

The StudySpace Project: Collaborative Hypermedia in Nomadic Computing Environments

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The StudySpace Project at Washington University School of Medicine is bringing together an assortment of computing and communications technologies to address the challenges of health sciences education. Collaborative hypermedia is the key integrating technology, and our goal is to provide effective anytime/anyplace use of information [1]. In StudySpace, we are using LiveBoards, mobile computers, ATM networks, and wireless LANs. Lotus Notes is the primary software system. Spatial and temporal boundaries are reduced by using Notes shared and private databases, while interdocument linking allows the structuring, personalization, and continued evolution of information. Asynchronous interactions over this material among developers, students, and teachers is supported by Notes' discussion group databases and integrated hypermedia mail facility. However, our experience with current releases of Lotus Notes raises two important design issues that future systems must address in multiplatform, nomadic computing environments.

Mobile interfaces

Mobile computing and the situated use of information require that hypermedia systems answer the questions "What am I?" and "Where am I?" In response to the first question, we are working on smart links that check hardware, network, and display capabilities before fetching a document. Information retrieved will be optimized for that machine, whether it is a tablet computer or a workstation with a full color display.

The second and more challenging question is how to provide the hypermedia system with an awareness of the user's physical location and deliver site-relevant information effectively. For example, interface and information requirements in a classroom are different from those in an emergency room. In a classroom, online lecture notes and access to literature through a pen and gesture interface may be needed. In clinical settings, hands-free access to patient data or therapeutic handbooks may be most useful. The situated use of information implies situated delivery and will involve the convergence of geographic information systems and hypermedia technologies.

Synchronous personalization

The accompanying photograph demonstrates how mobile computing can involve several people collaborating in real time over shared information using a variety of hardware. Just as students make notes on class handouts, there is a need to personalize and annotate shared electronic information. However, doing so in a multipoint environment during synchronous activity becomes a complex issue, as Streit notes in this issue. Who sees the annotations? If others may see them, when do they become visible? How are person-



al links and annotations managed?

We believe a model for hypermedia that fully abstracts the structural and behavioral aspects of hypermedia from the underlying information ultimately provides the flexibility needed for personalization and annotation [2, 3]. Individuals can manage a personal set of anchors and links separate from other users. This link information can be stored in personal hyperbases. Additionally, the system can provide a range of access privileges over these hyperbases to control which anchors and links are active at a given time [4]. (Bieber and Kacmar discuss access privileges further in this issue.)

These issues challenge us to rethink traditional approaches to designing hypermedia information and building hypermedia systems. We hope the StudySpace Project creates a framework for developing effective solutions. 

References

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