

LOS ALAMOS NATIONAL LABORATORY

RESEARCH LIBRARY

YEAR IN REVIEW
2008

Science starts here.

Our Vision: *Essential knowledge services for national security sciences*

Our Mission: *We deliver agile, responsive knowledge services, connecting people with information, technology and resources.*

Year in Review - Los Alamos National Laboratory Research Library 2008

PRODUCED BY the Los Alamos National Laboratory Research Library

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RESEARCH LIBRARY YEAR IN REVIEW – 2008



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Message from the Library Director



The early 21st century has presented research libraries with amazing challenges and opportunities. Many library customers do not physically come through the door looking for print books and journals; instead they look for material online and ask for help via email. The ubiquity of Web search tools like Google and Google Scholar has changed the search strategies that customers employ. Many customers now use Web search tools as their primary instrument for retrieving research materials. A major challenge for libraries is to make it known that the articles users find and download from a search engine are made available to them through library-funded subscriptions. In addition to funding the content, the linking mechanisms that bring researchers to articles they are seeking often are provided by sophisticated technology run and supported by their institution's library.

The LANL Research Library fully meets the criteria to be considered a “digital library.” The Research Library has built a Web-based collection; offers most of its content collections digitally; and embraces the concepts of information organization, integration, and interoperability that are the core of what modern libraries bring to scholarly and scientific communication.

Looking beyond technological capabilities, the Research Library, at its core, is a service organization that supports the LANL mission. Personal connections are critical to solving problems, so the Research Library has a team of agile and skilled information professionals who respond quickly and know the Library's collections and customers in breadth and depth.

In addition to these services, the Research Library plays a unique role in the broader landscape of Information Science. This library is able to attract talented

Information Science researchers who are interested in solving some of the biggest problems of the Web, such as scalability and interoperability. The ability to attract this type of researcher is, in part, due to the infrastructure the Library has in place so that it can provide local storage and access to digital commercial content that includes more than 90 million articles. In addition to providing counsel and prototypes that address challenges for the Research Library, the Library's Research and Prototyping Team has had significant impact beyond the Research Library. The members of this team have impacted Web architectures as whole and have become thought-leaders in emerging areas, such as the application of semantic technologies.

Finally, in 2008, the Research Library became the first support organization to be included in a rigorous scientific review at LANL when its researchers were part of LANL's Information and Knowledge Sciences capability review. The review confirmed that the Library's research and development efforts are world-class and lauded its work as "the most important and influential work in the world aimed at improving internet services and functionality."

This report aims to shine light on how the Research Library serves the LANL community and mission through vital collections, technology, resources, and people.



Miriam Blake
Library Director, LANL Research Library

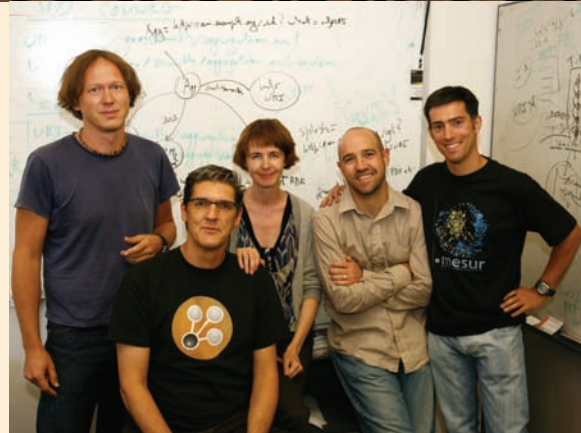


Making an Impact

Research Initiatives - Global Impact

MESUR – usage based models of scientific impact

The Andrew W. Mellon Foundation awarded the Library's Research and Prototyping Team an \$880 thousand, two-year grant to investigate the feasibility of impact metrics derived from usage data. Project MESUR (Metrics from Scholarly Usage of Resources) introduces the concept that, as an adjunct to citation data, novel measures of scholarly impact can be derived from actual usage (downloads) of electronic journal articles. The project produced the first ever maps of science derived from a large scale usage dataset. The results confirm the intrinsic value of scholarly usage data and support the feasibility of reliable and valid usage-based metrics of scholarly impact.



Research and Prototyping Team

OAI-ORE – Open Archive Initiative - Object Reuse and Exchange

Supported by the Andrew W. Mellon Foundation, with additional support from the National Science Foundation and Microsoft, the Open Archive Initiative - Object Reuse and Exchange (OAI-ORE) effort released version 1.0 of its interoperability specifications in October 2008. The OAI-ORE specifications define standards for the description and exchange of aggregations of Web resources. The standards represent a fundamental shift

in the approach toward information interoperability in the digital library and scholarly communication communities, which have typically adhered to a repository-centric instead of a resource/Web-centric approach.

The goal of these standards is to expose the rich content in these aggregations to applications that support authoring, deposit, exchange, visualization, reuse, and preservation. OAI-ORE provides solutions that enable services and automated processes that make the Web useful.



Collaboration and visibility in the digital library community

bX - Scholarly Recommendation System

Ex Libris Group, a commercial provider of library automation solutions, formally announced the release of the bX recommender service at the end of 2008. bX is the result of years of collaboration and research into advanced scholarly recommender systems conducted by Johan Bollen and Herbert Van de Sompel, who are members of the Library's Research and Prototyping Team.

bX, a first-of-its-kind service, provides library users with article-level recommendations based on collective usage data amassed from research communities around the world. Sixteen institutions have begun testing bX and are working with Ex Libris to help with ongoing development before the service's public launch.

The bX service derives its recommendations from the analysis of tens of millions of transactions performed by users from research institutions worldwide and captured through a large-scale aggregation of link resolver usage logs. Based on open interoperability standards such as OpenURL and OAI-PMH, which were also conceived by Van de Sompel while at LANL, bX can be tightly integrated into a library's existing user environment.

aDORe – Digital repository architecture

aDORe is a modular, standards based, repository architecture for digital objects. Created by the Research Library's Research and Prototyping Team, aDORe has matured to successful deployment in the Library's repository production environment. Significant performance, scalability, and functional improvements to aDORe were made during the past year. The current Research Library production instance of aDORe contains more than 91 million records, more than

218 million datastreams, and more than 625 million identifiers. The three-tier aDORe repository software was released as open source software in February 2008 and is already in use at major institutions including the Cornell University Libraries.

djatoka – open source software

djatoka (pronounced "j2k") evolved from a desire to use the Research and Prototyping Team's knowledge of standards, interoperability frameworks, and high resolution digital imagery to provide a foundation upon which the larger community can develop best practices and new functionality. This project intends to satisfy the need for an open source image server solution. The resulting djatoka software is a Java-based open source image server that provides compression and region extraction of JPEG 2000 images, URI-addressability of regions, and support for a rich set of input and output image formats (e.g., BMP, GIF, JPG, PNG, PNM, TIF, JPEG 2000). Off-the-shelf, djatoka allows developers

to quickly build “Google Maps”-like applications to view high-resolution images over the Web. djabatoka has since generated interest from the scientific and cultural heritage communities (e.g. NASA, Internet Archive, British Library). djabatoka was presented at the Digital

Library Federation Fall Forum, where the presentation and a dedicated Birds of a Feather sessions were considered the start of a community project to further evolve djabatoka and to develop a set of best practices for serving high-resolution images over the Web.

DOE National Laboratory Libraries Coalition

The Research Library has long been a participant in the Library Operations Working Group (LOWG), which held annual meetings to share ideas and information about activities at different DOE site libraries. In 2008, the group decided to re-examine its purpose and update its name to the National Laboratory Libraries Coalition (NLLC). The NLLC authored a whitepaper entitled “Libraries in the DOE: Planning for 10 years and beyond,” which articulated a broader vision for the role of libraries across the DOE in areas such as collaboration, knowledge management, data discovery, archiving, Web technology, and re-use of physical space as libraries become increasingly digital. LANL took a lead role in the creation of the paper and its vision. Upon completion, the paper was circulated to managers at each of the DOE Laboratories.

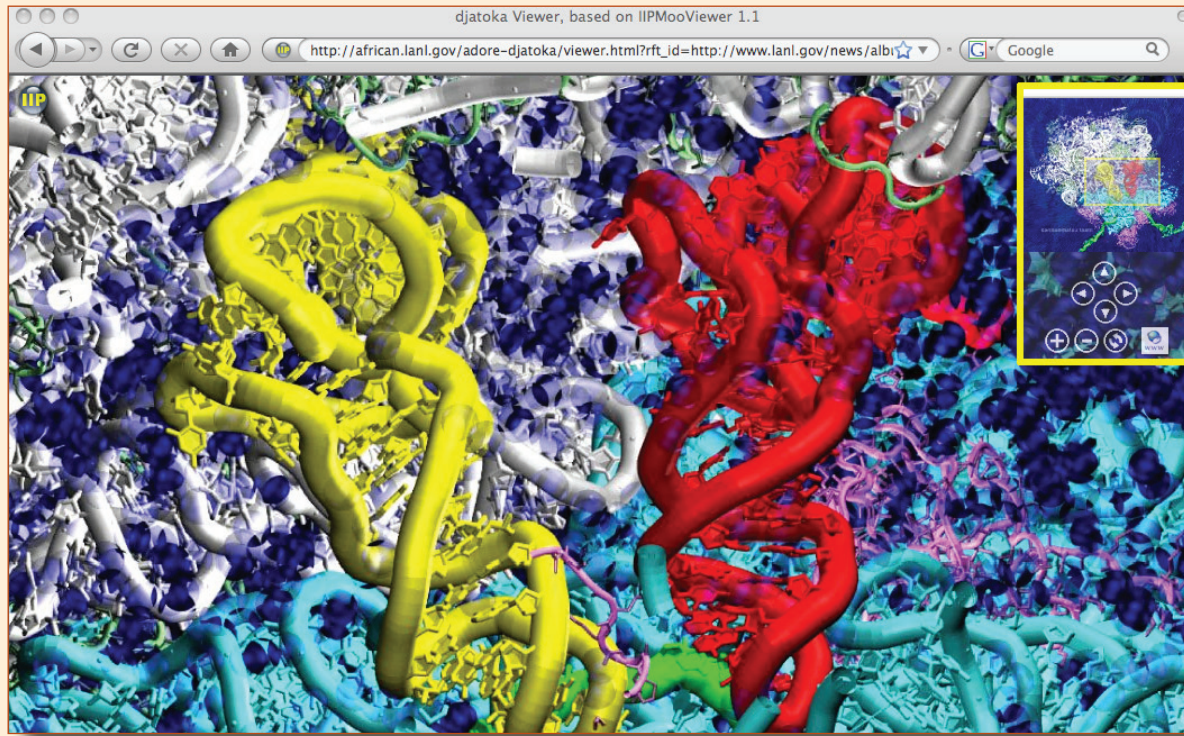


Image region extraction using djabatoka

Responsive to critical program areas at LANL

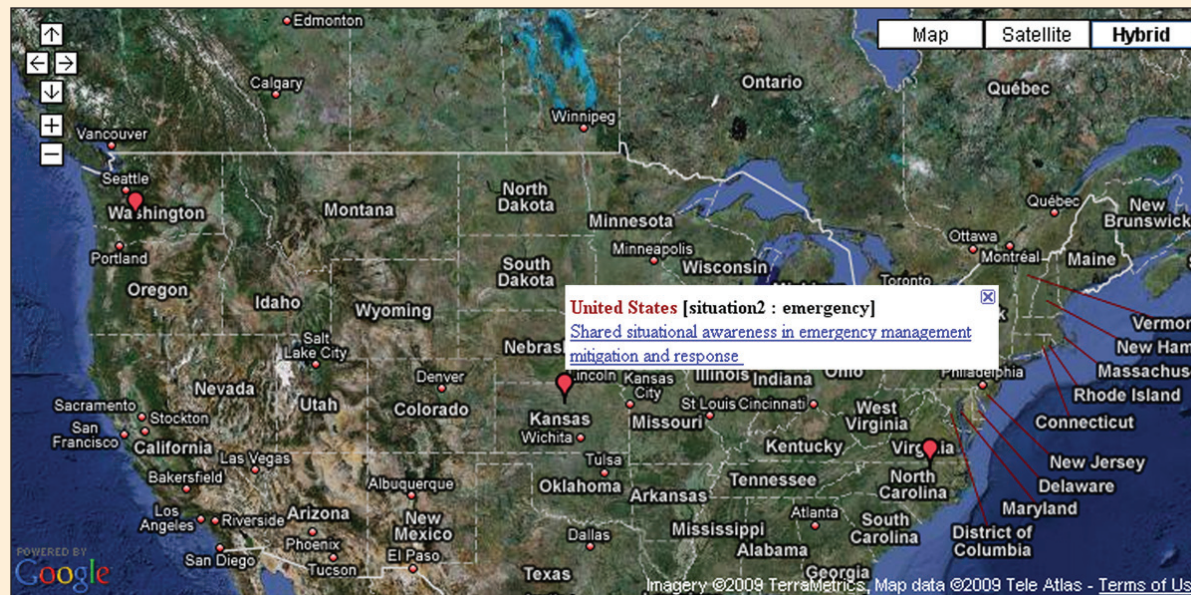
E-SOS – Emergency Situation Overview and Synthesis

The Knowledge Systems and Human Factors Team at the Research Library is developing E-SOS (Emergency Situation Overview and Synthesis), an emergency information system that will integrate information from heterogeneous sources and provide personalized situation awareness to scientific and technical responders. The goal is to help responders quickly find and synthesize relevant information. E-SOS aligns the Library with efforts at other national libraries such as the National Library of Medicine's Disaster Information Management Research Centers, the Centers for Disease Control's PEARL (Portable Electronically Accessible

Reference Library), and the Defense Technical Information Center's combat librarians.

E-SOS was included in three LANL Capability Reviews for the Department of Homeland Security Science and Technology Directorate in September 2008. E-SOS awareness tools are currently

being tested in the context of several projects at LANL and in collaboration with several divisions including Decision Applications, High Performance Computing, and Earth and Environmental Sciences. E-SOS tools are also being tested on information related to pandemic flu planning in collaboration with the Florida Department of Health.



E-SOS Content Awareness Tool

Broad Support for Science and Research

OPPIE science starts here

The Research Library reached two major milestones in 2008 with the retirement of its flagship search tool, SearchPlus, as well as the development and release of SearchPlus' successor, OPPIE.

The Research Library locally loads an average of 90,000 records per week from a variety of commercial scholarly publishers. Local loading distinguishes the Research Library from most other libraries, which typically purchase content served through numerous vendor Web sites and database platforms. By locally storing more than 90 million bibliographic records, 18 million full text articles, and several million related image and video resources, the Research Library addresses security concerns by keeping the research footprint within the Laboratory firewall.

OPPIE provides an interface for searching valuable research content; offers linking to full-text papers and other content; and enables data mining and the creation of citation impact information. OPPIE's architecture is robust and flexible and allows Research Library staff to continue to develop new ways to look at this corpus of data that support LANL's core National Security Sciences mission. These new views support many components of the Lab's mission, from primary research to the analysis underlying management decision making. The Research Library plans to continue enhancing OPPIE with tools that are critical to its customers and to continue finding ways to integrate information to provide new perspectives for core research and to help provide analysis of scientific productivity and impact.

Los Alamos Authors Database

The Los Alamos Authors Database offers an updated interface and new search capabilities for finding unclassified

data that were stored in the former Classification Office (SAFE-1) database. These records were created at the Laboratory by Classification Office staff and cover any Laboratory publications that were submitted for classification review. The earliest records are from 1943 and the repository includes data for records through 2009. Los Alamos Authors data is stored in an open-source, standards-based repository managed by the Research Library and the search tool is housed on the yellow network.

STI Review and Approval

In late 2007, the Research Library and Institutional Records Management (IRM-DO) formally co-championed a cross-Lab team to examine the Review and Approval process for Laboratory publications using Lean Six Sigma-methodology.

A major milestone was met in July 2008, when P1022 – the procedure for Review and Approval of Scientific and Technical

Information – was released to the Laboratory. The Research Library continues to play a significant role in this process by providing a copy of record archiving for unclassified Los Alamos publications and by interfacing with the DOE Office of Scientific and Technical Information (OSTI) to release Los Alamos reports to the public.

Publication Metrics

The Research Library is regularly asked to provide publication metrics to various scientific groups, divisions, and managers at the Laboratory. In 2008, the Library provided metrics for several quarterly reports, capability reviews, and other special requests. Metrics are pulled from bibliographic and citation data in OPPIE and cross-referenced against other data sources, including the Los Alamos Authors database and the Employee Information System. LANL publications are then loaded into a data warehouse, which currently includes more than 5,900



Staff works on compiling LANL publication metrics data

commercially published papers (i.e., journal articles, conference papers). From these papers, 15,000 Laboratory authors have been identified. As the data warehouse becomes more populated over time, the Research Library plans to provide the LANL community with an array of

on-demand reports to enable the accurate analysis of the institution's publication output and its broader impact on scientific and scholarly communication.



Strategic Investments

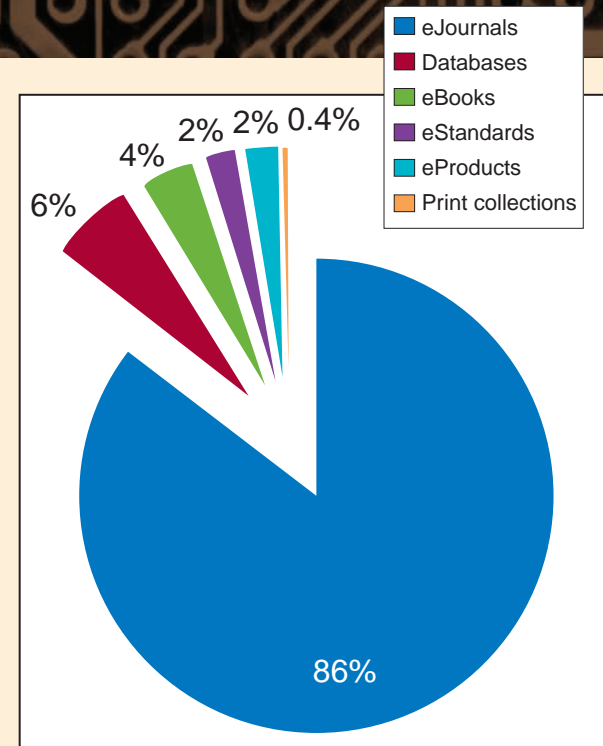
Digital Collections

The Research Library's digital information resource collection, which includes eJournals, eBooks, databases, eStandards and eReports, has been highly prized by Laboratory researchers. The comprehensive and multidisciplinary nature of the digital collection has consistently been mentioned as one of the benefits of working at LANL that researchers most value.

However, the cost of acquiring materials continues to increase at a rate that outpaces inflation, challenging the Library to find ways to sustain the quality of current collections and services while adding new forms of knowledge and responding to the growing and changing mission of the Lab. An annual 7-8% inflation increase in the cost of the digital collection, coupled with a flat or

diminished budget, has presented serious challenges. Due to budget constraints during the past several years, the Library has eliminated more than 300 ejournal titles from its digital collection. These cuts have seriously diminished the provision of timely and affordable access to peer reviewed literature for Lab researchers. To mitigate the effects of these losses, the Library has focused serious efforts on strategic access agreements and new funding strategies. As one example, the Research Library has moved the majority of its print book budget to the purchase of eBooks. eBooks provide the advantage of 24/7 availability to multiple simultaneous users at a cost less than that of a print book.

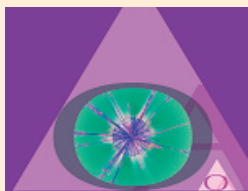
The Library proactively works with the Laboratory, publishing partners and the digital library community to find innovative ways to effectively manage the challenges of today's information world. Still, simultaneously sustaining the



Resources as % of total collection budget

Library's digital collection and supporting the multidisciplinary information needs of the Laboratory without additional funding continues to be problematic. If not readily accessible, digital information resources are less likely to be used, are more expensive when they are used and ultimately less able to support the research for which they are intended.

Open Access



SCOAP3

The Library is also very interested in new models of scholarly and scientific communication, and in 2008 we became early participants in a new model for Open Access publishing: SCOAP3 (Sponsoring Consortium for Open Access Publishing in Particle Physics). In this model, funding agencies and libraries collaborate to explicitly cover the costs associated with the peer-review services provided by a publishing company rather than purchase subscriptions. The publishers then make the electronic versions of their journals available for free. SCOAP3 enables transparency of publication costs, overall reductions in those costs, and makes journals free to everyone. In addition to these actions, the Library has renegotiated agreements with strategic publishers to enable long term cost savings and to increase access to critical digital resources.



Research Library's videoteleconference room

Videoteleconference/Access Grid Room

The Research Library is constantly working to meet and exceed the needs of its customers at the Laboratory. One successful effort has been the creation of a multi-media communication and collaboration room. In addition to video teleconferencing, this room offers connections to the Access Grid, which is an ensemble of resources used to support group-to-group interactions across the internet. Its location in the Research Library, which is part of the Lab's main complex at TA-3, makes it

ideal for easy access. The room is available free of charge to Lab employees for unclassified meetings, training sessions, Web conferences, and local presentations.

Started in 2007, the videoteleconference room, operated in co-operation with NIE-4, has proven to be an effective tool to help Laboratory staff alleviate the rising expenses and personal time loss that occurs during work travel. Usage statistics indicate a total cost savings to LANL of more than \$600 thousand since the room began to be used in mid-2007.



Customer Service

Our Focus

The provision of exemplary customer service to Laboratory staff through skilled search and information seeking techniques and personal relationships is core to the mission and purpose of the Research Library.

Library staff members conducted more than twenty-five training sessions and focus groups for Laboratory staff in preparation for the release of OPPIE. In addition, staff members attended several group meetings, visited external site users, and conducted a video-teleconference session for external customers to aid users during the transition from SearchPlus to OPPIE.

Customer service is the focus of many of the Library's day-to-day activities. Collection development librarians reviewed and selected an eBook platform that enables users to initiate the acquisition of new content. The new acquisitions model will

be implemented during the next fiscal year. This year, the Library staff fielded more than 4,800 questions from researchers, staff, and students. In addition, 320 interlibrary loan requests and 1,898 document delivery requests were processed.

The Research Library also hosted its annual student luncheon for

Laboratory mentors, GRAs, post-docs, and high school students. This year's event was attended by more than 300 people and was the most highly attended Research Library program to date. The goal of the program is to introduce and showcase the Library's resources to the Lab's students.



Providing point-of-need and personalized customer service

Computing Infrastructure

Computing Infrastructure

Locally loading commercial content at the Research Library provides significant benefits to Laboratory researchers. This practice enhances security by keeping Laboratory researchers' search footprint behind the firewall.

Additionally, having its own repository of content provides opportunities for creating tools and views of data that are specific to the needs of Laboratory employees. However, the local loading of large amounts of data – more than 150TB of content running on more than 105 servers – means the Library has to maintain a significant unclassified computing infrastructure. In 2008, concentrated effort was spent addressing issues relating to the LANL



Banks of disk arrays in Research Library's computer room

Compliance Order. The Library retired older systems including a large amount of disk and machines that supported SearchPlus and managed network switches and fiber cabling to improve

its network utilization. The Library also replaced an outdated tape backup system with a newer system that backs up Library servers and data files more quickly and reliably.

Staff Notables

Professional Activities & Service

The Research Library staff are actively engaged in laboratory-wide initiatives and professional service at the national and international level.

Together, we are serving the Laboratory and broader professional communities through participation.

- 23 committees and library advisory boards
- 8 journal referees
- 35 presentations, including keynote addresses and invited talks
- 2 editorial boards
- 4 Lean Six Sigma Projects (staff member is yellow-belt certified)
- Worker Safety and Security Team representation
- LANL Volunteer Protection Program (VPP) Assessment Team



Information professionals at your service

Seven publications for peer-reviewed, professional, and scholarly journals were written by Research Library staff in 2008.

Research Library staff contributed 35 presentations at professional and scholarly conferences, nationally and internationally, including invited keynote addresses and panel discussion

members. The complete list of publications and presentations can be found at:

- <http://library.lanl.gov/lww/staff/publications.htm>
- <http://library.lanl.gov/lww/staff/presentations>

Looking Ahead

What's Next?

Modern libraries are looking at an exciting and rapidly changing future filled with challenges and opportunities to evolve. Libraries' role in the information ecology is shifting due to factors such as rapidly proliferating information and disruptive technologies.

Both the role of libraries and the skills librarians must possess are changing quickly. Electronic content is rapidly replacing and outpacing print content and managing electronic content requires different skills and infrastructure than processing and housing books. Economic models are being turned upside down. The rapid growth in networked access to information, aggregations of large amounts of digital content, and the need for integrated information environments are changing what library work looks like.

All of these changes are opportunities for libraries, including the Research Library, but they require that the Library and its staff stay on the front edge of the technology curve and anticipate increasingly complex sets of user needs.

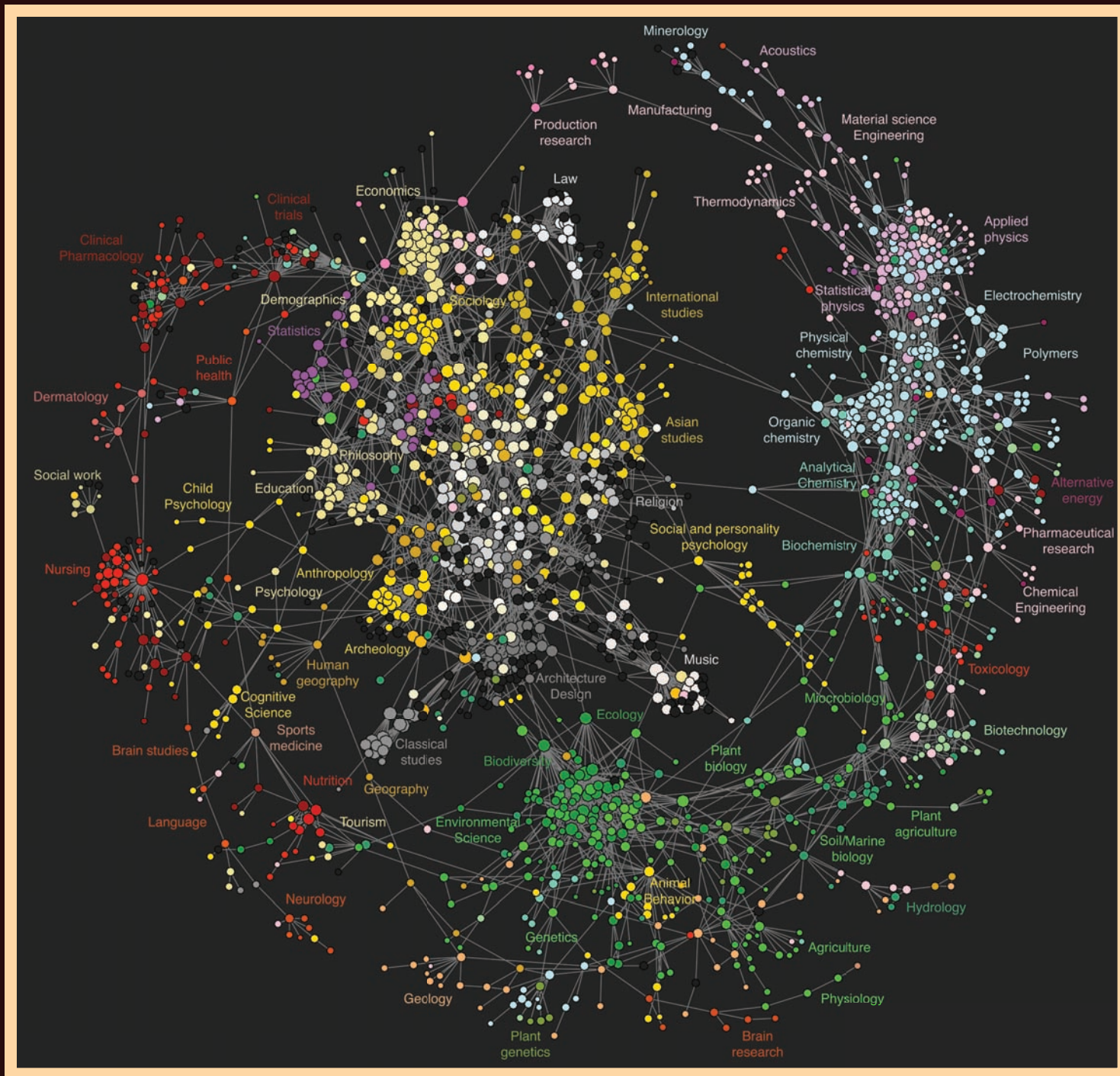
A short-term goal for the Library's future involves the renovation of the Library Web site and improvement of its Web presence. The Library Web site can no longer be a list of digital content purchased from publishers. Instead, the Library's Web presence must provide mechanisms (both human and machine) for efficiently finding information, integrating it, and using it in ways that are truly innovative. Overwhelming amounts of information need filtering, just-in-time analysis tools, and assurance of fundamental validity and authority of the content. In addition, the Library must respond to increased cyber security concerns. These requirements and

concerns indicate the Library will continue to confront difficult questions, challenges, and opportunities as it works to provide a customer-focused Web presence to vast amounts of information.

The success of the Research Library requires the organization to step up to its challenges and continue to play a vital role in the value chain of scientific research and discovery. It is incumbent upon the Research Library to enhance its role in finding, filtering, organizing, and preserving information and intellectual property for the Laboratory. The Library also must increase its understanding of how it can contribute to turning information into usable knowledge so it can enable LANL in its National Security mission.

<http://library.lanl.gov/>

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Map of science created from a selection of MESUR's 1 billion usage events (~400M)