eScience and the Evolution of Library Services

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I am not an e-Scientist

I am not an e-Science Librarian
Why Libraries
Library
Revolutionary
What’s in a Name?
eScience   eResearch   Cyberinfrastructure
“A new kind of science”

Which is it?

“e-Science is not a new scientific discipline”
The polymath blog
eScience

“...set of tools and technologies required to support collaborative, networked science.”

-Tony Hey and Jessie Hey
“The entire e-Science infrastructure is intended to empower scientists to do their research in faster, better and different ways.”

Why Libraries?
E-Science and Data Support Services among Academic Health Sciences Libraries

Survey Fall 2011

Figure 1. Is your institution providing infrastructure or support services for e-science as defined above?
E-Science and Data Support Services among Academic Health Sciences Libraries

Survey Fall 2011

Figure 2. Please indicate which one of the following structures best describes how your institution has organized itself to advance e-science planning and policy development.

- Institution-wide structure
- Individual units develop infrastructure
- Hybrid structure
- Another organizational structure
Our Perspective

- Clinical Informatics
- BioInformatics
- NSF/NIH
- Library
- SOM IT
- High Performance Computing
- Institutional Repository
- SciDaC
Data
Challenges are opportunities
Research Life Cycle
Library’s Role in the Research Life Cycle

1. Generate Ideas
2. Manage Information
3. Write Proposal
4. Perform Research
5. Publish Results
6. Preserve Research

Data Life Cycle
Generate Ideas

Literature review support
Research alerts
Collaboration

VIVO Profiles
Are these so different?
Library’s Role in the Research Life Cycle

Manage Information
Manage Information

Bibliographic Management
Electronic Lab Notebooks (ELNs) are more than just an electronically formatted print notebook. They are not input devices such as tablets. They are also referred to as virtual organizations (VO) and collaboratories. They are not specific for "Big Science" or Excellence.

Think of ELNs as having two layers.

![ELN diagram]

**ELNs at the University of Utah**

ViaTrails was developed at the Scientific Computing and Imaging Institute by Prof Juliana Fiore.

Software Development Center is a collaboration of the Technology Commercialization Office and Scientific Computing and Imaging Institute.

The Jackson Laboratory Mouse Colony Management System is.

The Center for High Performance Computing has developed a virtual workspace for Clinical Studies requiring HIPAA compliance.
Library’s Role in the Research Life Cycle

- Generate Ideas
- Manage Information
- Write Proposal
- Publish Results
- Preserve Research
Write Proposal

Funding opportunities
Grant Scout
Funding Policies
Data Management Plan
Libraries have been managing information for 4,000 years. Today, your libraries are evolving and building expertise to continue this tradition so that they can help you preserve research data of the past, present, and future.
Network...
Build...
Bridge...
Community-Based Tool
In total, the DMPTool has now had over **1,100 unique users**, over **880 plans**, and over **291 institutions** represented.
DMVitals: A Data Management Assessment Recommendations Tool
Sherry Lake, Susan Borda

Crowston, K., & Qin J. (2010). A capability maturity model for scientific data management
Library’s Role in the Research Life Cycle

Generate Ideas → Manage Information → Perform Research → … → Preserve Research

Perform Research
Perform Research

Protocols Research Guides
Research Portal Collaborative Hub
MyRA

MyRA (My Research Assistant) is a Utah statewide Web research portal that provides resources and tools for and about research. It gives information and guidance at every step of the research process. It supports collaboration among various participants in the research process (e.g., senior or junior researcher, clinician, student, patient, and interested public). MyRA will make it faster and easier to find the resources you are looking for.
Library’s Role in the Research Life Cycle

- Generate Ideas
- Manage Information
- Publish Results
- Preserve Research

Publish Results
Publish Results

High impact journals
Presenting and posters

Publishing and open access
Images and logos

Photo: Digital Scholarship in the Humanities Exploring the digital humanities
Subject Specific Repositories
Open Data
Citing Data
Image integrity for publishing
Library’s Role in the Research Life Cycle

- Generate Ideas
- Manage Information
- Publish Results
- Preserve Research

Preserve Research
Preserve Research

Collection Housing Cataloging Selection & Appraisal
Institutional Repository
Data Archiving
Rights Management
How will Libraries Prepare for the Future
Just as science must change so must libraries

Figure 9. How has your library developed staff capacity for e-science support?

Is it Enough?
Stronger science and technology backgrounds
Gain a better understanding of the research process
Get in the Room
Create Serendipity
But I just want to do my research