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Digital Libraries in the Context of Users' Broader Activities

JCDL 2006 Workshop Report

[Ann Blandford](#) and [Jeremy Gow](#)

University College London Interaction Centre

{a.blandford, j.gow@ucl.ac.uk}

Surprisingly little of the work on understanding information seeking and the design of digital libraries has taken much account of the background of the users or the context within which they are working. It has recently been noted (e.g., [Kuhlthau](#), 2005) that there is little interaction between those who study information seeking and information retrieval. The challenge is arguably greater than this: there is additionally a need to understand how digital libraries (and related information sources) are used and also how such systems fit into people's broader work tasks. Without such an understanding, it is a matter of chance as to whether new systems that are developed actually meet the needs of their users or not. This JCDL workshop brought together researchers with an interest in designing digital libraries, and those who study information seeking and use in context, to exchange ideas and insights, and create new interaction possibilities.

These themes carried through into the two technical sessions of the workshop. The first session focused on novel tools for supporting writing and collaboration, allowing users to become active participants in the construction of knowledge. The second discussed broader, user-oriented understanding of how digital and physical information resources support user activities. The two themes represented a contrast between technically motivated and user centred approaches to the development of novel technologies. This exposed interesting new opportunities, in that user studies identified needs that could be addressed by emerging technologies. Conversely, technologies suggest new interaction possibilities that change the relationship between users and information and work, creating a co-evolution between technology and use.

The morning session on writing and collaboration tools comprised four presentations. Ingo Frommholz presented the DiLAS service for annotation of digital documents within a digital library context, using compelling scenarios such as the "aha!" moment to be shared with colleagues and the "uh?" moment when help needs to be sought from knowledgeable peers. These were supported by asynchronous interactions across multiple libraries, using annotations of documents to share insights or solicit

clarification. The aim of this work is to foster change in interactions and support for social infrastructures. This was followed by a presentation from Yael Dubinsky, echoing the agenda of making users active in their interactions with information. She presented the DL Shell and a scripting language that allowed users to program tasks such as retrieving new information after library updates for semi-automated aggregation of new digital library resources. This could appeal to computer science users or underpin library services for less technically oriented user groups. Cathal Hoare further developed the theme of the active user, focusing on tools to support shared visualisations of information resources in synchronous communication with colleagues or subject experts. His work raised issues about 'matchmaking' between those who need and can provide knowledge, which in turn raised issues about privacy and workload management for experts. The morning session concluded with Anatoliy Gruzd's work on combining searching and writing tools within the context of digital libraries. His system exemplifies integrated tools for supporting broader work tasks: it provided ambient search results based on the developing text.

The afternoon session shifted the focus from technology to support users' needs, to determining what those needs are. Jon Rimmer opened the session on the theme of humanities scholars and their use of digital and traditional resources. He emphasised scholars' dependence on the integrated knowledge embodied in physical libraries and resources, and the role of scholarly communication in these environments. This was followed by a talk from Cristina Pattuelli on the design of digital learning objects to support humanities teaching, focusing on a collection of primary materials on the history of the American South. She noted the tension between designing for reuse and customising materials for specific contexts. Moving from formal to informal information construction, Richard Butterworth presented his findings on how information seeking practices develop in family history research by non-professional researchers. He argued that their information behaviours are shaped by significantly different criteria from professional knowledge workers, focusing on searching 'for its own sake' and finding material to present to other family members. The final talk by Stephann Makri shifted the focus to lawyers and their use of digital law libraries. He identified various types of knowledge that users of these libraries need in order to work with them effectively, and he highlighted some surprising misconceptions that even experienced users can hold. All the afternoon talks raised interesting challenges for digital library design.

Proceedings from the workshop are available at <http://www.ucl.ac.uk/events/dl-cuba2006/>.

In a concluding discussion the workshop identified emergent themes from the presentations:

Support for collaboration: There are various roles that digital libraries can play in collaboration and different channels of communication, both synchronous and asynchronous, that can support this. These include written, audio and graphical channels.

Integration of functionalities: The need for broader task support highlighted in the afternoon talks was to some extent addressed by the novel technologies from the morning, e.g., annotations of documents. However, a wider range of tasks needs to be addressed, with more attention paid to existing practices. The extent to which one tailors systems to specific domains or creates general resources is an open research question. Determining the audience for open resources is itself difficult.

Interoperability of resources: Even where tools are not integrated, interoperability is still a requirement.

Impact of technology: Novel information tools significantly change the landscape of interaction between people and resources, as well as interactions between people.

The active user: The potential for digital resource design to facilitate active use was highlighted. Users can create content or meta-content such as annotations or commentaries, and interact more deeply with information.

Importance of evaluation: Both usability and utility are essential to effective use. The myth that 'if you build it they will come' is unsustainable. System builders should evaluate early and often, and exploit existing good practice within library science.

Commercial pressures: These were not discussed by the workshop talks. It was felt that neither the system nor user-focused approaches dealt with the importance of commercial issues, which could be highly context-dependent.

Role of theory: Which theories could usefully inform digital library design? Information foraging theory and theories of writing were mentioned, but their role in informing design remains unclear.

Beyond finding: There has historically been an emphasis on searching, but users experience problems with subsequent selection and use. Questions such as what is useful and reliable information and what is possible with a particular resource need to be addressed.

Overall the workshop drew attention to the limitations of existing technologies; these represent opportunities for new kinds of DL design. There seem to be two distinct tracks of research coming at these problems from user and technology angles. Forums such as this workshop provide essential cross-fertilisation of ideas between these two groups. The dialogue has started: hopefully, it will continue into the future.

Reference

Kuhlthau, C. (2005) Towards collaboration between information seeking and information retrieval, *Information Research*, Vol. 10 No. 2. Available from <<http://informationr.net/ir/10-2/paper225.html>>.