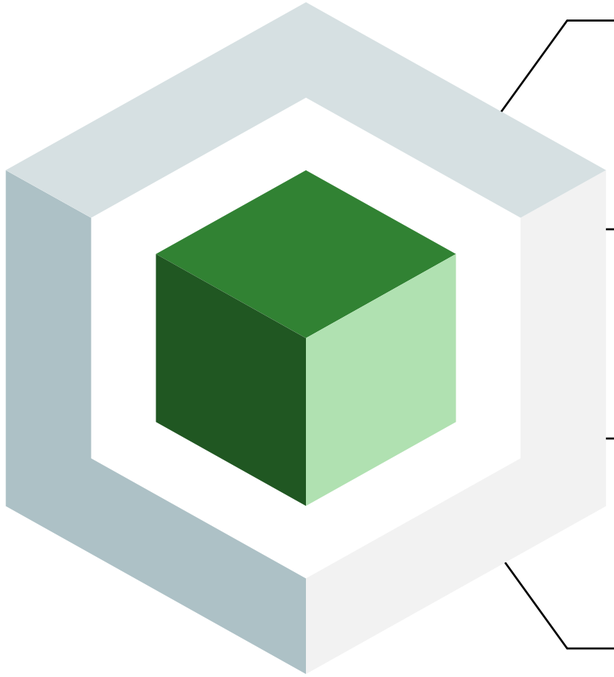
Key Themes from 2022 D3

The 2022 DOE Data Days set the goal of promoting disciplined data management as a means to higher-quality and more efficient research and analysis, discussing cloud and hybrid data management.

Data Management Challenges

"Data, in all its forms and with all its challenges, deserves a starring role in the DOE's scientific and technological progress"

– *DOE Data Days 2022 Report*



Cloud and Hybrid Data Management

Data Intensive Computing

Data Access, Sharing, and Sensitivity

Data Policy and Ethics