

THE NATIONAL SCIENCE DIGITAL LIBRARY

# Core Integration Update



**NSDL Annual Meeting 2004**  
**November 14-17**  
**Chicago, Illinois**



# NSDL in the World

Kate Wittenberg

Columbia University

# Digital Library Building

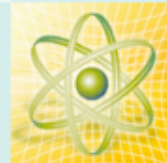
William Arms

Cornell University

# Enhancing the NSDL Community

Kaye Howe

University Corporation for Atmospheric Research



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## NSDL in the World



Working within a Changing  
Environment for Scientific  
Communication



# Defining Value: NSDL in a Changing Information Environment

- Encompasses benefits of open access science content by adding visibility, context, and tools.
- Works with teachers and publishers to bring in professionally developed resources for science education
- Provides content and tools that can supplement science textbooks

# From Research to Production: Partnerships with Publishers

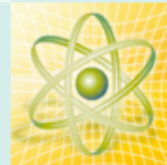
- NSDL has moved into an operational production phase—provide stable infrastructure, content, and tools
- Requirements include technical stability, professional standards for content presentation, design, and production
- Organizational structure and leadership of CI and the NSDL projects must enable adherence to these standards—Partnerships with publishers can play an important role

# Science Publishers in NSDL Currently Include:

- American Mathematical Society
- Association of Computing Machinery (ACM)
- BioOne
- National Academy Press
- Nature Publishing group
- Scientific American

# From Individual Projects to Collaborative Enterprise: What We Have Learned

- Collaboration must take precedence in planning for CI and NSDL projects
- Information sharing systems should avoid duplication of effort
- Content providers, tool developers, and infrastructure engineers must complement, rather than reproduce each other's work
- Existing organizational models in libraries, publishers, and IT organizations can help shape NSDL efforts in this area



**NSDL**

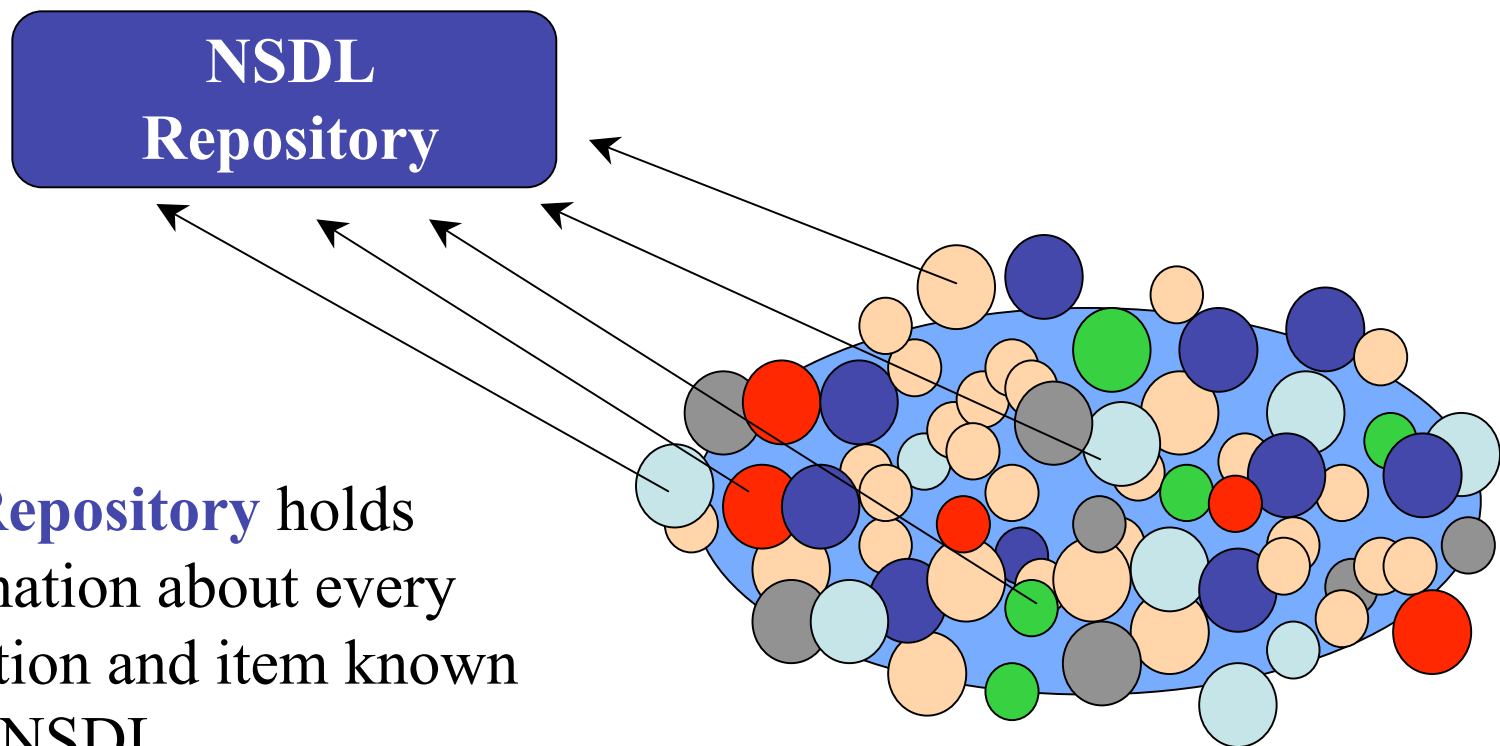
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# Digital Library Building





# Collection Building



**The Repository** holds information about every collection and item known to the NSDL.

# The Collections

## Growing the collections

The size of the collections has already doubled in 2004. They are expected to more than double again in 2005.

### *Core Integration activities:*

- Regular harvesting and updates automatically
- Recommender system for selection of web sites by trained experts and automatic incorporation in collections.
- Expert guided crawl to create metadata for the individual items within a web site [*iVia*]

# The Collections

## Quality and Usefulness of the Collections

### *Near term:*

- Augmented metadata (*e.g., Eisenhower National Clearinghouse*)
- Metadata crosswalks and registry (*e.g., ONIX*)
- Automated generation of subject headings [*iVia*]

### *Future:*

- Links to K-12 state standards

# End-User Services

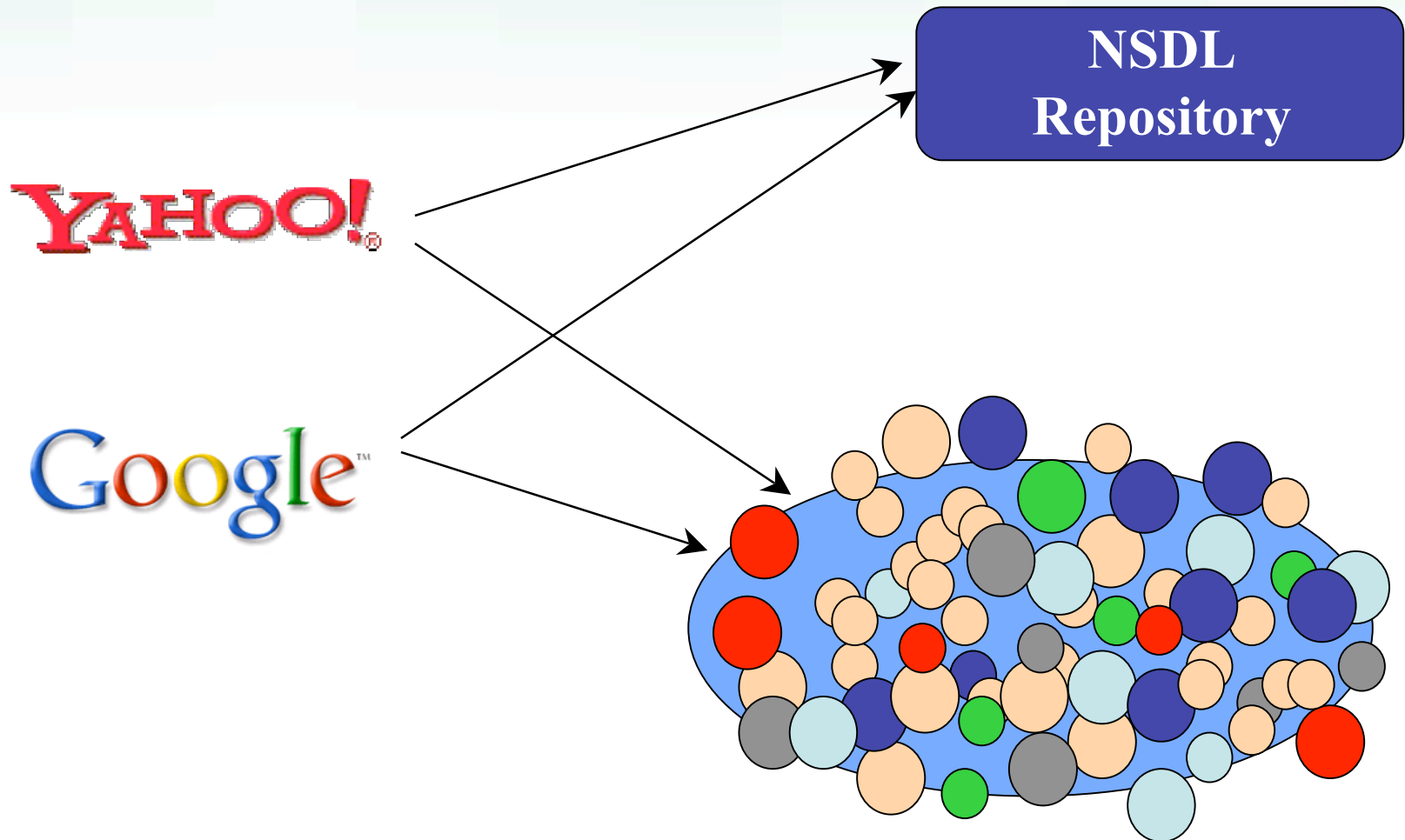
## Reference

- AskNSDL [*Syracuse University*]

## Search engine

- Incremental improvements to search engine and interface (*e.g., rapid indexing of new material, highlighting search terms in results*) [*U.Mass., Amherst*]
- Filtering and ranking by audience-specific criteria (*e.g., educational context*)

# NSDL and the Web



# Preservation, Persistence and Reuse

## Persistence and Reuse

An active area of planning: [reusablelearning.org](http://reusablelearning.org), SCORM-NSDL, Howard Hughes Medical Institute

## Preservation

- Monthly crawls of all accessible materials in the collections and nearby [*San Diego Supercomputing Center*]
- Archived version accessible from search service (now) and by an NSDL Wayback Machine (future)

# Community Building

## The [nsdl.org](http://nsdl.org) portal

- *Of Interest*: educational resources
- *Community*: a community portal for users

## The [comm.nsdl.org](http://comm.nsdl.org) portal

- A development portal for library builders

# Underlying Technology

## The NSDL repository

Fedora repository replacing the relational data base:

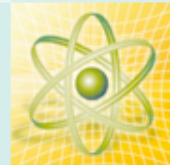
- More flexible data model (*e.g., relationships*)
- Support for content and metadata
- Web services interface for direct access to content

## Shibboleth authentication

- Single log-in to all NSDL services

## Systems and services integration





**NSDL**

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# Enhancing the NSDL Community



# Pathways

## The Prototype:

*Middle School Science, Technology, and Mathematics*

Eisenhower National Clearinghouse (Len Simutis – PI)

## The First Group:

*AMSER: Applied Mathematics and Science Education Repository*

Internet Scout (Rachael Bower – PI)

*CSERD: Computational Science Education Reference Desk*

Shodor Foundation (Bob Panoff – PI)

*Math Gateway*

Mathematics Association of America (Lang Moore – PI)

*Teachers' Domain: Multimedia Resources for the Classroom and Professional Development*

WGBH Educational Foundation (Ted Sicker – PI)

# Outreach and Communications

## Outreach

- Full presence at 20+ major meetings
  - American Library Association
  - American Association for the Advancement of Science
  - American Association of Museums
  - National Science Teachers Association
  - Excellence in Science, Math, and Technology Education Week
- Some presence at an additional 12+ meetings
- Full suite of promotional materials for meeting support
- Initial Capitol Hill briefing
- Initial contact with House STEM caucus
- Redesigned nsdl.org
- Coming merger of nsdl.org and comm.nsd.org
- AskNSDL expert recruitment and use

# Outreach and Communications

## Communications

- Whiteboard Report - now twice monthly
- LearnNSDL - quarterly magazine prototype
- Second Annual Report
- First national press release
- Fourth Annual Meeting

## Workshops

- Vocabulary - Diane Hillmann
- Reusability and Interoperability - Robby Robson
- Scientific Markup Languages - Laura Bartolo
- Participant Interaction in Digital Libraries - Steve Weimar
- Webmetrics - Casey Jones

# Evaluation: The New York Pilot Project

## Purpose

To demonstrate the value of NSDL in an educational setting.

## Goals

- To develop a scalable, repeatable process that engages teachers in developing a community of practice around science and math instruction based on NSDL resources and services
- To demonstrate the effectiveness of this process and related educational resources in producing changes in the practices, attitudes, and knowledge of participating teachers

# Evaluation: The New York Pilot Project

## Two planning meetings have included:

- K-12 faculty from the BOCES\* surrounding Glens Falls,
- New York
- Dean of Education and faculty from SUNY - Cortland
- DLESE staff
- CI staff

\* BOCES - Board of Cooperative Educational Services. A public organization created by the New York Legislature to provide shared educational programs and services to school districts.