

The National SMETE Digital Library

Moderator: Brandon Muramatsu

**Panelists: Jim Lightbourne, Beverly
Hunter, Cathy Manduca, Marcia
Mardis, David Wiley**



Outline

- # **Brief Introduction**
- # **The National SMETE Digital Library Program**
 - Jim Lightbourne, jhlightb@nsf.gov
- # ***Pathways to Progress* Whitepaper**
 - Cathy Manduca, cmanduca@carleton.edu
- # **Services Workgroup**
 - Marcia Mardis, mmardis@merit.edu
- # **Standards Workgroup**
 - David Wiley, wiley@cc.usu.edu

The Terminology

National SMETE Digital Library

- SMETE=Science, Mathematics, Engineering and Technology Education

The National SMETE Digital Library at JCDL 2001

Papers (6 full and 4 short)

- ‡ ***Linked Active Content: A Service for Digital Libraries for Education***
David Yaron, D. Jeff Milton, Rebecca Freeland (Carnegie Mellon University)
- ‡ ***A Component Repository for Learning Objects A Progress Report***
Jean R. Laleuf, Anne Morgan Spalter (Brown University)
- ‡ ***NBDL: A CIS Framework for NSDL****
Joe Futrelle, C. Kevin Chang (University of Illinois, Urbana-Champaign) Su-Shing Chen (University of Missouri, Columbia)
- ‡ ***Collaborative Design with Use Case Scenarios****
Lynne Davis (University Corporation for Atmospheric Research) Melissa Dawe (University of Colorado, Boulder)
- ‡ ***Community Design of DLESE's Collections Review Policy: A Technological Frames Analysis***
Michael Khoo (University of Colorado, Boulder)
- ‡ ***Design Principles for the Information Architecture of a SMET Education Digital Library***
Andy Dong, Alice Agogino (University of California, Berkeley)
- ‡ ***Developing Recommendation Services for a Digital Library with Uncertain and Changing Data****
Gary Geisler (University of North Carolina, Chapel Hill), David McArthur, Sarah Giersch (Eduprise)
- ‡ ***Designing a Digital Library for Young Children: An Intergenerational Partnership***
Allison Druin, Ben Bederson, Juan Pablo Hourcade, Lisa Sherman, Glenda Revelle, Michele Platner, Stacy Weng (University of Maryland, College Park)
- ‡ ***Looking at Digital Library Usability from a Reuse Perspective***
Tamara Sumner, Melissa Dawe (University of Colorado, Boulder)

The National SMETE Digital Library at JCDL 2001 (continued)

Papers (continued)

- # ***Managing Change on the Web***
Luis Francisco-Revilla, Frank Shipman, Richard Furuta, Unmil Karadkar, Avital Arora (Texas A&M University)

Panels (1)

- # ***The National SMETE Digital Library Program***
Brandon Muramatsu (SMETE.ORG, University of California at Berkeley), Jim Lightbourne (National SMETE Digital Library Program, National Science Foundation) Cathryn Manduca (DLESE), Marcia Mardis (Merit Networks, TeacherLib NSDL Project), David Wiley (Utah State University)

Posters (3)

- # ***Breaking the Metadata Generation Bottleneck: Preliminary Findings***
Elizabeth D. Liddy (School of Information Studies, Syracuse University), Stuart Sutton (School of Library & Information Science, University of Washington), Et al
- # ***A National Digital Library for Undergraduate Mathematics and Science Teacher Preparation and Professional Development***
Kimberly S. Roempler (Eisenhower National Clearinghouse, The Ohio State University)
- # ***An Atmospheric Visualization Collection for the NSDL***
Keith Andrew (Eastern Illinois University), Christopher Klaus (Argonne National Laboratory), Gerald Mace (University of Utah)

Plus a number of other education related digital library papers

The Goals

- # **Introduction to the National SMETE Digital Library Program**
- # **Background and discussion on community development and involvement in the National SMETE Digital Library**
- # **Activities of two workgroups**
- # **Time for questions**

The Process

- # **Panelists will speak 15-20 minutes**
- # **Will take a couple questions after each panelists**
- # **Time for questions at the conclusion of the talks**



**The National SMETE Digital Library
Program at NSF**

**Jim Lightbourne
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Pathways to Progress: A Basis for Collaboration



Editors:

Cathy Manduca, DLESE

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David Mogk, DLESE

Flora McMartin, SMETE.ORG

A Framework for Collaboration

- # **Shared Vision**
- # **Community Based Governance**
- # **Core Integration Services**

The Community Process

- # **September 2000 PI Meeting**
 - Established Working Groups and Governance Structure
- # **November 2000 Working Meeting**
 - Creating the Whitepaper
- # **January 2001 PI/CIS Meeting**
 - Guiding the Core Integration

Why does the National SMETE Digital Library Program have Governance?

- # **A Community project requires community-based decision making**
- # **Balance educational and technological goals and the interests of diverse communities**
- # **Guide project to maintain library vision**

Interim Governing Structure

- # **Open Working Groups to address primary needs for collaboration**
 - Governance, Community, education and pedagogy, Collections, Standards, Services, Evaluation, and Technical Infrastructure
- # **A Coordinating Committee to guide the whole**
- # **A website to enable broad-based participation (see www.smete.org/nsdl)**

National SMETE Digital Library Whitepaper: Pathways to Progress

Articulate Shared Ideas for

- Library Goals
- Collaborative Construction

Purposes

- enable collaboration among existing partners
- provide starting point for new participants

Based on Strong NSF Vision

A Community Vision

- # **Workshop process to define**
 - Scope and Vision
 - Educational Goals
 - Principles for Collaboration
- # **Working Group reports**
- # **Open review process**
- # **Coordinating Committee Action Plan**

A SMET Education Digital Library

- # **A network of learning environments and resources supporting students and teachers at all levels**
- # **An organization supporting contributors and users in a far-reaching virtual SMETE community**
- # **A test-bed for application and on-going research in Digital Libraries, Education, Evaluation, Information Technology etc.**

Shared Values Underpinning Development

- # **Promoting Excellence in SMETE**
- # **Sharing and collaborative development of NSDL**
- # **Serving the public good**
- # **Community-based governance**
- # **Human networks are an essential part of the library**

Next Steps

- # **Fall 2001 Principal Investigator meeting**
 - Welcome new projects to community
 - Foster collaboration
 - Working group activity
 - Establish strong relationships between Core Integration, governance and new projects

National SMETE Digital Library Services in Focus

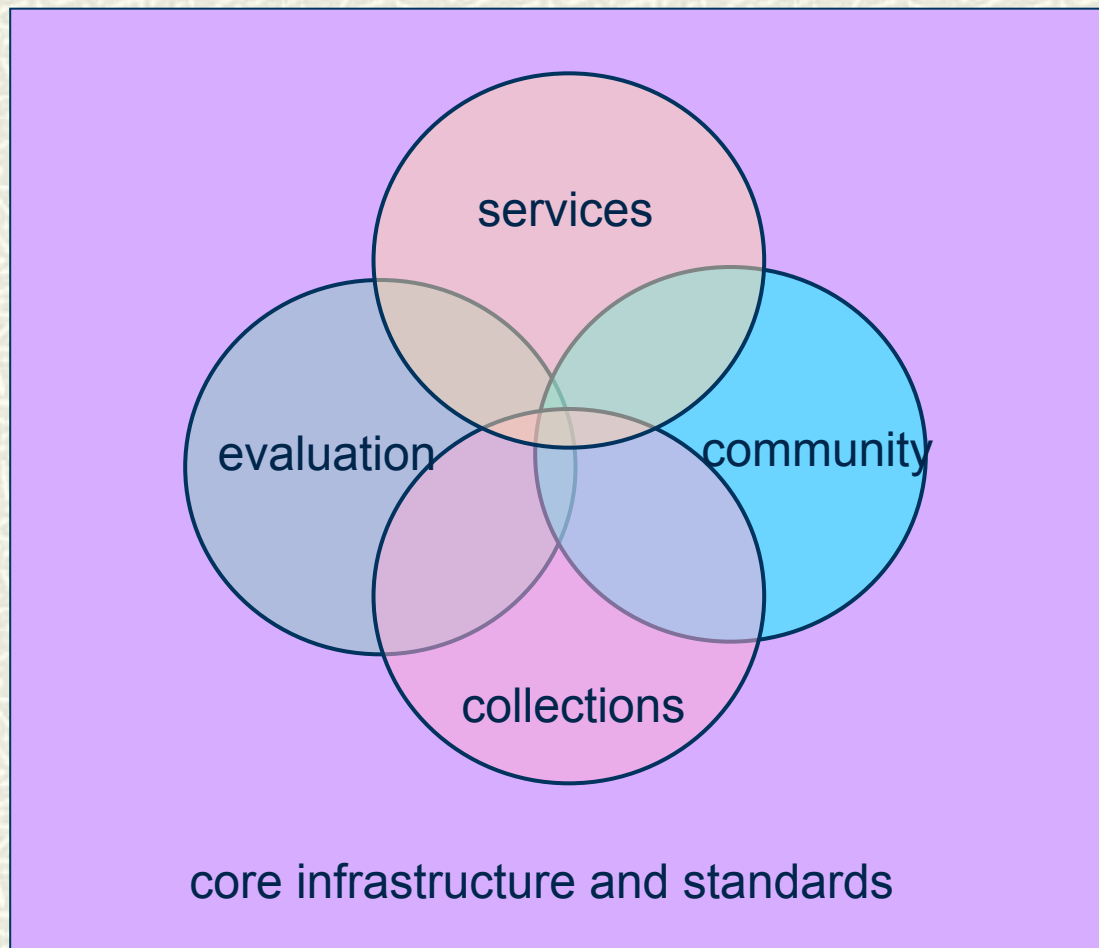
**Marcia Mardis
Merit Networks
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Who or What is Services?

- # **Support mechanism for learning and teaching**
- # **Provide unique value for users**
- # **Collaborator and independent entity**

One View of National SMETE Digital Library Interrelation



Collaborative Role of Services

Technical Collaboration

- ▣ **Services should work with necessary groups to develop an inventory of services required in later phases of the National SMETE Digital Library**
- ▣ **Inventory should identify gaps between needed and funded services**
- ▣ **Requirements for third party providers should be developed (e.g., Virtual Reference Desk)**

Collaborative Role of Services (cont.)

Collections and Evaluation

- ✦ Track emerging pedagogical practices
- ✦ Identify services needed to allow users best access to National SMETE Digital Library collections
- ✦ Identify gaps in Collections, especially the ratio between free and fee-based resources
- ✦ Identify new sources of materials to address gaps in collections

Collaborative Role of Services (cont.)

Collections and Evaluation (continued)

- # **Articulate requirements a collection or service provider must meet**
- # **Provide information services to respond to queries from potential collection providers**
- # **Collect info about re-purposing and use of objects**

Collaborative Role of Services (cont.)

Community/Education/Pedagogy

- # Support community development
- # Enable further dialogue about the purpose and impact of the National SMETE Digital Library
- # Examine services related to garnering community interest
- # Assisting role in identifying distinct user groups

Unique Activities of Services

Proactive and Reactive

- ▣ **Lead efforts that aid the user experience and maintain a high level of service quality**
- ▣ **Identify cutting edge services (e.g., visualization tools) and service upgrades**
- ▣ **User training and professional development**
- ▣ **Critical literacy and data literacy awareness**

Standards Workgroup



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Standards Activities

- # **Educational resource metadata**
- # **Minimally support resource discovery**
 - Title
 - Author
 - Subject area
 - Intended grade level, etc.
- # **Focus on interoperability**

Standards Research Activities

User profile

- Name, affiliation, etc.
- Authentication services
- Person recommendation

Resource recommendation

- Likert ratings
- Text annotations
- Usage patterns

Learning Objects

- # **Object oriented approach to instructional development**
- # **Digital educational resources**
 - Content
 - Applications / simulations
- # **Cisco, NETg models**
 - Specific objective
 - Instructional activity
 - Assessment

Learning Objects (continued)

- # **Automated instructional development**
- # **Special design considerations**
 - Grain size
 - Architecture
- # **NETg, Cisco, Dave Merrill**
 - “Reuse focus”; ignore 40 terabytes
 - Systems require specially prepared content

Educational-Digital Libraries (EDL) in Trouble?

Very heterogeneous content in EDLs

+

Learning Management Systems (LMS)
moving toward learning objects
(Metadata, content packaging, other specs)

**Will digital library content be
usable in near-future LMSs?**

The Role of Standards

- # **Pedagogical trends come and go**
 - Behaviorism, Cognitivism, Constructivism
- # **Technological trends come and go**
 - Gopher, web, peer-to-peer
- # **Resources are**
 - Used with all pedagogies
 - Deliverable via all technologies
- # **Open standards provide discovery stability**

Future of EDLs

- # **Carefully architected anarchy**
- # **Massive online learning communities**
 - Self-sustaining through collaborations
 - Expertise distributed among members
 - Authentic learning contexts / motivations
- # **Citizens create, store, find, and use artifacts**
- # **EDLs by the people, for the people**
 - Think Napster, Freenet, Gnutella



**National SMETE Digital Library
K–12 Issues in Focus**

**Beverly Hunter
Marcia Mardis**



Getting Involved

- # **Participate with a Workgroup**
 - Go to www.smete.org/nsdl
- # **Partner with a Project**