

# The Energy Data Exchange® – DOE Office of Fossil Energy Carbon Management's Trusted Data Curation Platform



Research & Innovation Center

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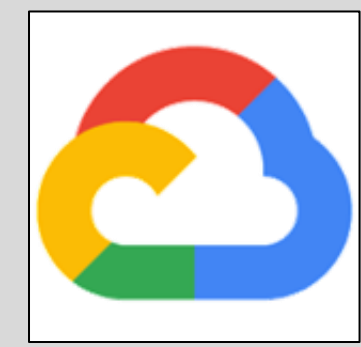
EDX ++ is now focused on building next-gen DOE Data Computing by connecting the data with scientific computing resources to drive next-gen FECM R&D...

## EDX++ FRAMEWORK

...ensuring compliance with Federal/DOE regulations



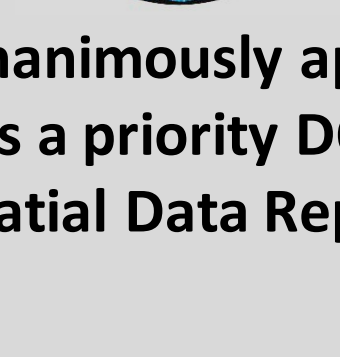
...ensuring preservation and access to DOE FECM knowledge and data resources



EDX selects Google Cloud Platform as first EDX cloud instance



NETL SmartSearch  
Infinitely scalable data parse & search tool - SmartSearch® completed



EDX launches folder upload logic for EDX Drive



Deployment of multi-cloud EDX-Esri-AWS capability for enhanced geospatial information access via EDX



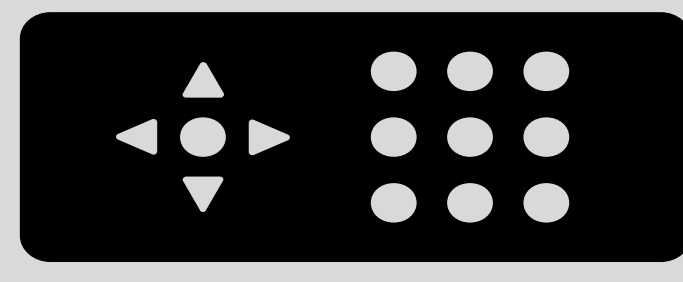
SAMI was founded and became a strategic partner with EDX



TBs of Regional Carbon Sequestration Partnership (RCSP) data curated through EDX



EDX launches enhanced secure, EDX multi-user data sharing logic via EDX Drive



EDX launches new HIGH-AVAILABILITY computing cluster



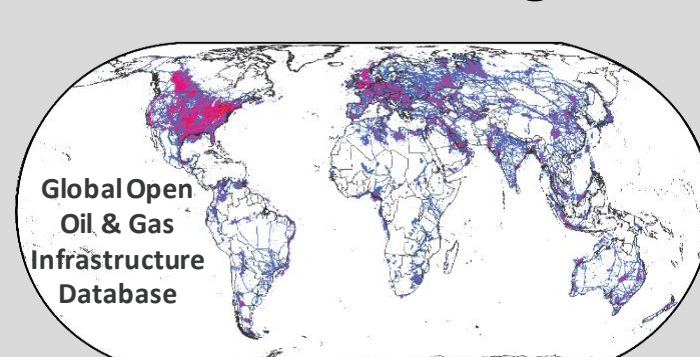
EDX receives a USPTO trademark for its name and logo



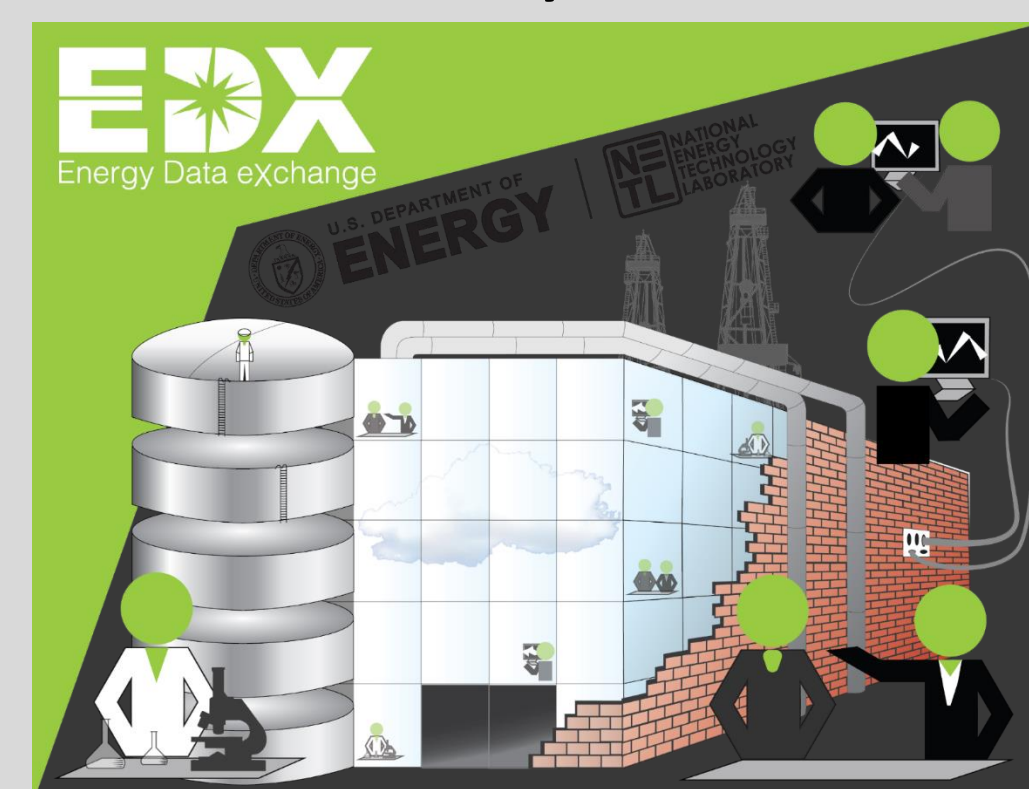
Component of the 2019 Carnegie Science Award winning GOGI Data Smart-System



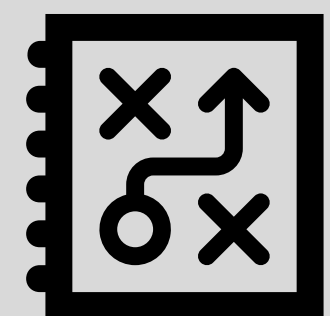
Component of the 2019 R&D100 winning data Offshore Risk Modeling suite



GOGI publishes millions of spatial features via EDX



EDX launches its VISION for a VIRTUAL Data Library and Laboratory



EDX releases 5 year strategic plan v2



Added citations to all public submissions



EDX launches EDX Wiki for internal NETL employees (retired)

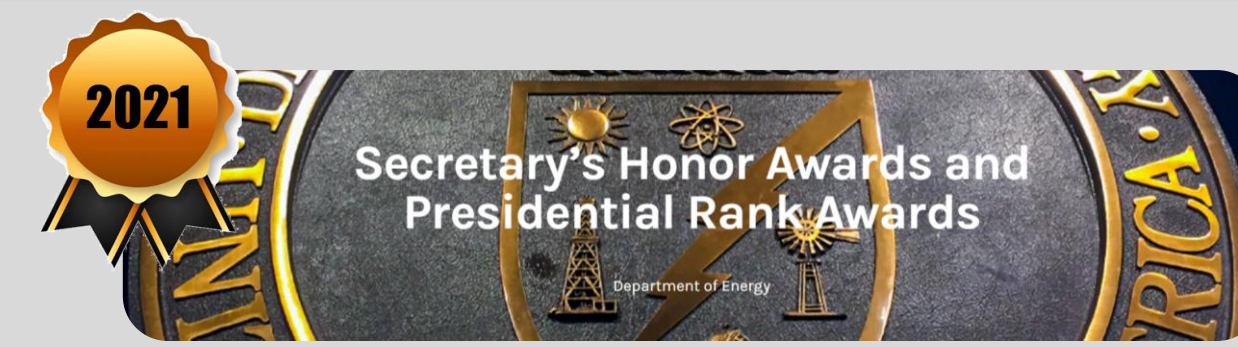
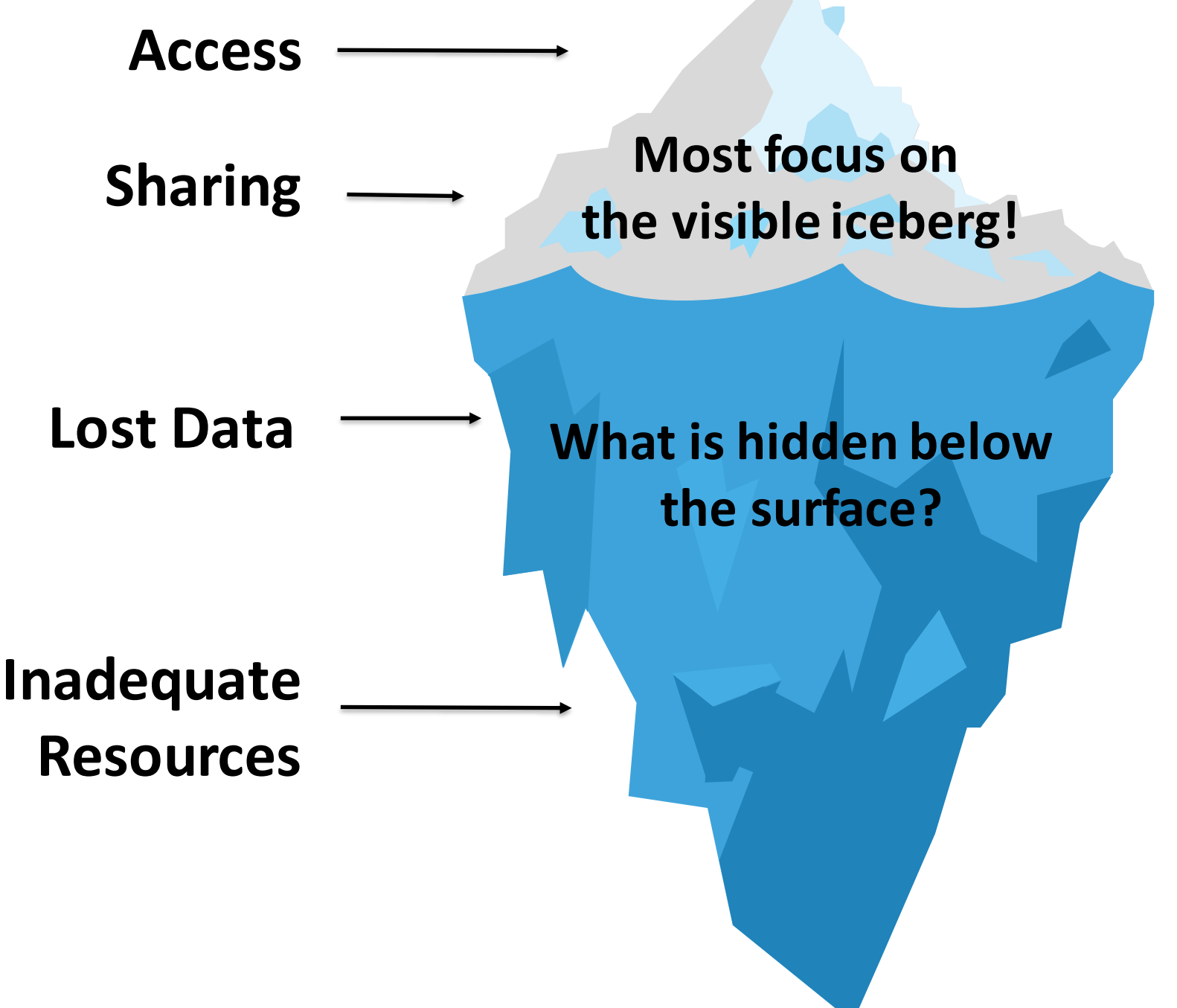
EDX releases Governance Document



DOE Cyber Approval



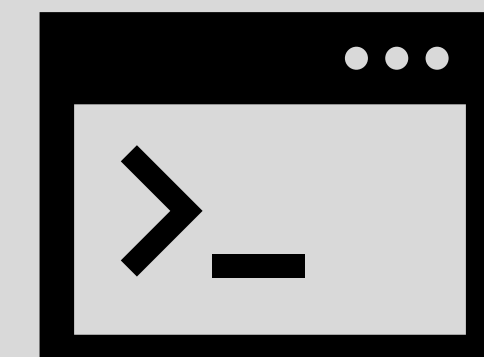
Scientific discovery is restricted by last data and inadequate resources



EDX receives a Secretary of Energy Achievement Award



FutureGen 2.0 technical data collection published on EDX in compliance with FAIR curation and reuse standards



Customized APIs and documentation to enable interaction with data resources

## EDX...

- supports the entire life-cycle of data, presentations, publications, and tools
- evolves to meet the needs of the DOE user community
- ensures alignment to Federal and DOE regulations and policies
- utilizes technologies such as machine learning, natural language processing and its very own SmartSearch® to enhance user data discoverability, integration, labeling and transformation

## Latest EDX Summary Stats

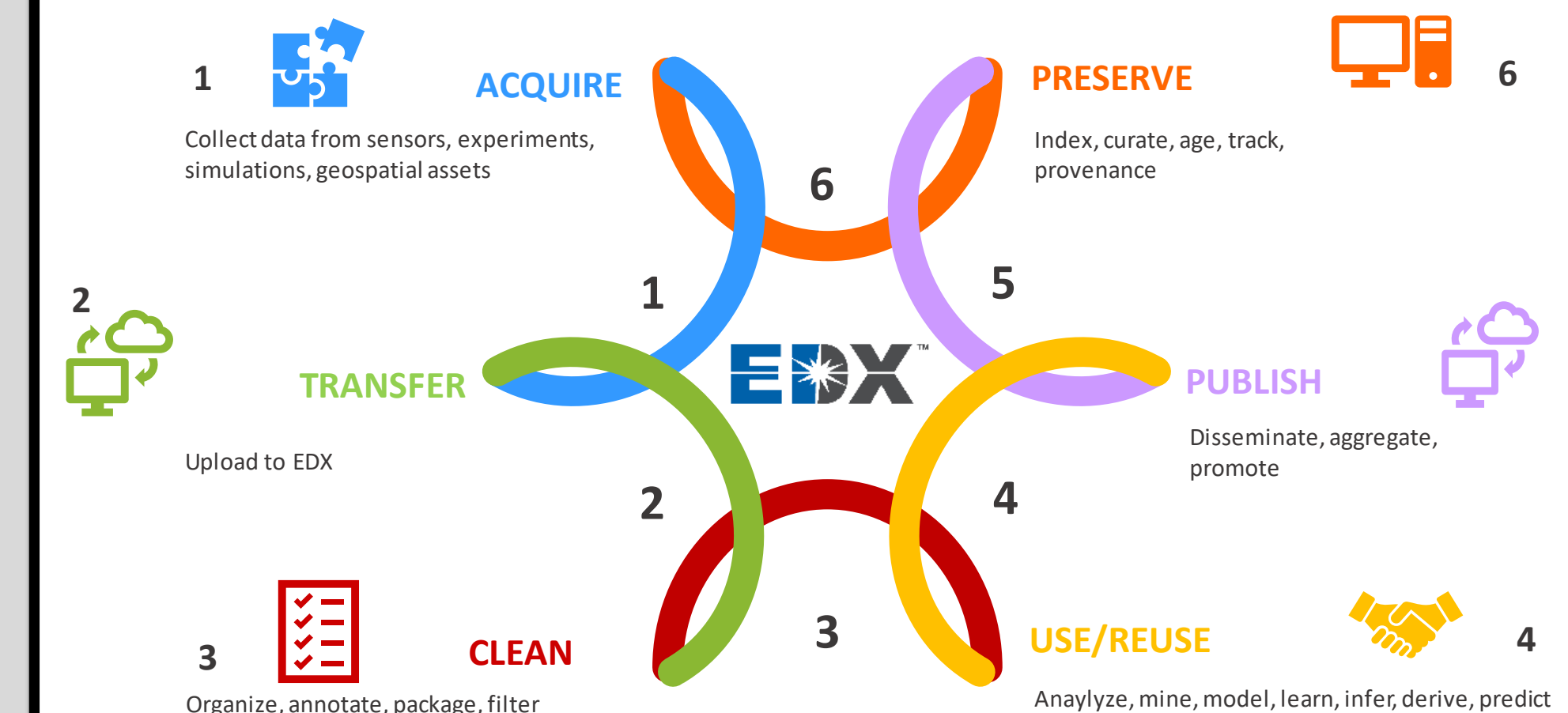
3,100+ registered users  
1000+ private workspaces  
2.2M+ files downloaded  
14.53PBs of data downloaded



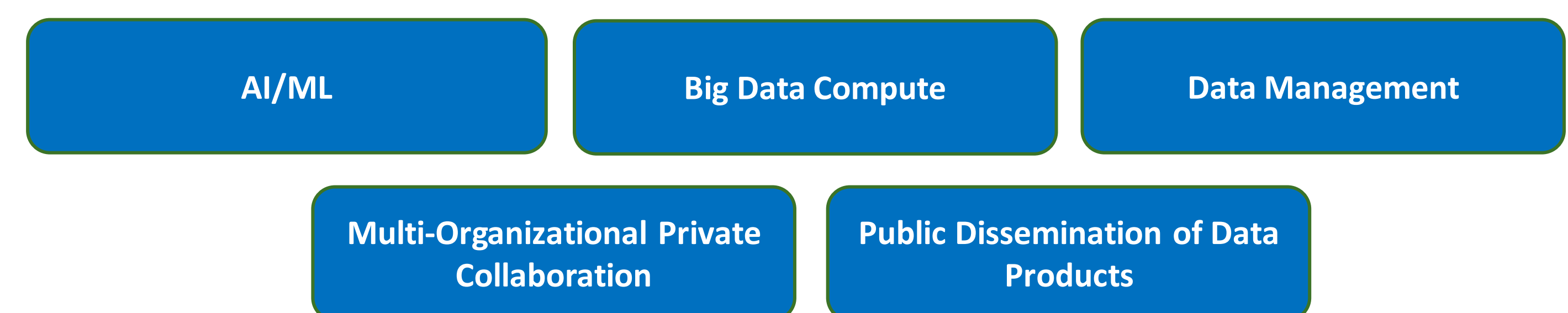
## Abstract

With the data revolution and FAIR data practices has come the recognition that scientific discovery through federally funded research products is limited to issues surrounding data curation and energy data management. In 2011, the U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL) began development and maintenance of the Energy Data eXchange (EDX) to address the needs of data curation throughout the data life cycle while building the functionality needed to support a virtual laboratory. EDX supports the entire life-cycle of data from project inception to completion, facilitating and prudently governing secure access to team resources for multi-entity teams, and ultimately, ensuring preservation of that data and associated data products until the data is ready for publication. EDX utilizes a self-developed, highly customized version of CKAN to address the research needs associated with private sharing, in-house review of data products, and ultimately data publication with an accompanying data citation and data license. EDX utilizes API connectivity with the Office of Scientific and Technical Information (OSTI) to provide DOI numbers which promotes data connectivity with other search repositories such as OSTI.gov, Data.gov, and Google Scholar making published resources more easily discoverable. EDX supports research by coordinating historical and current data and information from a wide variety of sources to facilitate access to research that crosscuts multiple projects/programs, providing external access to technical products and data, and collaborating with a variety of organizations and institutions in a secure environment through EDX workspaces. Fundamentally, the capabilities and functionality of EDX has grown and evolved over its decade of implementation and is underpinned by a robust governance protocol and procedure that addresses key challenges and needs for metadata flexibility, diverse data formats and types, managing data sharing, processing and archiving, compliance with DOE and Federal data curation and management orders, and increasingly incorporates infrastructure for virtual analytics and commercial cloud options. The platform hosts and in some cases, virtualizes thousands of datasets encompassing millions of natural systems and engineering data features and attributes. EDX releases monthly updates that include new functionality and recently added functionality includes new API documentation, EDX Chat (powered by RocketChat), EDX Drive folder upload, and many others. In 2020, EDX was the recipient of the registered trademarks for EDX's name and logo by the USPTO and in 2021 was unanimously approved as a priority DOE Geospatial Data Repository, recognized by FAIRsharing.org as a Trusted Research Data Repository, and received the Secretary of Energy's Achievement Award which is bestowed upon a group or team of DOE employees and contractors who together accomplished significant achievements on DOE's behalf.

## Private Collaboration / Public Dissemination



## Core Competencies of EDX

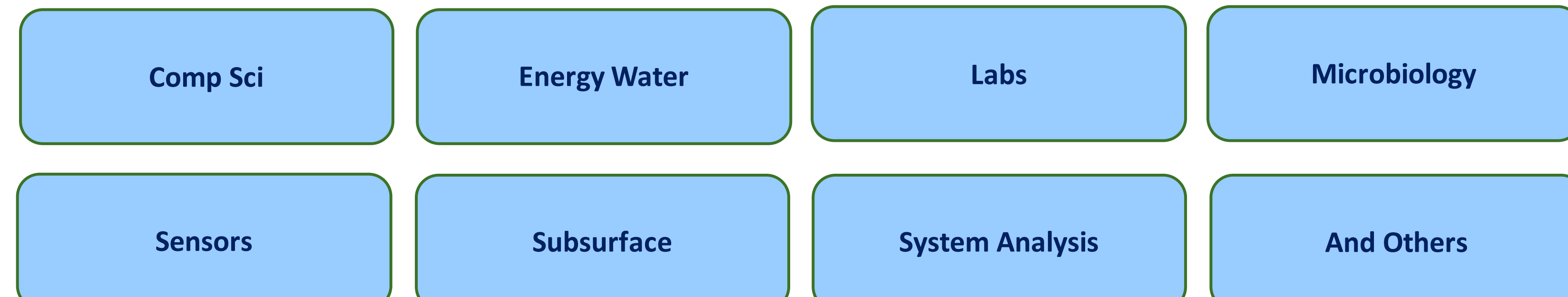


these 5 competencies support

## Core Projects/Programs



## Ancillary Projects/Programs



EDX has fundamental capabilities that can be utilized across many research communities



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Science & Engineering To  
Power Our Future

U.S. DEPARTMENT OF  
ENERGY

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