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Report of the Science-Technology Division Program for “Global 2000”
“Digital Library Projects: Focus on Improving Access to Information for Users”

Sponsored by Science-Technology Division (lead); Aerospace Section, Engineering Division; Biomedical and Life Sciences Division; Chemistry Division; Engineering Division; and Physics-Astronomy-Mathematics Division

Organized and reported by Nancy D. Anderson, professor emerita, Mathematics Library, University of Illinois at Urbana-Champaign

In mid-October, the Special Libraries Association held an international conference, “Global 2000,” in Brighton, England. While many SLA librarians attended, it was very pleasant to meet nonmember librarians from all over the world. Our panel discussion was held Wednesday afternoon, October 18, on “Digital Library Projects: Focus on Improving Access to Information for Users.” It was one of six programs presented that afternoon; despite the competition, more than ninety librarians attended.

Our publicity for this program may have been the reason why so many librarians wanted to hear what the participants had to say: Presentations on digital library projects have commanded large audiences nationally and internationally. Numerous digital library projects are being conducted on both sides of the Atlantic—in the United States, Canada, France, Germany, Netherlands, and United Kingdom, to name a few countries with established programs. While most research is being conducted at university or national libraries, the products of this research are of interest to special librarians in government labs, industry, and academic and medical institutions.

The moderator was Tina Chrzastowski, professor and chemistry librarian, University of Illinois at Urbana-Champaign. Speakers were William Mischo, professor and Grainger Engineering Librarian, University of Illinois at Urbana-Champaign; Jeff Parche, electronic products manager, Institution of Electrical Engineers, United Kingdom; and Herbert Van de Sompel, visiting assistant professor, computer science, Cornell University, and University of Ghent, Belgium.

Bill Mischo led the discussion with a paper on “The Digital Library: Current Technologies and Challenges.” Mischo briefly defined the digital library, describing the elements of a digital library; full-text document technologies; the University of Illinois testbed, XML, and its role and importance; the distributed repository model; and the role of libraries and librarians.

I thought his talk about the Illinois DLI-I Project, covering the large-scale testbed, distributed repository models, evaluation, and Web software (funded under DLI-I by NSF, DARPA, and NASA from 1994 to 1998, followed by CNRI D-Lib Test Suite Program from 1998 to 2001) was perhaps the most interesting part of his talk. The Illinois testbed included the American Institute of Physics (APL, JAP, RSI—16,000+ articles from 1995), American Physical Society (PRL—10,000+ articles from 1995, with weekly updates), ASCE Journals (25 titles—9,000+ articles from 1995), IEEE Proceedings and Electronics Letters (8,500+ articles from 1993), ASM Handbook, ACM, and Elsevier Science.

Project issues dealt with evolution of the document, the information environment, use of metalanguages and transformations (SGML, XML), searching over full text of journals vs. abstract and index service database, rendering and styling (SGML, XML, MathML), dynamic metadata for normalization and linking, breadth and depth of collections, and user needs.
Mischo reported as accomplishments the process and retrieval from multiple publishers and heterogeneous DTDs, cross-repository searching, SGML to XML conversion, metadata extraction, representation, merging, transformation and rendering technologies, and dynamic linking (forward/backward, from/to Abstracting & Indexing services).

Ongoing investigations include support of simultaneous searching of A&I services, distributed repositories, enhanced navigation, expanded gateway functions, metadata harvesting (replicative or distributed approaches), Z39.50 protocols, HTTP harvesting, spider technology, archiving of electronic resources, and local resolution of resources.

Mischo was followed by Jeff Pache, who spoke on “Linking—The Role of the A&I Service.” The talk describes linking from the perspective of an abstracting and indexing service, using INSPEC as an example. He looked at past developments in unique identifiers and how INSPEC has made use of these, as well as linking mechanisms and INSPEC’s involvement in them. Pache presented a snapshot analysis of the current situation, assessing the volume of current literature that INSPEC links to and how this is likely to change in the short and medium term. Finally, he showed us a view of likely future developments and involvement from A&I services.

Some interesting facts presented by Pache include the size of the INSPEC database. In April 2000, INSPEC included more than 6.5 million records, eighty countries of publication, more than 3,000 journals and 3,000 other publications, 330,000 records per annum, and more than thirty years of electronic data. To give a sense of scale (for INSPEC only), Pache noted that there are journals from more than 1,000 publishers and twelve online and site license vendors, implying more than 12,000 bilateral agreements (more than 1 million bilateral agreements with citation linking publisher to publisher).

Pache next touched on the evolution of linking systems. In the 1980s, they were integrated CD-ROM systems, e.g. UMI, BPO, IPO (now IEL). In the 1990s there were aggregators, with and without separate A&I databases, and A&I vendor systems linking to publisher and aggregator full-text systems. Next, he spoke on where we are now with linking projects. Pache said 50 percent of the IJAs (INSPEC Journal Articles—those currently going into the INSPEC database) are linked via one vendor or another to one full-text system or another.

Finally, Pache gave a brief synopsis of CrossRef, with regards to linking. CrossRef members publish 65 percent of IJAs. When fully implemented with existing members, total linking could be raised to 72 percent of IJAs or 58 percent of current INSPEC throughput. The history of INSPEC and DOI/CrossRef is as follows:

Fall 1998—Announced new field for DOI (digital object identifier)
January 1999—Capturing DOI for IEE articles
May 2000—Joined CrossRef
End 2000—Capturing DOIs for academic press, ACS, AIP and IEE articles
Early 2001—Plan to use CrossRef to obtain DOIs

Pache closed his talk by discussing the barriers to total linkability: not all journal full text is on the Web, bilateral vendor-publisher agreements are not scalable, not all A&I and few vendors use DOIs, not all publishers are CrossRef members, the appropriate copy problem and other rights management issues, and conferences and other material.

The last speaker, Herbert Van de Sompel, focused on two recent activities that aim at facilitating access to scholarly information, “The SFX framework and the OpenURL and The Open Archives Initiative.” The OpenURL is a proposal aimed at enabling the delivery of context-sensitive extended services. When linking from a citation to the article it represents, one needs to take into account that multiple instances of that
article may exist. Delivery of the appropriate instance depends on the user’s context. But this problem is not limited to linking from citations to full text. It is equally relevant for other types of so-called extended services that link a record from whichever scholarly information resource to related information. For instance, when an institution subscribes to an abstracting and indexing database run by an intermediate, its users should be able to link from records in that A&I database to corresponding records in the version of the citation databases to which the institution subscribes. Or, the link-to-holdings feature pointing at the user’s OPAC system, commonly used for A&I databases, should also be available for citations in journal articles. All kinds of linkages between electronic scholarly information resources should take into account the user’s context. In general, this is not the case for actual linking solutions.

Van de Sompel spoke about the SFX-framework and the OpenURL in more detail, showing how application of the concepts of the SFX-framework in the DOI/CrossRef linking environment can make the latter context-sensitive. He then discussed the SFX server, a software module that fits into the SFX framework, illustrating its potential with examples.

Finally, Van de Sompel showed how the Open Archives Initiative started as a forum to discuss and solve matters of interoperability between e-print archives. Its Santa Fe convention described a low-barrier protocol allowing selective harvesting from distributed e-print archives. Over the course of the past months, the protocol has attracted the interest of many different communities, looking for basic solutions to make their repositories interoperable. Therefore, the Open Archives Initiative decided to do an in-depth revision of the metadata harvesting protocol in order to make it applicable in a broad range of contexts. He then provided an insight into the concepts ruling the upcoming version and discussed the timing for its release.

The variety of talks really sparked the audience’s interest. A lively question and comment session followed, ending only when we had to leave the conference room. At the end, Bill Mischo announced that the best way to access this program is to link to the Web site set up by the speakers (http://dl厅.grainger.uuue.edu/sla2000/). (Note: The best way to view these presentations within Internet Explorer 5.x is to choose the “Download presentation source” option, which results in the original PowerPoint presentation being run within the browser. This is particularly useful with Herbert Van de Sompel’s more interactive presentation.)
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