

Project Alexandria: Enabling Data with Governance-Driven System Management

Victor Walker – Idaho National Laboratory

DOE Data Days
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Suggested placement of
classification or distribution
statements

Peace Through Atomic Strength



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Why Alexandria?

NNSA Research for innovative data management

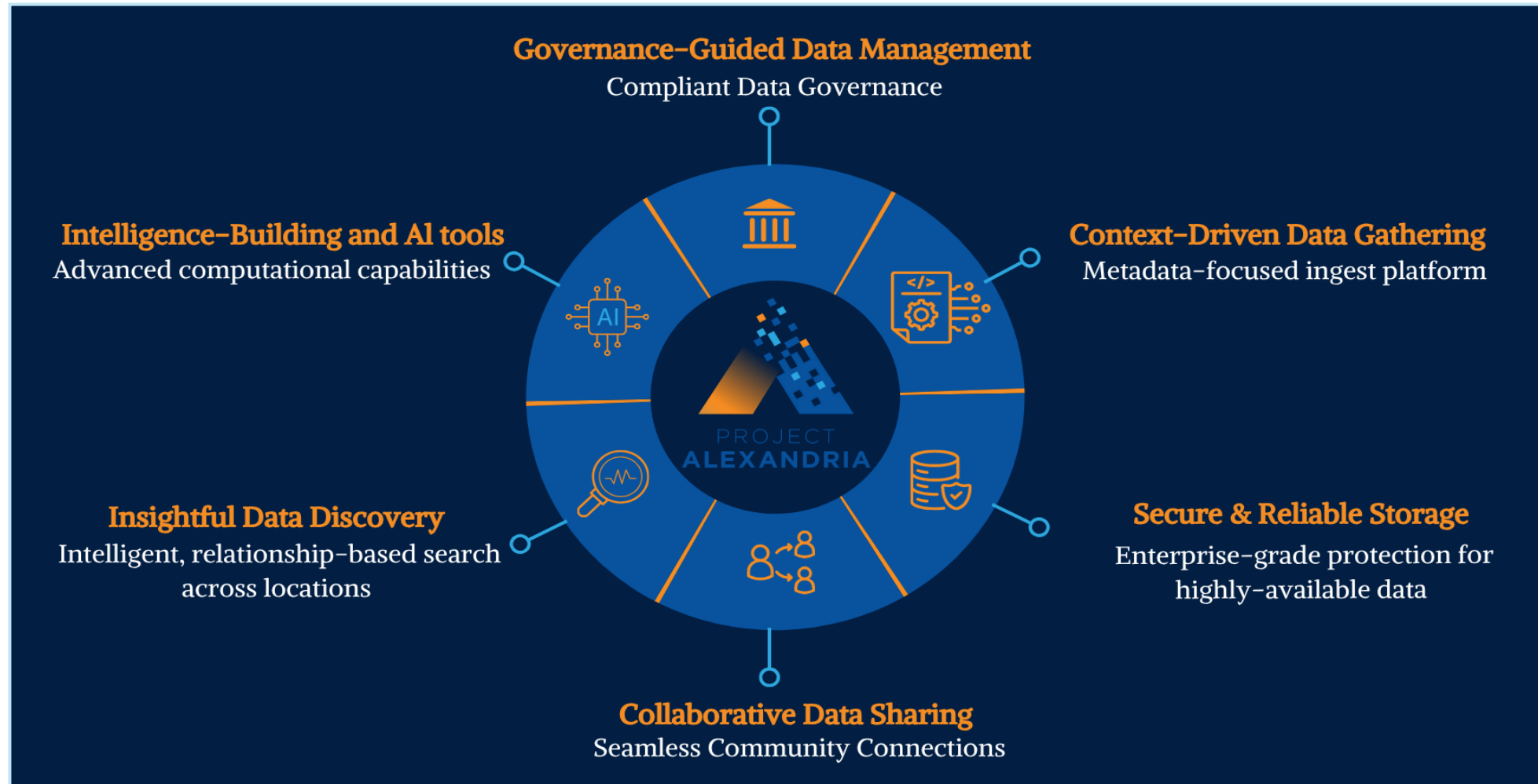
- More Effective Data Management for More Effective Research
 - Enable sharing of massive amounts of data
 - Remove silos of data availability
 - Governance-Driven data management
- AI drives data to the forefront
 - Context becomes critical
 - Enable new insights with data
 - Start with data management plan



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Project Alexandria



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System Principles

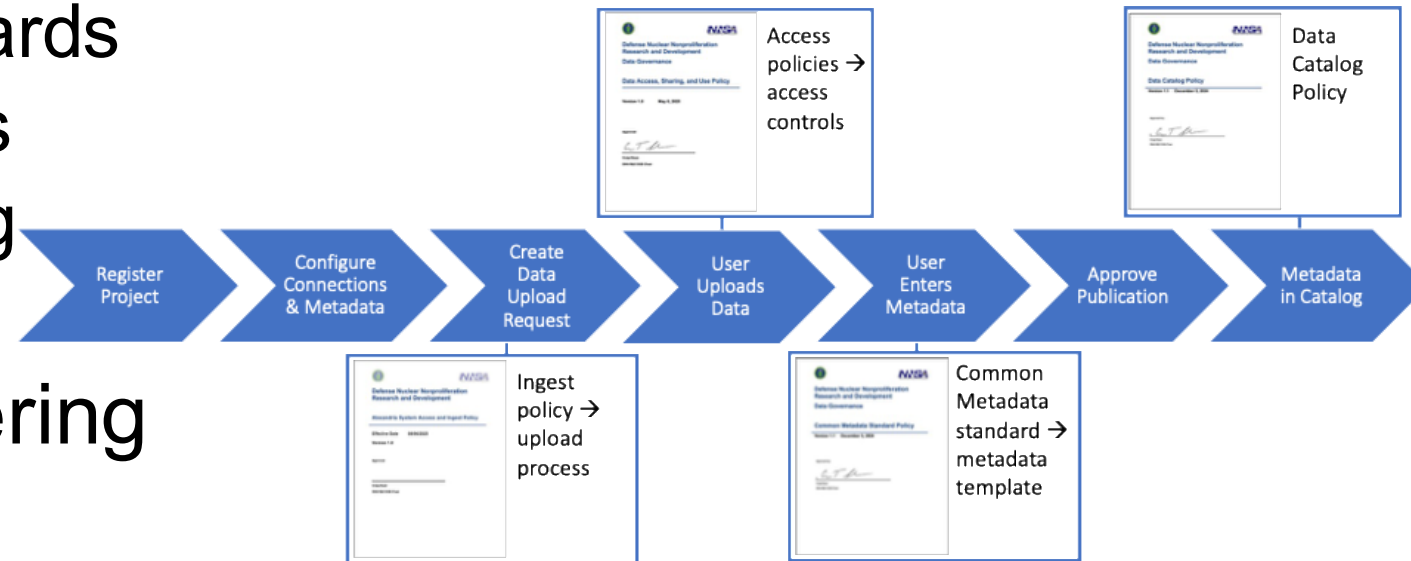
★ System-Enforced Governance

- Access
- Common Metadata Standards
- Review / Approval Process
- Community-Based Sharing

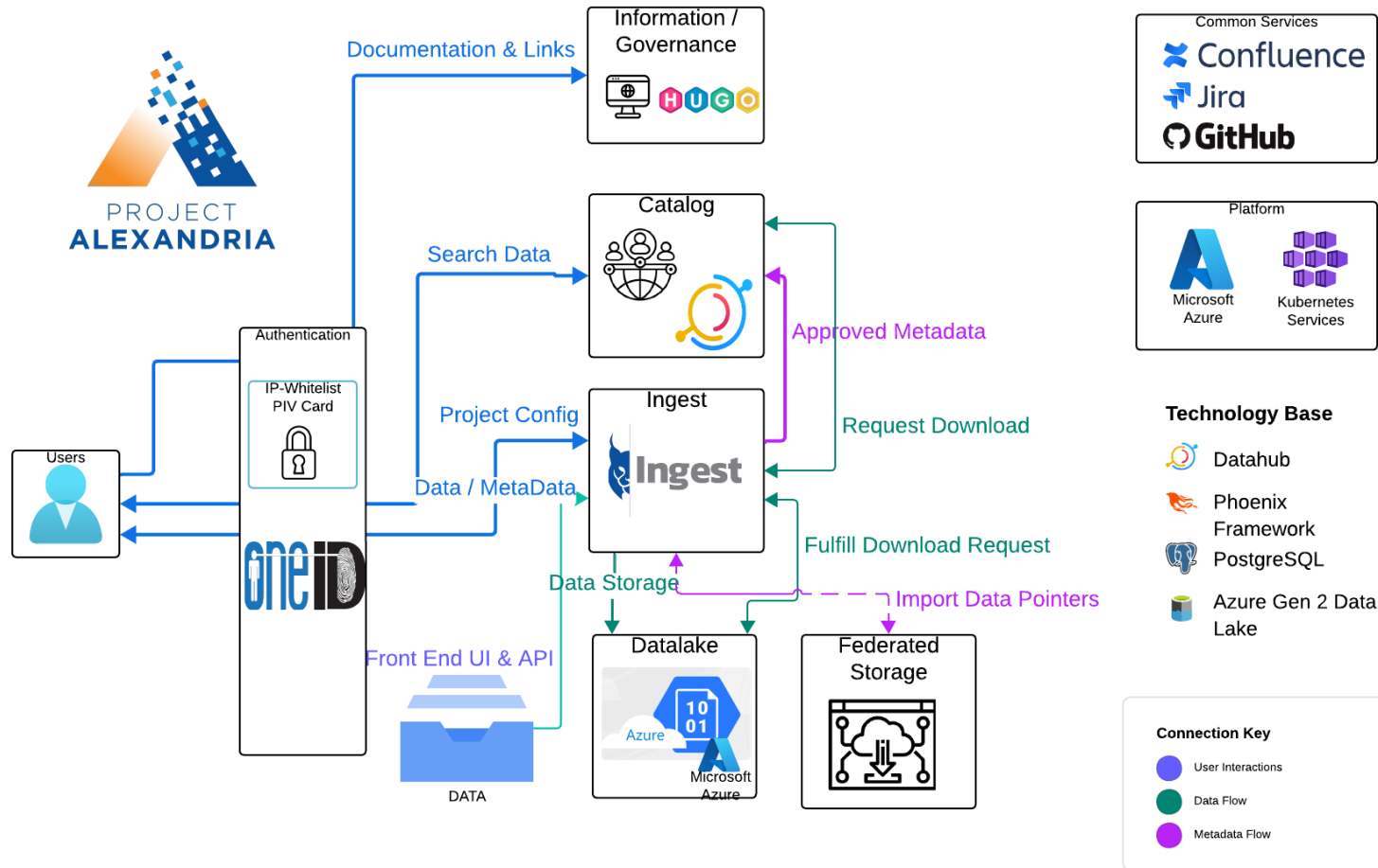
★ Collaborative Data Gathering

★ Simplified Work-Flow

★ Constant System Improvement



System Architecture



Governance And System Information

<https://alexandria.inl.gov/>

- ★ Informational Site for new users.
- ★ Why Alexandria?
- ★ System Training
- ★ Data Governance Documentation

The screenshot displays the Project Alexandria website interface. At the top right, there is a 'Training' link. Below the header is a search bar labeled 'Search this site...'. A left-hand navigation menu is titled 'Data Governance' and includes the following items: 'Definition of Terms', 'Data Governance Structure', 'Data Standards', 'DGB', 'Policies', 'Processes', 'Roles and Responsibilities', 'Roles and Responsibilities - Alexandria', and 'Templates & Guidance'. The main content area is titled 'Data Governance and Data Management' and contains an introductory paragraph about DNN R&D's data governance. Below this are several blue hyperlinks: 'Definition of Terms', 'DNN R&D Data Governance Structure', 'Data Standards', 'DNN R&D Data Governance Board', 'Data Governance Policies', 'Data Management Processes', 'Roles and Responsibilities', 'Alexandria Roles and Responsibilities', and 'Templates and Guidance'.



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Data Ingest: Context-Driven Data Gathering

- ★ Multi-Layered data Ingest Approach
 - Project-level
 - Data Collection-Level
 - File-Level
- ★ Create Custom Metadata forms
 - Targeted Data Gathering
- ★ Context-driven data gathering
 - Project metadata
 - Create data collections (assign templates)
 - Gather Dataset metadata
- ★ Provide Review and Approval Process

<https://ingest.alexandria.inl.gov/>

Welcome to Alexandria Ingest

Use this tool to help you create and share projects and data requirements, set up collections for file uploads, and manage metadata gathering tasks efficiently.

-  Register or Manage a Project ?
-  Create or Edit Data Collections ?
-  Upload Data ?
-  Enter Supporting Metadata ?

Data Ingest: Context-Driven Data Gathering

★ DNN R&D
Common Metadata
Standards



★ Metadata
Gathered on Data
Ingest



★ Review / Approval
Process

The screenshot displays the Alexandria Ingest web application interface. On the left, a sidebar menu includes options like Dashboard, Upload Data, Tasks, and various project management tools. The main content area is divided into two sections. The top section, titled 'COMMON METADATA ELEMENTS VERSION 2.2, December 16, 2024', provides an overview of the spreadsheet and details about version changes. The bottom section, 'Metadata Entry Tasks', shows a table of uploads with columns for File Name, Date, and Size. A file named 'DNN_RD_DataManagementAssessment_Granular.xlsx' is listed with a date of 21-1-2026 and a size of 1.29mb. To the right of this table, there are buttons for 'Approve Upload', 'Reject Metadata', and 'Reject File', along with a 'Pending review' status indicator and file details (File type: .csv, File size: 50092). Below the table, a 'Submitted Metadata' section contains a table of standards.

COMMON METADATA STANDARDS	
Title	EC Sensor Data 2
Description	CSV of data from temperature sensor.
Keyword	Sensor, Input, Temperature, Test.
Version	1
Information Sensitivity	UUR
Information Sensitivity ...	INL
Export Sensitivity	None

Find @ <https://alexandria.inl.gov/governance/standards/>



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Data Catalog: Insightful Data Discovery



View all ▾ 🔍 Search Tables, Dashboards, People, & more... 🗖️ K

Try searching for [Explore all >](#)

Export Controlled DNN R&D SCFN Participant DNN R&D FN Participants

Explore your data

Datasets
14.4k

Data Products
9.5k

- ★ Discover DNN R&D datasets
- ★ Searchable catalog on metadata fields
- ★ Sensitivity-driven visibility

This site is for collaborators. Inclusion of content on this site does not imply permission to share that content outside this site with third parties. Documents may be export controlled and/or contain CUI information. Access to this site is contingent upon you being a US citizen or a Green Card holder and you agree by accessing this site to comply with all relevant export control laws.

Datasets > objs > objs > ted_ai_ontology Details Lineage 0 upstream, 0 downstream

Dataset | Obj

ted_ai_ontology.ttl

Description Documentation Schema Lineage Properties Queries Stats Quality Governance Inci ...

🔍 Search in properties...

Name	Value
Provenance String	Derived Product
Description String	An ontology of attributes, traits, and metrics for trustworthy, effective, and deployable artificial intelligence systems for national security applications.
Instrument Type (keyword) String	
Related Project String	

Repo: objs
Filename: ted_ai_ontology.ttl
Size:
[Download Dataset](#)

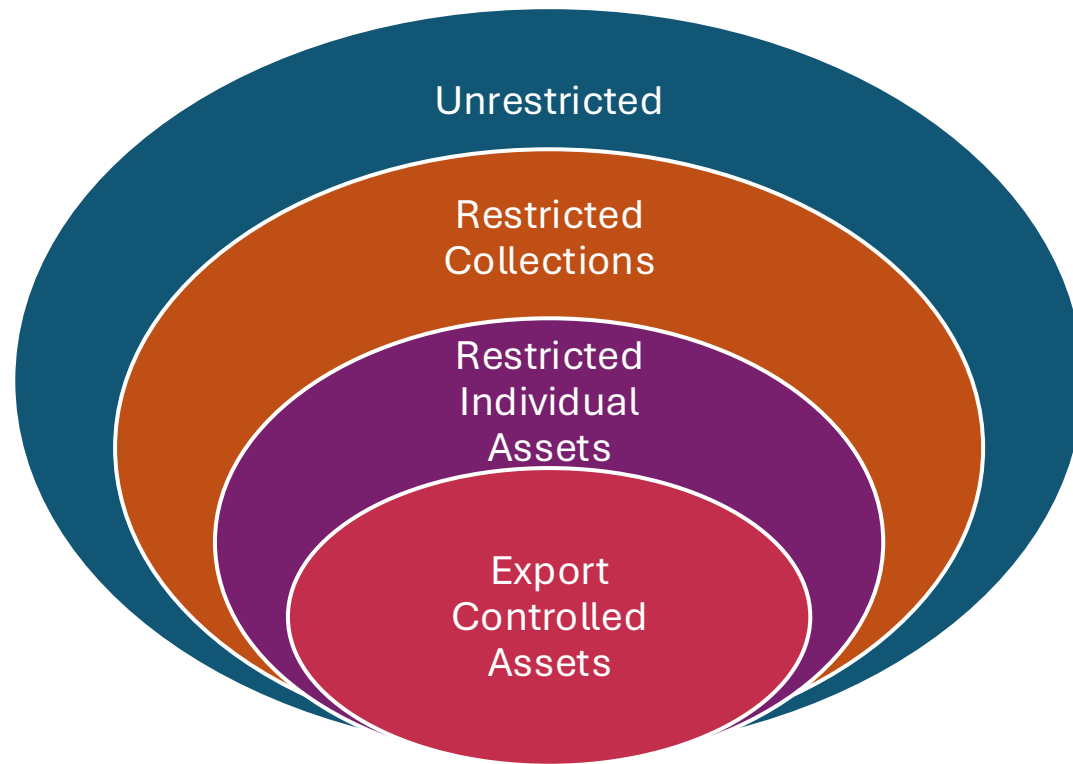
Tags
sensitivity:UUR x
exportControl:None x + Add Tags

Glossary Terms
No terms added yet. Apply glossary terms to entities to classify their data.
[+ Add Terms](#)

<https://catalog.alexandria.inl.gov/>

Data Security: Collaborative Data Sharing




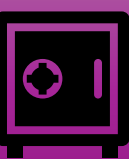
- ★ Defined access control groups enable collaborative data sharing
- ★ Reduce risk by limiting discovery access to all data assets and/or metadata



DNN R&D Community Group
DNN R&D U.S. Participant
External U.S. Participants
DNN R&D Foreign National Participants
External Foreign National Participants
DNN R&D Sensitive Country FN Participant
External Sensitive Country FN Participant
All others external to the DNN R&D Community

- ★ Community Request Form
- ★ Approvals by Organization Contacts

Data Ingest Capability

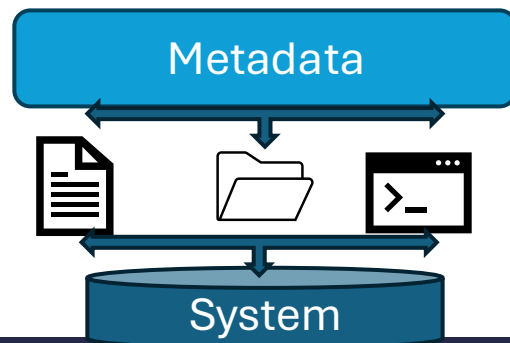
Data Use Cases	Examples	Status
 Simple Data	Upload and annotate files with metadata / Search, discover, extract data / Team & DNN R&D collaboration	Supported
 Big Data	Large Files > 40 GB / Many files (100-1000s) / Complex file types (databases, models, etc.)	Integrating Now
 Dynamic Data	Live data interaction (API) / Federated storage / Integrated compute (mod & sim, AI, code repositories)	Planned FY26+ In Progress
 Classified Data	Vertical integration / Model training with classified data	Planned FY27+ In Progress



Near-Term Focus

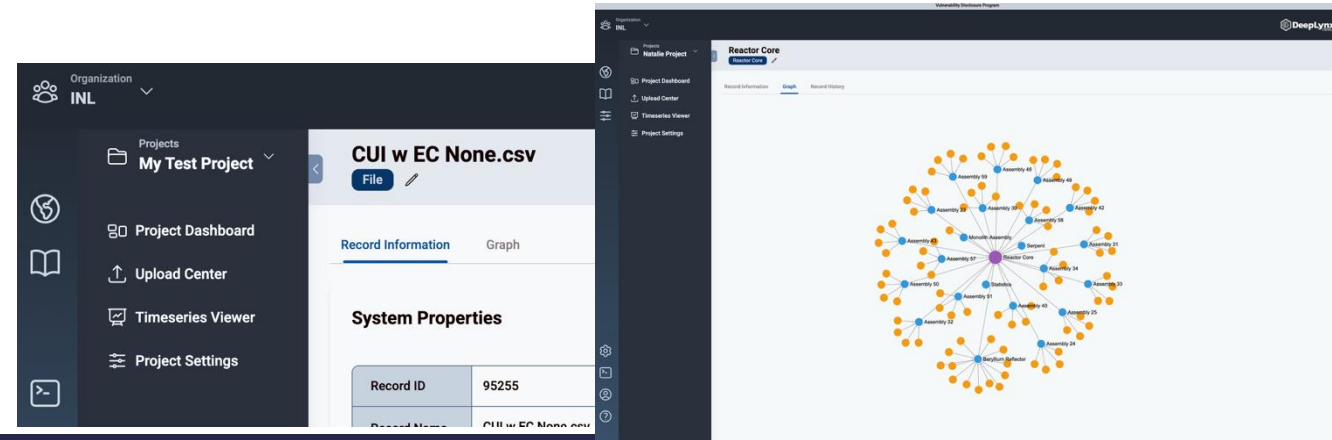
★ Simplify / Ease Burden of Ingestion and Metadata

- Targeted Metadata Templates in multiple formats
- Personal Defaults for each Template to ease entry
- Apply values to many files
- SDK/API uploads for many files at once



★ Migrate to Improved Data Ecosystem

- Migrate to DeepLynx Ecosystem
- Improved Catalog / Security / Connections
- Integrated Tools for Intelligent metadata, connections, compute capability

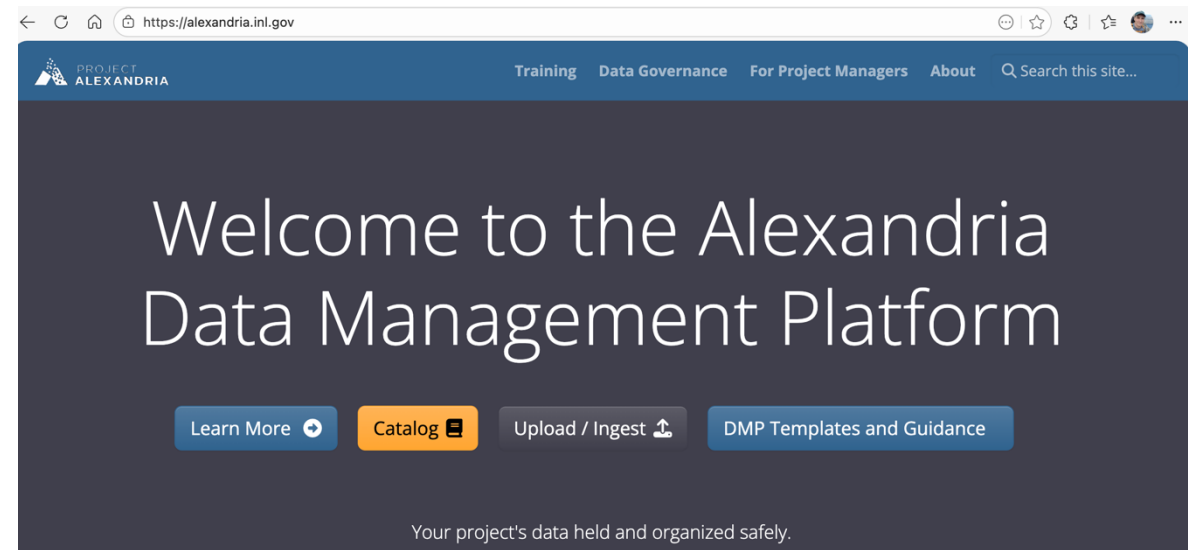


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Next Steps

- ★ Integrate Significantly more Data
- ★ Utilize Federated Storage
- ★ Improved Workflows
- ★ Ties to Genesis
- ★ Implement AI tools / Compute Capability
- ★ Connections to JUCE
- ★ Extend to Classified Environment



Email questions to: alexandria@inl.gov
<https://alexandria.inl.gov/>