Information Journey through Knowledge Desegregation in Digital Environment

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Abstract

The temporal elements of users' information requirements are a continually confounding aspect of digital library design. No sooner have users' needs been identified and upported than they change. This paper evaluates the changing information requirements of users through their 'information journey in domains academia. In-depth analysis of findings from interviews, focus groups and observations of users have identified three stages to this journey: *information initiation*, *facilitation* (or *gathering*) and *interpretation*. The study shows that, although digital libraries are supporting aspects of users' information facilitation, there are still requirements for them to better support users' overall information work in context. Users are poorly supported in the initiation phase, as they recognize their information needs, especially with regard to resource awareness. The user satisfying them that the information is trustworthy and understanding what it means for a particular individual.

Desegregation is the breakdown of observations, usually within a common branch of a hierarchy, to a more detailed level to that at which detailed observations are taken a scientific journal article is comprised of standard components, such as author names, an abstract, figures, a bibliography, and sections describing methods and results. With the creation of digital documents and new tools for manipulating them comes the ability to facilitate the desegregation of journal articles into separate components.

Introduction

If, a digital library (DL) information requirement are simple and lives by now. However, digital library designers not only deal with increasingly complex data sources but are continually confronted by the complexity of different user needs and abilities. Furthermore, no sooner are user needs and abilities supported than they change. The focus of this paper is on the way that users' information requirements change over time. We do this by reference to the user's "information journey", which has been found to consist of three important stages: initiation, facilitation (or gathering) and interpretation.

Most existing work on information seeking has focused attention on what we are calling here facilitation; this work sets that within the broader context of information use and, in particular, considers how an information need arises (and how existing tools support that early phase of information work), and subsequently how people make sense of (or interpret) information in the light of their own needs – for example, interpreting the significance of a clinical finding in relation to the treatment of the current patient.

Users' changing needs

Within the academic domains, time-based aspects of social and contextual issues are key elements of information usage (e.g. who's responsible for providing or interpreting the next bit of information, how important the information is at this stage, etc). As digital libraries can change the context of people's work practices, and therefore restructure their

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relationships with each other and the task at hand, these elements need to be understood.

Research reveals that the temporal elements of information seeking behaviors in an academic domains report that faculties/ guides are the most important drivers for the information journey:

1. Faculties/ guides are the first information reference point for academic (for initiation and facilitation).

2. Library staff provided the contextual information and interpretation that cannot usually be provided in a hardcopy format (interpretation).

Within the academic domain, contextualization of information is also important, and that contextualized understanding is often achieved through negotiation with library staff. However, the crucial difference between the domains is that the collaboration highlighted in the academic domain is that between librarian and user, while colleagues take on this role within the clinical domain. This difference in work

Figure 1: Academic domain libraries
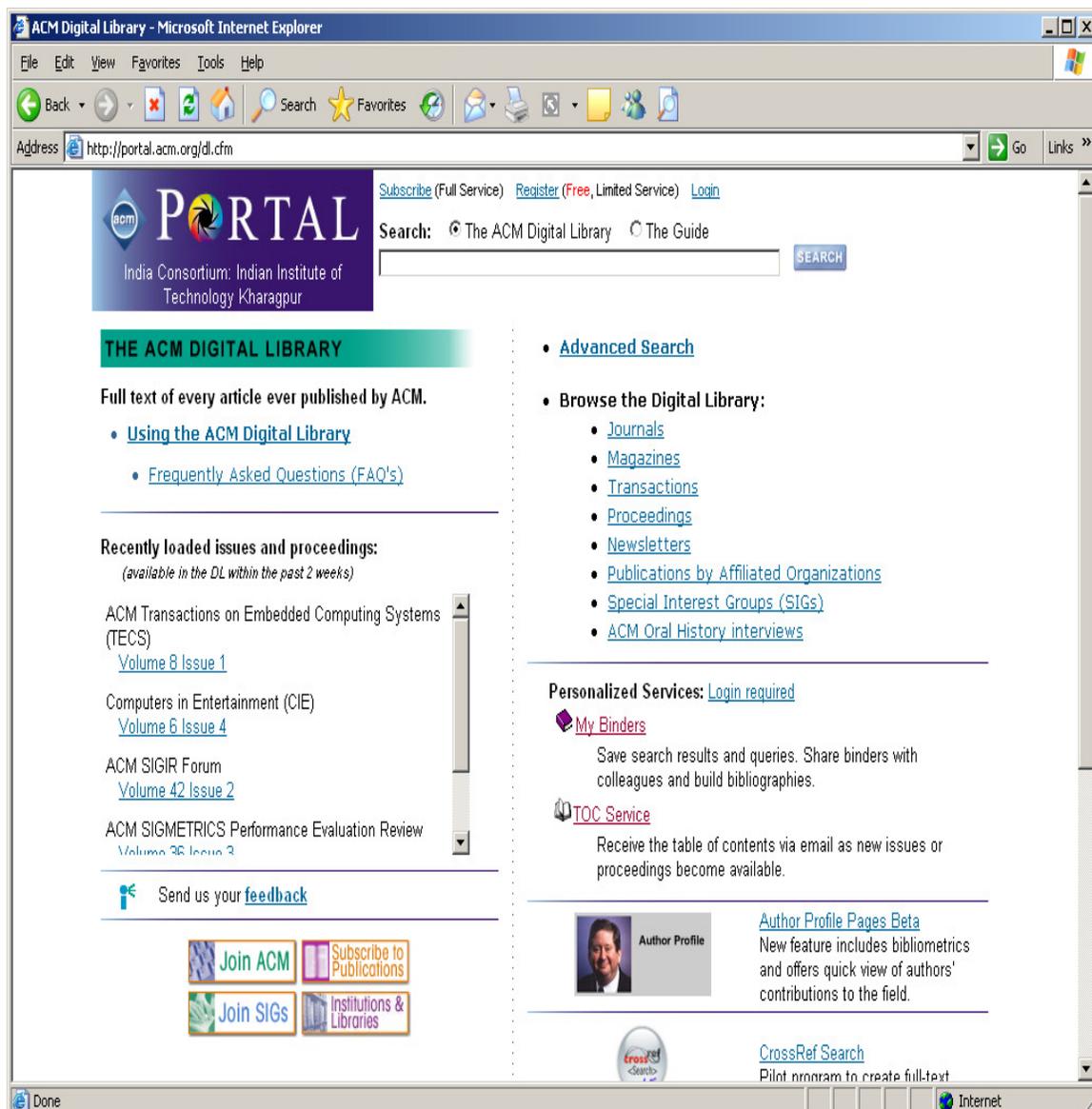
(a) ACM digital library
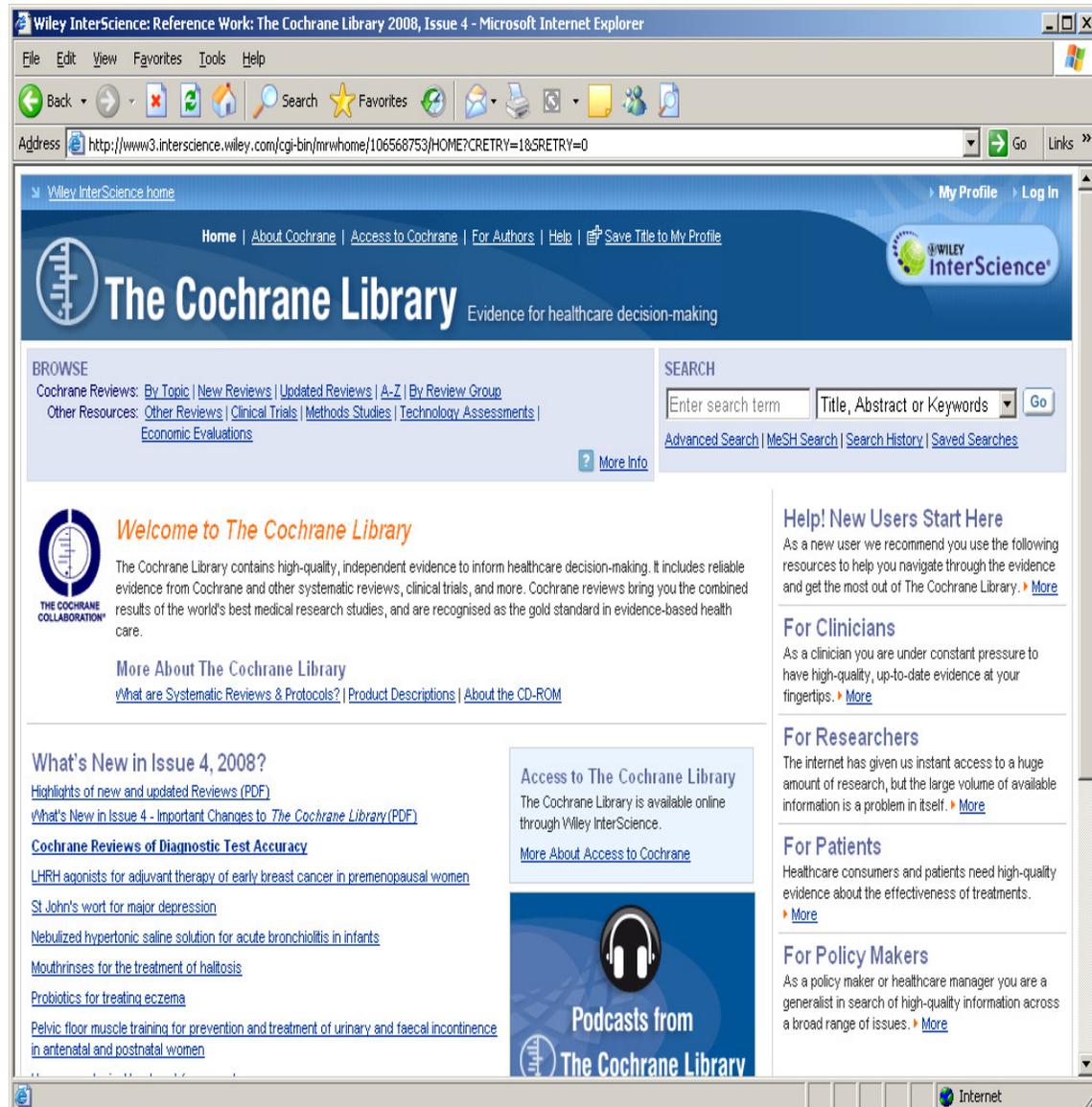
(b) Cochrane library

practices may reflect the different social structures within these two domains. Although digital library research has concentrated on the facilitation of information, there have been a growing number of studies analyzing the interpretation and use of information. Brewer argues those digital libraries should be more pro-active, and notes the importance of interpretation and application of information for digital libraries. He argues that value can be added during the mediation process through information translation (e.g. language services) and

publication. Recent applications demonstrate how digital library information can be integrated within the authoring and publishing process and support the interpretation of information. Integrated environments for both seeking and organizing information are utilized to support the sequential activities of the writing process.

Digital library applications used

A pre-defined concept of a 'Digital Library' was not employed, so that users could explore

what they perceived as comprising a digital library. However, the resources referred to most frequently by the users as digital libraries were similar kinds of systems such as the ACM Digital Library and the Cochrane Library(as shown in Figure 1).

Academics and academic librarians

The findings within the academic domain are based on data gathered from a university that is split over several geographically distributed campuses. Focus groups and in-depth interviews were used to gather data from 25 academics and librarians from 4 different campuses within the university. All of the respondents had a high degree of

Result

The data analysis from all 5 settings showed that users interact with information temporally, traveling through a personal or a team-based information journey. The journey has three stages:

- Information initiation: someone, something or some event initiates information requirements.

- Information facilitation: someone or some system facilitates required information retrieval.

Table 1: Participant descriptive Data

Group	Job	Status & Role	No	Major DLs Used
Academic	Lectures(CS, Business & Humanities)	Research & Teaching roles (from Lecturer to top ranking professor)	12	ACM DL & LEXIS
	Librarians(CS, Business & Humanities)	Subject Librarian through to senior library management	13	Several DL like Cochorane ACM Digital library

computer literacy and had used digital libraries at some point.

Data Collection and Analysis

Four issues guided the focus of questions within all the studies:

- Perceptions of individuals' roles within the organization and their information requirements (both changing and constant).

- Perceptions of information practices, social structures and organizational norms (again, both changing and constant).

- The evolution of practices, structures and norms, and their impact on information resource awareness, acceptance and use.

- Information interpretation: someone or some system supports contextual information interpretation and / or modification.

The results are reviewed in two sections: an overview of the resources used within the information journey, then a detailed analysis of the sub-issues relating to each stage of the information journey (i.e. initiation, facilitation, interpretation), specifically in relation to digital libraries.

Users' Information Journey (Resources Use)

People are supported on their information journey by both online and offline resources, and also by their social interactions. The findings from our studies reveal the role of different resources in the users' transitions

through the stages of their information journeys (see Table 2). Digital libraries were identified as mainly supporting the facilitation of information (rather than initiation or interpretation) in the users' information journey. Academic librarians were found, however, to utilize Digital Libraries in this role more than any other users. It was also only this user group that referred to information needs being initiated by email alerts or bulletin boards linked to digital libraries. Typically a

DL designers will learn from these findings that there are many additional ways that users within the academic and health domain require information resources to support their journeys. Recent digital library advances have facilitated access to different types of temporal data [3]. However, digital libraries have further to go in supporting users' changing needs for all types of information (both theoretical and practical) according to varying contextual

Table 2: Information Journeys of Users

	Initiation		Facilitiations	
Academic Librarian	Colleague, DL email alert & bulletin	coursework / personal query,	Digital library, Book, Web.	Colleague
Lecturers	Colleague	Course development, Research	Book, Colleague, Web, Some Digital Libraries	As above

clinical users initially skim-read journal off-line to initiate information requirements and use digital libraries to facilitate information retrieval. The offline resources also support their need for serendipitous interactions with articles indirectly related to their area of expertise.

Conclusion

This paper identifies users' changing information needs over time via an 'information journey' that involves the use of both online and offline resources. In the first stage of the information journey, information requirements are initiated by either an active specific task or condition, or passively (e.g. by friends and family, information intermediaries or the press). After initial information requirements have been established, most users require support in facilitating its retrieval and then its interpretation and application.

requirements. Few other users were aware of these tools and when some clinicians introduced to these mechanisms they greatly appreciated their usefulness. The findings presented here also highlight the need for press-alerts that would link recent press articles on a particular subject with related current research and professional articles, and then gather them for the users. Ultimately, digital library applications should seek to support users' changing needs in the type of information required and what they wish to do with that information.

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