Integrating Human Factors into Designing User Interface for Digital Libraries

Sung Been Moon[*]
sbmoon@yonsei.ac.kr

Biographical Sketch

Sung Been Moon has been involved in digital library research and project since 1993 when he finished the Ph.D at the University of North Carolina at Chapel Hill. His research areas are: IR, Full-Text Retrieval System, Digital Library, Database System, HCI. He has been also involved in the organizing and program committee of many digital library conferences held in Korea. He is currently serving on program committees for the 3rd International Conference of Asian Digital Library to be held in December at Seoul Korea. He was in charge of the Vice Director of the Yonsei Central Library during the last two years(1998-1999), and has been currently leading the Digital Library Project for the Yonsei Central library. He is currently concerned with integrating HCI components into user interface design for digital libraries.

Position Statement

Dramatic advances in information technology and network have revolutionized the way that people now interact with computer systems and are bringing a whole new set of users and task needs. In particular, an integrated information system, so-called digital library, makes it possible to process multimedia information such as combinations of video and live images, as well as text, sound and graphics. A digital library may provide a single point of access to a huge quantity of structured and accessible information which is available to a variety of users having different information needs. Digital libraries are inherently interactive systems with a constant growth of the number of end-users. They must not only rely on effective and sophisticated retrieval mechanisms but also provide efficient interaction with the end-users(Mulhem and Nigay, 1996).

In the 1990's, several information scientists have paid attention to HCI in the

---

[*] Associate Professor at the Department of Library and Information Science
  Yonsei University, Seoul, Korea

user interface design for information retrieval system as well as a digital library(Fox, et al., 1993; Kling and Elliott, 1994, Van House, 1996, Spink and Saracevic, 1998, Sheiderman, 1998; Savage-Knepshield and Belkin, 1999) and a special issue of the JASIS in 1997 introduced an overview of HCI(Schackel, 1997). However, our understanding of what it means to interact with computer has advanced during the last decade. Research and activities on HCI has also shown us how to put this understanding into designing and evaluating user interfaces.

Unlike in the early days of digital libraries, the range of knowledge and experience of different users is very broad. One of the challenges of HCI design is to ensure maximum users benefits, and to produce usable as well as functional systems. Usability is a key concept in HCI, which is concerned with making systems easy to learn and easy to use. In order to produce computer systems with good usability, it is essential to understand the psychological, ergonomic, organizational, individual, and social factors that determine how people operate and make use of computer technology effectively. It is also important to translate that understanding into the development of tools and techniques to help designers ensure that computer systems are suitable for the activities for which people will use them(Preece, 1994).

During the last decade, designs for digital libraries have been dominated by technical oriented approach rather user oriented approach. The key requirements for digital library are: usability, scalability, and sustainability(Shackel, 1997). In order to enhance the usability and the accessibility of digital libraries, it is needed to show how theories and models from the domain of HCI can be applied to the user interface design of digital libraries. Integrating human factors into digital libraries is necessary for a digital library to effectively cope with a variety of users having diverse individual differences aw well as cultural difference.

References

Baldonado, M.Q.W. (2000). A User-Centered Interface for Information Exploration in a Heterogeneous Digital Library. Journal of the American Society for Information Science, 51(3), 297-310.

Cousins, Steve B. (1996). A Task-Oriented Interface to a Digital Library. ACM CHI'96 (pp.103-104).

Elliott, M., and Kling, R. (1997). Organizational Usability of Digital Libraries: Case Study of Legal Research in Civil and Criminal Courts. Journal of the American Society for Information Science, 48(11), 1023-1035.

Fox, Edward A., Hix, D., Nowell, L.T., Brueni, D.J., Wake, W.C., and Heath, L.S. (1993). Users, User Interfaces, and Objects: Envision, a Digital Library. Journal of the American Society for Information Science, 44(8), 480-491.

Gaines, B.R., Chen, Lee Li-Jen, and Shaw, M.L.G. (1997). Modeling the Human Factors of Scholarly Communities Supported through the Internet and World Wide Web. Journal of the American Society for Information Science, 48(11), 987-1003.

Kling, R. and Elliot, M.(1994). "Digital Library Design for Usability." In: Proceedings of Digital Libraries '94 The First Annual Conference on the Theory and Practice of Digital Libraries. Edited by Schnase, J.L et al. Texas: College Station. (pp.146-155).

Mulhem, p and Nigay, L. (1996). Interactive Information Retrieval Systems: From User Centered Interface Design to Software design. Proceedings of the 19th Annual International ACM SIGIR Conference on Research and Development in information Retrieval (pp.326-334), New York: ACM.

Preece, Jenny, Rogers, Y., Sharp, H., Benyon, D. Hooland, S., and Carey, T. (1994). Human-Computer Interaction. New York:Addison-Wesley.

Savage-Knepshield, P., and Belkin, N. (1999). Interaction in Information Retrieval: Trends Over Time. Journal of the American Society for Information Science, 50(12), 1067-1082.

Shackel, Brian. (1997). Human-Computer Interaction-Whence and Whither? Journal of the American Society for Information Science, 48(11), 970-986.

Schmidt, Colin T. (1997). The Systemics of Dialogism: On the Prevalence of the Self in HCI Design. Journal of the American Society for Information Science, 48(11), 1073-1081.

Shneiderman, Ben. (1998). Designing the User Interface: Strategies for effective Human-Computer Interaction. Massachusetts:Addison Wesley.

Spink, Amanda, and Saracevic T. (1998). Human-Computer Interaction in Information Retrieval: Nature and Manifestations of Feedback. Interacting with Computers, 10, 249-267

Van House, N., Butler, M.H., Ogle, V., and Schiff, L.(1996). User-Centered Iterative Design for Digital Libraries. D-Lib Magazine (February, 1996). Accessible at <http://wwww.dlib.org/dlib/february96/02vanhouse.html>