

About Macaulay Library

What We Do

The Library is the world's largest collection of recordings for basic research, education, conservation and habitat assessment, the media, and commercial projects. Although the sound collection is strongest in New World species, we now have greatly expanded holdings from Africa and Madagascar, Europe, the former Soviet Union, and South East Asia. The Library archives and preserves as complete a sampling of the behaviors of each animal species as possible using digital video and audio recordings. We serve many different types of clients in research, education and the commercial world.

- More than 160,000 recordings of 67 percent of the world's birds, and rapidly increasing holdings of insects, fish, frogs and mammals
- The video collection includes more than 3,000 species, including assets filmed in high definition
- Even in it's earliest incarnations, (circa 1915) Cornell's Lab of Ornithology was committed to using and developing the latest technology for the study of bird behavior

What We Have Accomplished

- Interfaces linking the Macaulay Library to the NSDL
- Taxonomic translator allows searching by common names, etc.
- Data model complete, database conversion in process, compliant with Dublin and Darwin core
- Query tools that allow users to search the annotated and authenticated database, both simple and advanced search

Where We Will Be Next Year

- Online annotation tools that allow remote experts to log into our metadata each event and object within a recording
- Structure and tool to add behaviors to taxonomic groups by common name
- Content packages on important topics available to educators and others

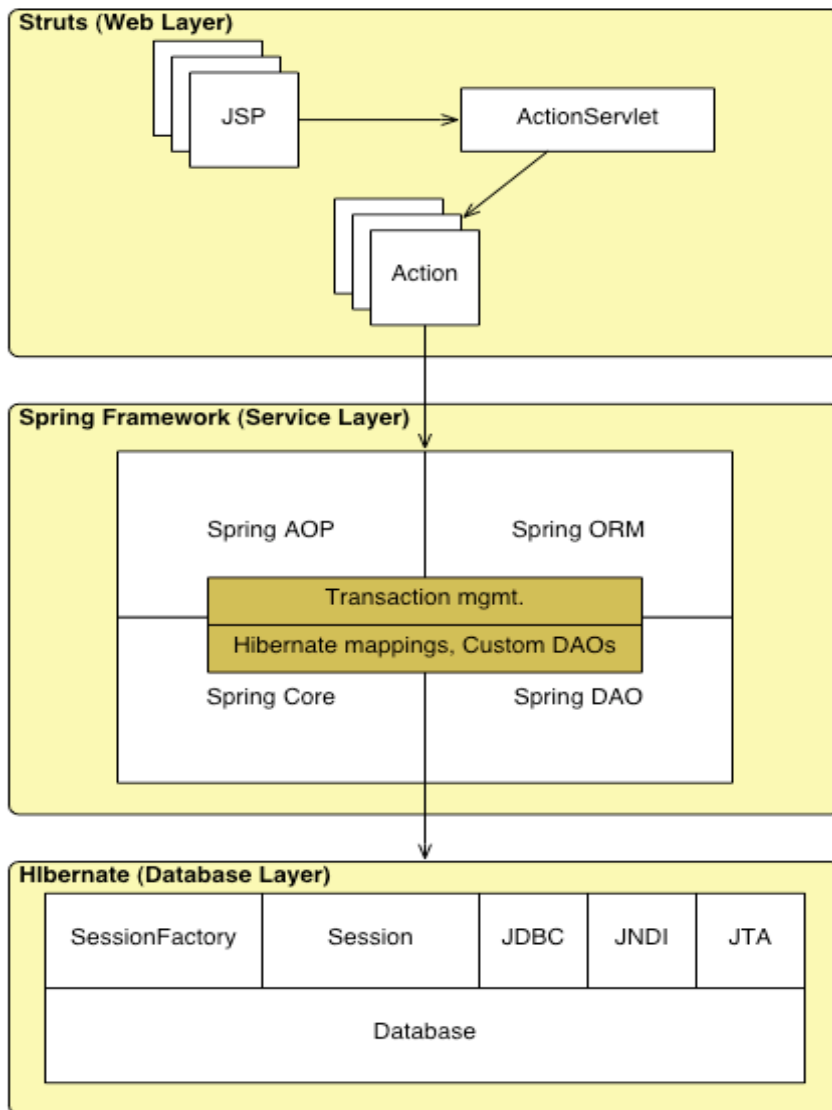
An Invitation to Participate

We are looking for teachers (particularly at the middle school level, but others as well) to help us identify the best strategies for making assets of the collection available to students. We need information on everything from delivery mechanisms to specific groupings of content. If you are interested in participating, contact Mary Guthrie at msg21@cornell.edu



Application Architecture

The Macaulay Library Application Architecture is based on several well-known frameworks. Each framework in the system is loosely coupled with the others, allowing flexibility while still achieving high performance. For our presentation layer we use Struts; for our business layer we use Spring, and for our persistence layer we use Hibernate.



The Struts framework employs the MVC design pattern, utilizing JSPs, Servlets and xml, to provide a flexible environment for building dynamic Web applications. Java Servlets handle the requests made by Web browsers. Java Server Pages create the dynamic Web pages. This is all held together and configured by xml.

The Spring framework is a micro-container for writing business services. Spring provides most all of the features of EJB without the complexity. Business objects in Spring are plain-old Java objects (POJOs). These POJOs are "wired together" in Spring via xml configuration files.

The Hibernate framework allows object-to-relational persistence and query service for Java. Hibernate has a medium learning curve for Java developers who are already familiar with SQL and the JDBC API. Hibernate persistent objects are based on POJOs and Java collections.

Struts: struts.apache.org - Spring: springframework.org - Hibernate: hibernate.org

Usability and Evaluation

User groups

- University faculty
- High school/Middle school teachers
- High school students
- Middle school students
- Macaulay Library staff

Potential indicators of impact

(to be determined by evaluation)

- Users demonstrate learning
- Users indicate collection is an effective resource
- Collection solves problem for user
- Collection increases user awareness of specific animal behavior and ecology topics

Usability steps during requirements gathering

- Begin with initial set of user-developed requirements
- Create personas document
- Conduct formal interviews with users of the old application, gather their requests for new features, complaints about old system, learn from past mistakes
- Develop full set of programming use cases
- Create full set of interface use cases
- Conduct competitive analysis of websites providing similar features

Usability steps during development

- Conduct a series of informal usability tests using paper mockups
- Labeling focus group – go through application with administrators and agree to label names – confirm the usefulness of these labels during testing
- Keep lines of communication open between users and developers by posting screenshots, conducting regular meetings

Usability steps during application testing

- Beta test application – testers attempt to break application, find errors, bugs & inconsistencies.
- Identify larger pool of representatives from key user groups
- Natural language search testing – users attempt to locate resources using natural language. Identify acceptable success rate.
- Task-based usability tests – users attempt to perform timed key tasks, (Example: “Find three facts you could use in the classroom.” Observers view user interaction with application and recommend changes)

Goals of evaluation

- Learning outcomes
- Determine/improve usability
- Meet grant requirements

Evaluation methods

- Site visit to classrooms, present resource and conduct observations of website in use
- Survey to identify site effectiveness across large numbers of users
- Pre- Post- testing to identify learning outcomes
- Usability testing