



Los Alamos Takes “Library Without Walls” to the Second Generation

An Interview with Rick Luce, Research Library Director, Los Alamos National Laboratory, New Mexico, USA

“What I like best about my position at LANL is the latitude to continually innovate. The laboratory sets high expectations, and it provides the resources and the talent to meet them.”

For more information on Rick Luce visit springeronline.com/librarians

Background

Richard E. Luce is the Research Library Director at Los Alamos National Laboratory (LANL). Known as both an information technology pioneer and as an organizational innovator, his organization was co-recipient of the 1999 Federal Library and Information Center of the Year award, and a 1997 and 2000 Quality New Mexico Roadrunner recipient for organizational performance excellence based on the Malcolm Baldrige criteria.

Rick was appointed project leader of LANL’s Library Without Walls in 1994, which is now internationally recognized as a state-of-the-art, large-scale digital library. In 1999 he co-founded the Open Archives Initiative to develop interoperable standards for author self-archiving systems, and in October 2003 he was active in setting the stage for the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities.

Rick spoke with Springer Library Zone editor George Scotti about LANL’s massive (30-terabyte) collection of STM publications, and his work developing the organization’s library without walls (LWW).

Q: Can you briefly describe your collection of STM publications, and how you organize the content and services to meet the needs of your constituents?

Luce: We locally load about 4,000 titles from 12 major STM publishers. Those titles include electronic journals, standards, conferences, etc., as well as an extensive set of back files. Users have access to that primary content either through links from secondary databases (e.g., SciSearch, Inspec, Biosis, Engineering Index, etc.) or by searching and/or browsing through our e-journal server.

Among other things, our applications support customized alerts based on user-created profiles. These alerts can be journal tables of contents, subject-specific, author- or citation-specific, etc.

Q: What do you mean by second-generation LWW?

Luce: The first-generation goal of the LWW program, which lasted roughly from 1994 to 1999, was simply to acquire and deliver e-content. To accomplish that, we digitized Los Alamos technical reports, loaded publisher content and large secondary databases (60M records), and built the associated front-end web applications to accommodate users’ needs.

Propelled by the decision to locally load and store e-content whenever possible, the LWW has grown into a complex, 30-terabyte resource, totally supported through locally developed applications.

After obtaining a critical mass of digital content that we delivered to our scientist’s desktop, the next challenge was to make it more useable – that’s the second-generation goal. Strategically, our aim was to increase the richness and usefulness of the scientific literature available to scientists by developing new ways to exploit our information repositories, and promote scientific collaboration. Here are the key strategies that we employed to support this aim:

1. Develop second-generation tools.

It became clear that we needed to rethink our data architecture and systems framework that support the organization, transformation, and storage of objects of all types in current and future versions of the digital library. As a result, we have developed a series of tools to ingest a variety of data feeds, and transform the feeds into MARC-XML for further manipulation.

The key result of this work is the de-coupling of our applications from the data layer, and our new ability to dynamically bind objects together.

To meet the needs of our users, we have deployed personalized services since 1999, primarily via MyLibrary @LANL, which provides a customized user interface to our digital library and supports the storage of links to both internal content and to external web resources. More recently we experimented with several other capabilities, such as support for focused harvesting from the web, and an innovative approach to de-duplication of metadata records or references that originate from multiple sources.

2. Improve our knowledge discovery capabilities. We store enormous amounts of primary and secondary data: 30+ TB of data, increasing annually by 3-4+ TB. Like many libraries, we have discrete applications for journal browsing and retrieval, search and retrieval applications for databases, a stand-alone OPAC for local materials, and the usual plethora of external resources we link to. A key requirement is the need to integrate the variety of content delivery mechanisms and differing formats through one application environment.

3. Enable scientific collaboration to help scientists network and collaborate with their colleagues. Digital libraries now offer opportunities for collaboration and communication that were not feasible in traditional libraries. Today's technology lets us consider new ways of working with library materials, as well as new methods of analyzing the use of digital resources. Rather than limiting the user to working in an isolated mode as an individual with generic capabilities, now we can enable users to work collaboratively or in groups. Thus, the digital library supports work and collaboration both within and between groups.

In order to develop an interesting application for supporting and archiving electronic research interactions, we support capabilities that are important for collaboration among users of digital libraries and knowledge management systems, such as:

- Shared information spaces
- Mechanisms to allow varying degrees of sharing
- The ability to find other groups or individuals based on shared interests

Version 2.0 of *MyLibrary @LANL*, released in September 2001, introduced shared libraries. This "sharing" of resources facilitates team projects, interest groups, etc., with one virtual place to store and access collective resources.

One of the unique characteristics of the *MyLibrary @LANL* application is the ability to push active recommendations to users and adapt the system and corresponding recommendations further, based on user interactions. We believe scientific libraries need to demonstrate the ability to support dynamic, adaptive systems that meet our researcher's need for personalization and collaboration. The Active Recommendation Project (ARP), a multi-year research effort of the LWW, has been developing recommendation systems for large databases and the Web that adapt to the expectations of users. We used *MyLibrary @LANL* as an early deployment test environment of the ARP approach.

4. Capabilities that help our scientists turn information into insight. Leveraging the investment in storing content locally, we've turned our attention to extracting more value out of these assets. One example is our experimental *ActiveGraph* visualization tool to better understand and identify trends, patterns, and anomalies in data sets resulting from searching our repository. We initially assumed that users would want to visually explore our information spaces. However, customer feedback thus far has indicated greater interest in visually examining result sets.

The *ActiveGraph* tool allows the end user to manipulate result sets, visually sort and display the data using a variety of filters, export result sets in a table format, and so forth.

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MyLibrary @LANL



“Library Without Walls”... An Interview with Rick Luce

(continued from page 7)

Laboratory managers have become interested in the trends and comparative patterns and associations in the bibliometric data we collect as an aid in decision-making.

Another interesting project has focused on analyzing log data to discover new domains of scientific activity based on self-identified communities of practice. We are testing the log analysis component as another source for recommendations as well.

Q: How do Springer journals fit into your collection?

Luce: As a part of this very rich STM environment, we provide access to the complete set of Springer and Kluwer titles. Since we locally load those titles and integrate that content into our journal repository, some of the capabilities mentioned above are utilized to gain additional value from the Springer and Kluwer journals.

We also provide access to these resources, subject to appropriate licensing, to a number of external institutions on a cost-recovery basis.

Q: What do you like best about your position at LANL?

Luce: What makes the job so stimulating and rewarding is the combination of (1) innovating and integrating a broad spectrum of digital library components, from R&D through application development and deployment; (2) providing innovative and highly customer responsive products and services to world-class scientists; and (3) driving toward those objectives using sound business and quality principles.