

eagle-i
Consortium

eagle-i: an ontology-driven framework for biomedical resource curation and discovery

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THE eagle-i CONSORTIUM

The eagle-i Consortium comprises nine geographically and ethnically diverse U.S. universities working to make biomedical research resources more visible via a federated network of institutional repositories. The Consortium is developing a proof of concept of this network using an ontology-driven approach for resource annotation and discovery.



<http://www.eagle-i.org/home>

GOALS

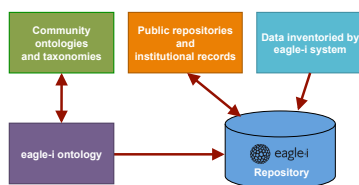
1. Collect information about "invisible" research resources
2. Add value to resource data by providing meaningful semantic relationships between resources
3. Make resource data available through a search application able to answer complex queries

DIVERSE RESOURCE INTEGRATION

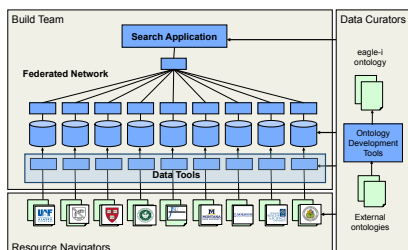
The project is focusing on resources that are commonly generated but rarely shared, including

reagents, protocols, instruments, expertise, organisms, software, training opportunities, human studies, and biological specimens.

For each resource type, we assess the value of adopting existing biomedical vocabularies and ontologies and drawing from public repositories to enhance resource discovery in eagle-i. This will promote interoperability with existing data models and place eagle-i in context with existing data repositories.



ARCHITECTURE

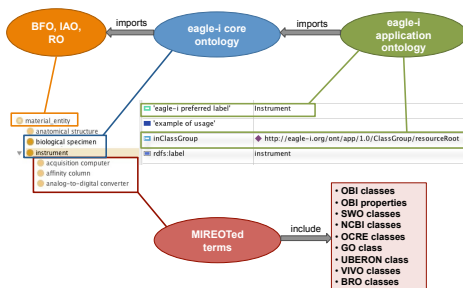


ONTOLOGY DEVELOPMENT

The eagle-i ontology is being developed to enable representation of biomedical research resources, leading to more effective searches and better linkage between data types.

Approach:

- Engaging in active discussions within the bio-ontology community
- Reusing existing and widely accepted ontologies
- Applying best design and development practices



The eagle-i *core ontology* directly imports the upper-level Basic Formal Ontology (BFO) and Information Artifact Ontology (IAO).

The eagle-i *application ontology* implements additional classes and annotation properties required to drive the UI and the logic of both the data collection and search interfaces.

External terms have been imported following MIREOT* guidelines.

*M. Courtot, F. Gibson, A. L. Lister, J. Malone, D. Schober, R. R. Brinkman and A. Ruttenberg. MIREOT: The Minimum Information to Reference an External Ontology Term. In ICGSO: International Conference on Biomedical Ontology, 2009. <http://bit.ly/mireot>

ONTOLOGY DRIVEN APPLICATIONS

Components of the data entry and search interfaces are generated directly from the eagle-i ontology, which allows rapid change in response to user needs and ontology evolution. Thus new resource types may be added in the future without needing to re-code the applications.

DATA COLLECTION TOOL

• Each participant institution populates its repository locally using a web interface.

• The tool will support the import, and semi-automated annotation with eagle-i ontology classes, of resource information from various external digital systems.

• Every resource is reviewed by an eagle-i Data Curator prior to publication.

eagle-i SEARCH

• The eagle-i ontology enables robust interface usability through query suggestions, ontology browsing, concept-based search, and automatic query expansion.

• The ontology defines which primary resource types users may browse during data entry and search, and their associated search filters.