

Introduction

The 8th DELOS Workshop on User Interfaces in Digital Libraries was held in Stockholm, Sweden, 21-23 October 1998. The DELOS Working Group is an action of the ERCIM Digital Library Initiative (<http://www.area.pi.cnr.it/ErcimDL/>). During the workshop, a “mini-workshop” was held, together with participants from the 4th ERCIM UI4All Workshop, another ERCIM Working Group, that was held between the 19-21 October 1998. 21 participants, including guest speakers attended the workshop. 11 presentations were made during the workshop.

The DELOS working group is funded by the ESPRIT Long Term Research Programme and has been promoted by ERCIM with the objective of supporting research in areas related to digital libraries. In particular the DELOS objectives are

- to stimulate research activities in areas which are relevant for the efficient and cost-effective development of digital library systems,
- to encourage collaboration between research teams working in the field of digital libraries and
- to establish links with on-going projects and activities in the field of digital libraries in industry and other public and private institutions.

A Digital Library is the integration of several different components and will include a range of content and services. It will also include a large and diverse group of users. It is important to develop an understanding of the overall tasks and interactions users are engaged in when entering a Digital Library. We interact constantly with our environment through different communication mechanisms and processes. *Information seeking and retrieval* in Digital Libraries is but a special case of such a process. Analysis and evaluation of user, systems and interactions are needed to successfully build future Digital Libraries. Information retrieval research tends to abstract away from both the general aspects of interaction and view actions at the interface as isolated events, and from the special requirement information access tasks pose on interface design.

Presentations

The workshop started with a “Challenge paper” (Preben Hansen and Jussi Karlgren, SICS). The paper summarized some important research issues raised 25 years ago related to information retrieval (IR) and user interfaces (UI) and its relevance for the workshop. The authors found that some of the questions raised then are still valid today, such as the characteristics of the user, the task, the information content and medium, the computer and IR techniques and the role of evaluation and feedback in the redesign cycle, among others. However, there has also emerged new research areas such as multimedia content, multimodal interaction, multilingual information and users and distributed systems and collections.

Our guest speaker, Professor Nicholas Belkin, Rutgers University, provided a “road-map” on important issues for Digital Libraries in his paper “Understanding and supporting Multiple Information Seeking Behaviours in a Single Interface Framework”. First, Belkin presented a definition of a Digital Library and what functions need to be supported in such a framework. Based on the knowledge that people engage in multiple information seeking strategies (ISS) and multiple types of interactions with information within an information-seeking episode, Nick Belkin described his and his group's work within the third TIPSTER research program. The goal of the project is to identify and classify different ISSs, characterize sequential structures of ISSs, identify specific combinations of IR techniques appropriate for different ISSs, and construct and evaluate system which adapts to support different ISSs in the course of a single information seeking episode

Constantine Stephanidis, ICS-FORTH, our second guest speaker, raised some critical issues for interaction design in digital libraries in the light of HCI and Digital Libraries. Among the main issues and challenges mentioned were diverse user groups, variety in the context of use, and technological proliferation. The author also proposed a way to deal with the design of Digital Libraries containing 3 phases: Design processes and techniques, Implementation, and Evaluation.

The first two presentations focused on multilingual aspects. Nuno Miguel Antunes Freire, INESC, described a digital library project containing theses and dissertations, based on the LDAP technology, including Multilingual Classification Systems to allow a cross-language information retrieval service. Aarno Jarno Tenni (VTT) described the use of controlled languages for query translation in a legislative document retrieval system in the paper *Automatic Translation in Multilingual User View to Legislative Databases*.

Two papers addressed the issue of evaluation of information systems. The paper “*WWW Interface Design, Driven by Heuristic Evaluation: The EINS-Web Project*” presented by Silvana Mangiaracina, CNR, describe the experience of the evaluation and design of the EINS-Web user interface, using heuristic evaluation. Demosthenes Akoumianakis, ICS-FORTH, discussed principles for constructing user interfaces as multiple metaphor environments.

Kuldar Taveter (VTT) presented an agent-based system of semantical information retrieval IR system based on concepts and domains in his paper *Intelligent Information Retrieval Based on Interconnected Concepts and Classes of Retrieval Domains*. Maria Francesca Costabile (Bari University) discussed the issue of visualization and describe a technique for visualizing meta-information in the paper *Information Visualization in the Interaction with Digital Libraries*.

Three papers concerned the implementation of user interfaces. Two of them were based on the Dienst System. *Implementing a Common User Interface for a Digital Library: the ETRDL experience* presented by Donatella Castelli (CNR) discussed the design decisions and experiences underlying the design of the interface. *AQUA: An advanced user interface for the Dienst digital library system* presented by László Kovács (MTA SZTAKI). Finally, based on empirically defined stylistics based genres and clustering, a interactive information retrieval interface with multi-dimensional presentation of search results which was developed in a joint project between SICS and Telia Research, was presented by Johan Dewe and Niklas Wolkert, now from Netsolutions AB.

Some important issues discussed during the workshop:

1. *Information seeking and retrieval*. One important issue in Digital Library research is issues related to HCI and distributed information seeking and retrieval (ISR). We should consider information seeking and retrieval as embedded activities within Digital Libraries.
2. *Evaluation*. Currently, a lot of different applications are being developed and used. We need techniques and methods to analyse, and evaluate different systems as well as different users, their behaviour, and tasks, when interacting with distributed information resources. This also includes developing new techniques and methods. It was also recognized that it was important to evaluate the ideas behind the systems developed.
3. *Support for interaction*. We need to support interactions with information, such as texts and multimedia in information seeking activities. This include access to multilingual information. It is also important to construct conceptual models and theories in order to understand the interactions in distributed Digital Libraries.
4. *Modalities*. Future Digital Libraries will encompass alternative modalities for representations of information seeking activities.

5. *Integration.* Integrating the user interface closely with the functionalities of the system is desirable: usefulness cannot be added after the functional design.

We take this opportunity to thank the participants of the workshop and especially those who made presentations, for the many interesting discussions that took place and for making the workshop such a success. We also thank the ERCIM office for their valuable contribution to the organization of the workshop and the publication of these proceedings.

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