

# The Digital Library: the Next Sigmoid Curve of the Information Profession

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# Tango on the Web: The Evolution of the h-journal

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## INTRODUCTION

A distinction can be made between the electronic journal and a hypertext or hypermedia journal (throughout the rest of this paper the terms e-journal and h-journal will be used) that categorizes them as belonging to two different stages in the evolution of electronic documents [1]. While the e-journal contains unstructured text and mimics the print model of journal publication, the h-journal builds upon both. It contains structured text, hypertext, and incorporates notions of user centrality to document creation acknowledging thereby that certain kinds of electronic documents can also function as information systems. Recognizing that practitioners need and use information, often transforming it into practice, the primary aim of the h-journal can be further specified as support of information work in the practitioner environment.

The h-journal has its roots in the genre of the review serial. Nevertheless, it makes no assumptions about publication frequency and has been conceptualized with the following features [2]:

1. it includes other document formats (graphics, audio, and video) besides structured text and hypertext;
2. it supports differing levels of user interactivity (ability to interact with the author or a relevant discussion group, add annotations);
3. it facilitates the exploration of dynamic concepts with some amount of interaction that is beyond mere descriptive text;
4. it extends the information activity to its fullest potential by utilizing a taxonomy of links to include documents outside the immediate context; and
5. it makes provisions for other forms of data manipulation besides information retrieval (editorial support, statistical analysis, instruction support, decision support).

Hyper-MedLIB is the proof-of-concept h-journal that was developed based on categories of information work in the domain of health sciences reference librarianship. It is built using the World Wide Web protocols and technologies as a prototyping tool. Like the tango, web publishing has a great deal of creativity and originality to offer. And like the tango, web publishing must be managed as a series of “elegant, flowing, steps” [3] if it is to achieve the same kind of perfection that the well-executed tango does. Hyper-MedLIB offers a WWW interface to do so.

## METHODS

Several exploratory techniques, such as content analysis, means-ends-analysis, document analysis, and data flow diagrams, were used in an effort to answer two questions:

1. What are the applications of a h-journal that support work in the practitioner environment?
2. What is the usable document and links structure of a h-journal?

Health sciences reference librarianship was the practitioner work domain chosen for this study. Categories of information work were identified through a content analysis of the literature (65 articles) and job descriptions (31 position descriptions) in the domain. This was supplemented by observation and unstructured interviews of participants (8 practitioners drawn from 4 institutions). Additionally, copies of written materials of participants were also collected for a coarse-grained content analysis. A means-ends analysis provided the specification of the h-journal structure and list of applications for one specific activity, teaching (see Sundaram [4] for details of the methods used and Sundaram [5] for a discussion on information work).

Volume 2 of *Current Practice in Health Sciences Librarianship* was chosen as the print corpus [6]. It was subjected to a document analysis that identified answers to two questions: **1)** what are elements of the document; and **2)** what can be done with the document, that is, what are possible applications of each element.

Because the development of Hyper-MedLIB used the WWW as a prototyping tool, Netscape Navigator Gold 2.01a was the browser of choice. HTML 2.0 (with the Netscape extensions that have been submitted to the Internet Engineering Task Force (IETF)) was the markup language used. A list of web development tools used can be found in [Appendix 1](#).

## RESULTS

Seventeen categories of information work were identified in the domain. They are:

- 1) teaching,
- 2) reference work,
- 3) online searching,
- 4) information design,
- 5) information quality filtering,
- 6) electronic publishing,
- 7) archivist,
- 8) collection development,
- 9) inter-library loan,
- 10) management,
- 11) staff training,
- 12) professional development,
- 13) documentation,
- 14) meetings,
- 15) resource use/re-use,
- 16) technology alliancing, and
- 17) a miscellaneous category called others.

Information work revolves around four pivotal activities: **1)** documentation, **2)** meetings, **3)** resource use/re-use, and **4)** technology alliancing. They are pivotal activities because one or more of them occur in conjunction with other information activities such as teaching or reference work. For example, teaching involves

meetings. It also involves documentation because handouts and other instructional materials must be prepared. Sometimes it includes technology alliancing because the structure of information in the students' subject domain makes different requirements of teaching, for example, medicine has a vocabulary, engineering drawings have certain conventions. This means that programmatic instruction at strategic places in the curriculum is what is required, not just an ad hoc introduction to MEDLINE or INSPEC databases. It may even include resource use/re-use if the teaching resource must be shared with other information activities.

The means-ends analysis showed that work is a complex interplay between activities that are both situation and function dependent, that actors (workers) have different skill levels and use specific mental strategies, and that information must be filtered . This complexity of work and tasks, multiplicity of user levels, and the necessity for filtering must be represented in the access points available for information retrieval. Specifically this means that in addition to the traditional methods of representing a document, in the h-journal space a customized, interactive, and functional access to information - a problem-oriented approach to retrieving, using, and filtering information - must be provided. Based on these findings, three broad areas of h-journal applications can be identified for information retrieval, information work, and imprimatur functions, and an interface developed.

## **DISCUSSION**

### **Fig. 1. H-journal interface development considerations**

The different considerations about the h-journal that need to be incorporated into its interface can be very simply illustrated as shown in Fig. 1. The h-journal is a networked electronic document with two components: structure and applications. But it is also an information system. Its structural and applications considerations for interface development are therefore influenced by this perspective. Not only must attention be paid to formats (for example, the use of standard formats that enable easy sharing, downloading, and manipulating) but document markup (how much and of what kind) becomes important. Structure also implies links:- the active links to and from the h-journal. The purpose of document markup is manipulation of the text and is determined by the users' tasks (how will users use the specific information). Since manipulation of videos, and other document formats on the WWW are in their infancy, a word/phrase index must be created for the different media formats in the h-journal. Figure 2 illustrates the interface for the Hyper-MedLIB, proof-of-concept h-journal. Please note that all the icons representing information work are not shown in the figure below.

## **Fig. 2. WWW interface to Hyper-MedLIB**

The interface screen is always divided into three parts with the top left window established as the target window. This is Window A which always shows the user what he/she requested. The user may have clicked a button or completed a form in one of the other two windows, but the requested information is always displayed here. Information in the other two windows never changes, thereby giving the user an ever present option for opening another line of inquiry. Window B has the traditional links structure that is associated with a book: an index, a thesaurus display, a search feature, a table of contents, a help function, and the imprimatur information. Users comfortable with this structure can use this as their command console. Window C is the interactive, customized interface that lets the user query using problems, configure use levels, and enable applications. Each icon in Window C will allow the user to enter an interactive problem domain specified by its category name.

The proof-of-concept demonstration will illustrate the interface for one category of information work - teaching - as it is supported by the h-journal.

## **CONCLUSION**

As electronic networked documents continue to evolve the interface to the document space becomes an important problem for research. Electronic documents, like the h-journal, have no print equivalent. It may therefore be inadequate to design title pages for these documents or home pages as we see on the WWW today. This paper has presented the view that an electronic document is an information system and it must therefore have an interface that is suited to its tasks (the applications for which it will be used).

The h-journal, Hyper-MedLIB provides an innovative interface for information retrieval that takes advantage of icons as well as the interactive forms popular on the WWW. Additionally, it utilizes the traditional models of bibliographic structures (table of contents, index, thesaurus) with a problem-oriented approach that is bound to information work categories. Because most of the software used in the development are shareware tools, this model interface is both cost-effective and relatively easy to implement.

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### **Appendix 1**

**HTMLed, 1.5.** [HTML Editor] Available from <http://www.ist.ca>

**Mapedit** [Imagemap Editor] Available from <http://www.boutell.com/mapedit>

**Netscape Navigator, 2.01a.** [WWW Browser] Available via ftp from <http://www.netscape.com/>

**SoftQuad HoTMetaL, 1.0.** [HTML editor] Available via ftp from <http://softquad.com>

**SWISH.** [Index] Available from <http://www.eit.com>

**Website.** [WWW server software for Windows] Available via ftp from [O'Reilly's Computer Books and Web Software](#)

### **References**

1. SUNDARAM, A. **A Simple model for publishing a hypertext journal.** *Serials Review* 22(1) 1996: p 1-20. In press.
2. SUNDARAM, A. **Towards publishing a hypermedia journal.** Champaign, IL: Graduate School of Library and Information Science, University of Illinois at Urbana-Champaign, 1995. Unpublished doctoral dissertation proposal.
3. The 1996 Grolier Multimedia Encyclopedia. [CD-ROM] New York, Grolier, 1996.
4. SUNDARAM, A., LESSICK, S and SMITH, J. What is reference work? New conceptions about old functions. **2nd Annual Conf. on Conceptions in Library and Information Science (CoLIS 2), Royal School of**

**Librarianship, Copenhagen Denmark, 13 - 16 October, 1996.** Manuscript submitted.

5. SUNDARAM, A. Categorization and modeling of information work for h-journal design. **1996 AMIA Annual Conference: A Conference of the American Medical Informatics Association, October 26-30, 1996, Washington DC.** Manuscript submitted.

6. BUNTING, A and ALLEGRI, F. eds. **Educational Services in Health Sciences Libraries.** NJ: Scarecrow Press for the Medical Association, 1995.