

Chapter LIV

New Roles of Digital Libraries

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ABSTRACT

The limited scope of digital libraries can be attributed to the brick and mortar vision of the library metaphor. In order to extend scope of digital libraries, in this chapter we examine the current supports and future possibilities afforded by digital libraries to support conventional consumers (i.e., information-users and information-curators), as well as emerging new types of consumers such as distributed computer applications. A functional analysis of conventional libraries is coupled with metaphor design methodology to explore new promising applications and usage scenarios for digital libraries.

INTRODUCTION

Since their conception, digital libraries have made significant contributions in organizing and structuring information, exploring innovative user interface designs, establishing workflow practices, and providing a venue for obtaining empirical data on user behaviors. Patrons have benefited from the sophisticated services for locating and using information, while librarians have been provided with new services for curation: (e.g.,

preserving, reviewing, sharing, and administering collections). Although these services come close to fulfilling the goals of conventional libraries, the potential of computational technologies to support digital library operations has not been fully realized.

The limited scope of digital library (DL) services can be attributed to the brick and mortar vision of the library metaphor, which initially guided a multidisciplinary research community in gathering around and working on a common

set of problems. However, DLs have arrived at a juncture (Lynch, 2005) at which they are now capable of either redefining the library metaphor or breaking away from it in order to investigate promising new research directions. Along either path future DL research will focus primarily on consumers; improving support for conventional consumers (i.e., information-users and information-curators) (Levy & Marshal, 1995), as well as emerging new types of consumers. From the information-user perspective, DLs need to improve support for sense making activities by providing cognitive tools, offering gateways to knowledge networks and providing support for personalization of content and interaction. From the information-curator perspective, DLs need to improve support for automation of administrative operations, such as automatic detection of resource quality and metadata creation. The new types of consumers—unique to DLs—are distributed computer applications. These applications use DLs as rich topic specific semistructured information repositories. In this scenario, the role of DLs is as ubiquitous information rich platforms that can be used as a springboard by a wide array of applications.

In this chapter, we investigate the future of DLs in terms of the support provided for the end users and distributed computer applications. This consumer focus facilitates contextually grounded research and development which targets real world issues and acts as a mirror for reflecting on research.

We will briefly present our methodology for systematically exploring the future of DLs and then highlight some of the roles a DL can play to support its diverse set of users. A new breed of consumer will be introduced with discussion on how DLs can provide support to this consumer group. Discussion focuses on providing ways to judge the relevance and importance of various DL roles with respect to the contextual requirements.

FUNCTIONAL ROLES OF LIBRARIES

A close inspection of ways in which conventional libraries are used provides insight into their functional roles (e.g., conventional libraries serve as a repository of books, as a group meeting place, and a place to conduct research). In this chapter, we extend these functional roles in order to support changing practices and needs of emerging consumers. Metaphors are used to draw analogies and explore new DL roles for servicing its consumers. Use of metaphor is a well established technique in human computer interaction design (Madsen, 1994), and is particularly used for generating future application designs.

ROLES OF DIGITAL LIBRARIES TO SUPPORT END USERS

In order for a DL to be useful and usable, its users should be able to complete their tasks with relative ease and should feel satisfied with the experience. The complexity and the diversity of user¹ populations and tasks demand interfaces, tools and services that are tailored to specific user needs. Hence a wide variety of DL interfaces, tools, and services will be required to meet these needs and improve user experiences. It is impossible to exhaustively list future DL roles hence we focus here on succinctly describing a few promising DL roles resulting from our research experience.

DIGITAL LIBRARIES AS A SIEVE

The growth in Internet usage² (200% between the years 2000–2006³) is resulting in an intensifying problem of information overload; consequently people face an ever increasing level of difficulty in filtering desired information from irrelevant information. DLs—as a gateway to the WWW—are

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