



eagle-i
consortium

Making Invisible Resources Visible

DARTMOUTH COLLEGE, HARVARD UNIVERSITY, JACKSON STATE UNIVERSITY, MONTANA STATE UNIVERSITY, MOREHOUSE SCHOOL OF MEDICINE, OREGON HEALTH & SCIENCE UNIVERSITY, UNIVERSITY OF ALASKA FAIRBANKS, UNIVERSITY OF HAWAII AT MANOA, UNIVERSITY OF PUERTO RICO MEDICAL SCIENCES CAMPUS

THE eagle-i CONSORTIUM

As the national biomedical research agenda moves towards a multi-PI collaborative team-science paradigm, NIH understands the urgent need to develop a robust directory of scientists who can easily find each other and their shareable resources. The eagle-i Consortium, comprised of nine ethnically diverse institutions (in five IDeA-eligible states and Puerto Rico) which span across America, is building a federated network of often-invisible research resources.

When fully developed, the eagle-i comprehensive search engine will accelerate the pace of science and research discoveries by enabling researchers to identify and locate research resources that are currently invisible. By enabling the sharing of resources, eagle-i will help reduce development of redundant resources and free up more funds for research.



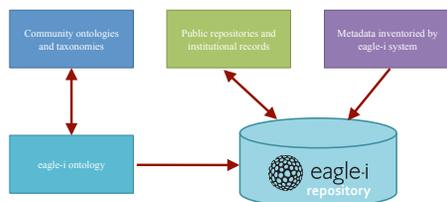
DIVERSE RESOURCE MAPPING

What kinds of resources is the eagle-i system inventorying?

- laboratories • services • instruments • reagents • organisms • persons • protocols
- human studies (metadata) • tissue/biological sample repositories • training opportunities

Diverse resources require diverse ontologies and data sources. For each resource type, eagle-i will assess whether value can be added by leveraging:

- existing vocabularies and ontologies for biomedical resources
- existing public resource repositories



BUILDING THE INFORMATION MODEL

eagle-i is building an *ontology*, a specialized vocabulary, in which both the terms and the relationships between them are logically defined.

This approach will:

- enhance search capabilities
- link related resource types
- allow eagle-i resources to be interoperable with external sources

Vetting the ontology using real queries:

The query: "Find available antibodies used to study cardiomyopathy"

The model:

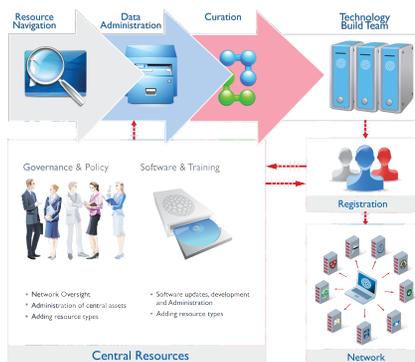


COORDINATING ONTOLOGY CONSTRUCTION WITHIN THE COMMUNITY

<http://groups.google.com/group/resource-representation-coordination>

- goal is to promote interoperability and domain-wide standards for resource types used throughout biomedical research
- current members: OBI, BRO, Biositemaps, NIF, VIVO, Science Commons, CTSAs, University of Washington, eagle-i
- all are welcome to join!

GETTING THE INFORMATION: COLLECTION, INTEGRATION & DISSEMINATION



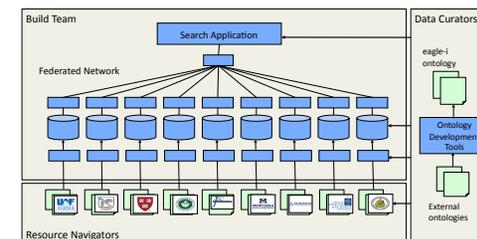
"This project is about linking scientists nationally to resources, technologies, and opportunities, and about making invisible resources visible to the researchers who need them. Historically little has been done to systematically inventory and advertise research resources beyond the labs or institutions where they were developed, and so investigators are often left to expend significant time and effort seeking out unique resources, sometimes even unwittingly re-creating resources that already exist elsewhere."

Lee Nadler, eagle-i Consortium PI, Harvard Medical School

ARCHITECTURE DEVELOPMENT

Four main architecture components:

1. *tools* for data collection, management and curation
2. a local institutional resource *repository*
3. a *federated network*
4. a central *search application*



WORKFLOW

- each institution populates their repository using ontology-based tools that support the semi-automated annotation of resources
- a federated network is used to query all repositories and retrieve aggregated results
- a semantic search application supports auto-suggestions, taxonomy browsing and concept-based searches

STATUS OF SYSTEM

A proof-of-concept integration of all major eagle-i system components has been deployed successfully and populated with core facility data collected at the nine participating institutions.

Search application demonstrating auto-suggest feature and advanced search technique hierarchy



CURRENT FOCUS

- migrate to production platforms and execution environment
- improve system usability, performance, and scalability
- support additional resource types
- expand the use of the eagle-i ontology to drive data entry and search
- explore automated methods for annotation, mapping and validation