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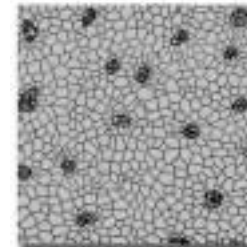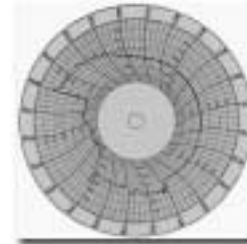in science, technology, engineering and mathematics education

NSDL

NSDL

An overview of the

National Science Digital Library

"Resources for In-Depth Learning"

Dave Fulker

University Corp for Atmospheric Research

Presentation Topics

What is a digital library?

Why invest public funds in NSDL?

Who will build NSDL?

Why is UCAR involved?

How will NSDL be constructed?

What progress has been achieved?

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What is a digital library?

A managed set of resources, primarily from the Web

  ➢ **Scoped to meet a specified need**

Systems for cataloging/indexing/organizing these resources to facilitate discovery & use

  ➢ **Within scope, more powerful than a generic search engine**

Services that add value (for targeted audiences)

  ➢ **E.g.: help desks, means for review/annotation/tailoring...**

An intellectual commons, where human interaction fosters knowledge creation

  ➢ **Communities that share common practices & needs**

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Why invest public funds in NSDL?

Research shows the potential of technology to improve science learning, *but ...* progress is slow—precollege surveys show the U.S. still trailing other nations...

- ➢ **Despite its lead in providing access to computers/networks**
- ➢ **Despite prior NSF investments in high-quality materials**

NSDL offers hope for changing teachers'

- ➢ **Knowledge of learning materials & scientific subjects**
- ➢ **Applications of technology to enhance learning**
- ➢ **Understandings about how students learn**

One major investment can fill needs at many levels

- ➢ **Reaching every classroom/school having Internet access**
- ➢ **Addressing a** <u>prominent</u> **item on the National agenda**

Who will build NSDL?

NSF has 4 competitive funding tracks <u>(totaling ~$25M/yr)</u>

- ➢ **Collections**
- ➢ **Services**
- ➢ **Research**
- ➢ **Core Integration (now sole-source)**

Library construction is a distributed process

- ➢ **Collections will not be held centrally**
- ➢ **Services may be offered anywhere on the Internet**

Responsibility for a coherent outcome—incorporating <u>many</u> resources that are not NSF funded—falls under the "Core Integration" award...

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Introduction to the players -

The NSDL Core Integration effort is

A collaborative project

- **University Corporation for Atmospheric Research** - David Fulker
- **Cornell University** - William Arms
- **Columbia University** - Kate Wittenberg

With additional partners

- **Eastern Michigan U** - Ellen Hoffmann
- **Syracuse University** - R David Lankes
- **U Colorado-Boulder** - Tamara Sumner
- **U Massachusetts-Amherst** - James Allan
- **U California-Santa Barbara** - Terence Smith
- **U California-San Diego** - Reagan Moore

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Why is UCAR involved?

The UCAR and NSDL missions are consistent

Progress on DLESE positions UCAR to help lead NSDL

An NSDL role positions UCAR to better lead DLESE

Digital-library methods & UCAR data-management interests are converging

> **Common to both is the use of <u>metadata constructs</u>**

> **Good DLs will include map rooms & data rooms with GIS...**

- NSDL-funded THREDDS project, awarded to Domenico in Unidata
- Alexandria Digital Library at UC-Santa Barbara

I stumbled into the role of team leader

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How will NSDL be constructed?

A Spectrum of Interoperability

➢ **Unite ALL collections into a single coherent library**

➢ **Create an open framework for new collections and services**

➢ **Embrace highly varied and rich collections**

➢ **Support both <u>open access & restricted access</u> to materials**
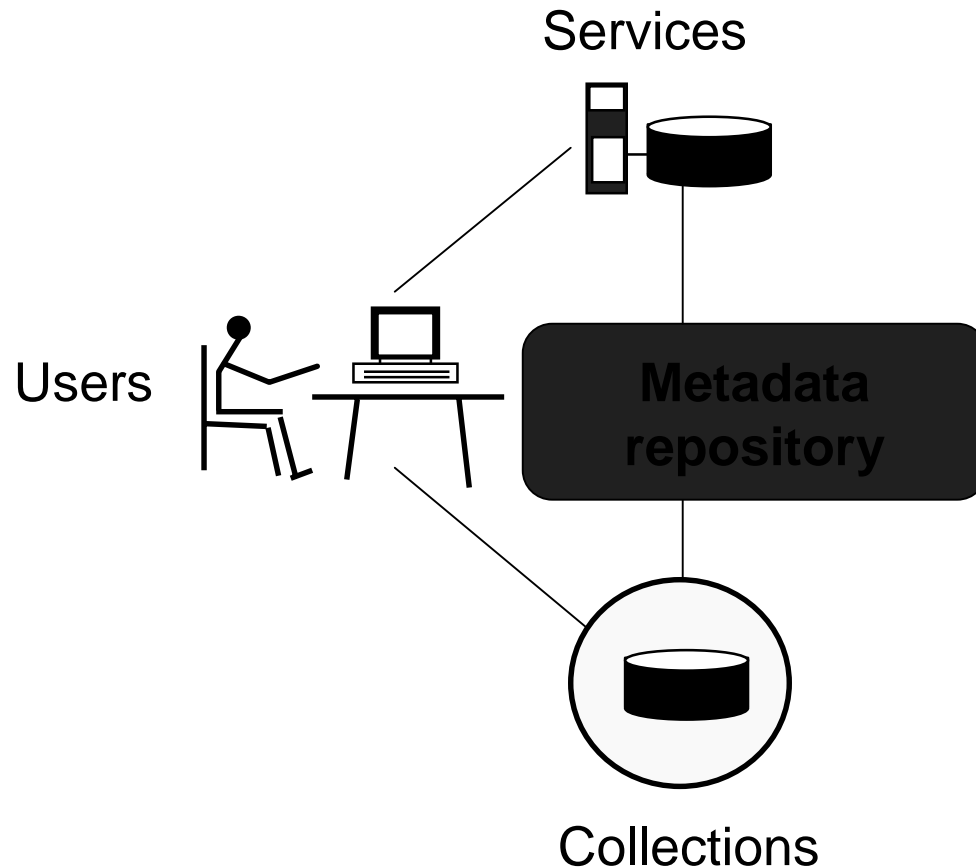
One Library, Many Portals

➢ **Run the main NSDL portal**

➢ **Support different portals for different groups of users**

➢ **Provide selected basic services (e.g., searching, user profiles)**

Software Engineering

➢ **Technical tools for NSDL developers and contributors**

The Metadata Repository

Services

Users

Metadata repository

Collections

The <u>metadata repository</u> is the primary basis for service provision.

It provides information about every collection & item in NSDL, including certain relationships among them, such as:

> **Item A is contained in Collection B**

> **Item C annotates or elaborates item D**

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CI Management Structure (proposed)

Executive Director of NSDL — **Dave Fulker (UCAR)**

Director of Educational Impact — **Kaye Howe (UCAR)**
> Fostering NSDL usage across the educational spectrum

Director of Library Services — **Diane Hillmann (Cornell)**
> Ensuring end-user satisfaction & reliable operation of NSDL

Director of Project Relations — **Susan Jesuroga (UCAR)**
> Guiding interaction between the CI team & other NSDL builders

Director of Publisher Relations — **Kate Wittenberg (Columbia)**
> Developing a business model that engages publishers in NSDL

Director of Technology — **Carl Lagoze (Cornell)**
> Designing & developing a leading-edge NSDL technical framework

What progress has been achieved?

Collection Development

➢ **Contact with 120 collections → metadata in repository:**

- ~15 collections / ~20,000 records; 20% NSDL funded / 80% non-NSDL funded
- Provided in "Dublin Core" format (less descriptive than DLESE)

User Interfaces & Portals

➢ **Communications portal working; library portal under design**

- Web-site for builders (SourceForge) + newsletter (WhiteBoard Report)
- Open-source approach to generalized portal building (uPortal)

Information Retrieval

➢ **Engine (InQuery) allows metadata- & content-based query**

Access Management

➢ **Using Internet2 method for distributed authentication...**

On track for initial rollout (targeted audience) in December