Guest Editorial

Digital Libraries

Digital Libraries (DLs) provide access to digital information collections. Information content in DLs may include a combination of structured/unstructured text/numeric data, scanned images, graphics, audio and video recordings, etc. Digital librarians are required to select, acquire, organise, make accessible, and preserve digital collections[1]. Just as conventional library services, digital services must be planned, implemented, and supported. But similarities often end there. Deployment of DLs require integration of several information technologies. Many of these technologies are often quite complex and advanced. Unfortunately, currently there are very few opportunities for librarians to receive training in the new tasks and responsibilities that DLs demand[2,3]. It is hoped that this special issue of the *DESIDOC Bulletin of Information Technology*, focusing on digital libraries, will bring the DL concepts and technologies closer to its readers, especially librarians and information professionals in India. An overview of the six papers that comprise the special issue is given below.

The special issue starts with a very interesting article ***Digital library : content preservation in a digital world*** by Richard Hulser of IBM Corporation. The article presents, in very simple terms, the key features, functions and advantages of a DL. Hulser begins with a brief discussion about information services trends and directions. This is followed by a description of the IBM Digital Library whose components enable institutions to address digital content management issues. The description includes the integrated functions of create and capture, search and access, distribution, storage and management, and rights management. The article concludes with a discussion on guidelines and considerations which are important when contemplating implementation of a DL project.

The DL initiatives taken in the United States a few years ago have substantially influenced similar developments and interests in other countries. A study of some of these DL projects will be quite rewarding to the prospective digital librarian. Padmini

Srinivasan presents a brief survey of representative DL projects in the United States in her article ***Digital library projects in the United States***. She covers the six DL projects, funded under the NSF/ARPA/NASA Joint Digital Library Intitiative and the projects of Library of Congress, Xerox, TULIP (The University Licensing Program), NCSTRL (Networked Computer Science Technical Reports Library) which is an inter-university collaboration focusing on computer science technical reports, Research Libraries Group (RLG) and OCLC. Her survey reveals the highly interdisciplinary team approach of these projects, diversive user populations addressed, technologies used, theoretical and practical challenges faced, DL models adopted, and collections used for the test bed. She concludes with the observation that for a DL project to succeed it is necessary to have strong organisational commitment, a critical mass of information and a well defined collaborative approach.

David Price, in his article ***The digital library on campus : a perspective from a UK academic environment*** provides a brief description of several digitisation projects taking place in Oxford and in the process brings out key issues one needs to contend with in the digital world. These include copyright, storage requirements, and WWW as the basic delivery mechanism for global information. He dwells at length with three areas : efforts in using client/server computing to provide across-the-campus network access to electronic databases, including the now popular ERL technology of SilverPlatter; the importance and current limitations of using WWW for integration of network resources; and the standards that are being developed to make this possible. A practicing digital librarian himself, Price believes strongly that in the emerging DL environment the users will continue to expect the librarian to exploit IT on their behalf and provide effective access to information in digital form.

From an implementation point of view, three core issues of a DL are storage, indexing and retrieval. Alistair Moffat and Ian Witten, in their article ***A compression-based digital library***, show how data compression techniques can be employed to increase both space- and time-efficiency. They discuss, with minimal use of mathematics, how to compress documents in a collection, how the use of compression can make indexes and multi-gigabyte databases manageable and also aid in their construction, and finally survey techniques for supporting content-based queries on very large retrieval systems. To illustrate application of these techniques, they discuss the New Zealand Digital Library (http://www.nzdl.org), a Web-based tool that provides many distinct services, the largest of which indexes in excess of 40,000 computer science technical reports, collected from over 300 sites around the world. It uses as its underlying search engine the public-domain MG^4 (Managing Gigabytes) software system, a collection of programs that through the use of compression provide economical storage and indexing for large collections of documents, as well as fast index construction and query processing.

Networked Digital Library of Theses and Dissertations (NDLTD) (http://www.ndltd.org) is a DL project of international significance, launched recently at the initiative of the Virginia Tech University, USA. The paper ***NDLTD : encouraging international collaboration in the academy***, by Edward Fox *et al.*, focuses on this project and its potential to improve education and enhance international collaboration. According to them, NDLTD seeks to involve every educational institution in the world in helping students to learn more about publishing and digital libraries, ensuring that as many theses as possible are captured and archived electronically and accessing these theses through DL technology. Their article begins by exploring how digital libraries in general, and NDLTD in particular, can be developed so as to increase international collaboration. They then focus on how universities can evince more cooperation and explore types and levels of collaboration that are possible. They also describe the collaboration that is currently taking place. While concluding, they observe that support by SURA (Southeastern Universities Research Association, USA) and US Department of Education have enabled the extension of NDLTD membership around USA and into a number of nations around the world.

Today, Internet provides the distributed environment for accessing digital libraries. A key issue is transmission delay due to the vast amount of network traffic caused by multimedia objects like images, audio and video. It would appear that compression of this data objects before transmission can reduce the response time, with some reduction in the quality of data. This issue is the focus of attention in the paper ***Multiple browsing levels in digital libraries*** by Bala Srinivasan, Santosh Kulkarni and Le. They observe that, depending on the quality of output required by an application, data compression can be an acceptable means to reduce transmission time over the Internet. They suggest different *quality* or *browsing levels* that can be achieved by use of appropriate compression techniques, depending on how data will be used. A lower quality level could be used for general browsing of data whereas a higher quality level could be used where the output data has to be further processed and analysed. Based on a study of the behaviour of different images, compressed using different compression techniques, they classify images into different classes. In their paper they identify a set of rules to calculate a near optimal compression ratio to achieve a given level of image quality and explain how these rules can be incorporated into digital libraries with multiple levels of browsing, to achieve a faster response time.

My sincere thanks to the authors of the six papers for having accepted our invitation to contribute to this issue and for tolerating my innumerable e-mails! I feel honoured to be invited to be guest editor of the special issue and it has indeed been a very enjoyable experience. I am hopeful that this issue will find a large number of enthusiastic readers.

NOTES AND REFERENCES

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