Hierarchical Faceted Metadata in Site Search Interfaces

Jennifer English, Marti Hearst, Rashmi Sinha, Kirsten Swearingen, Ka-Ping Yee
SIMS, University of California, Berkeley
Berkeley, CA 94720-4600
{jenglish,hearst,sinha,kirstens,ping}@sims.berkeley.edu

ABSTRACT
One of the most pressing usability issues in the design of large web sites is that of the organization of search results. A previous study on a moderate-sized web site indicated that users understood and preferred dynamically organized faceted metadata over standard search. We are now examining how to scale this approach to very large collections, since it is difficult to present hierarchical faceted metadata in a manner appealing and understandable to general users. We have iteratively designed and tested interfaces that address these design challenges; the most recent version is receiving enthusiastic responses in ongoing usability studies.

Keywords: Search User Interfaces, Iterative Design, WWW

INTRODUCTION
Although general Web search is steadily improving, studies show that search is still the primary usability problem in web site design. A recent report by Vividence Research analyzing 69 web sites found that the most common usability problem was poorly organized search results, affecting 53% of sites studied. The second most common problem was poor information architecture, affecting 32% of sites [3].

We are examining how faceted metadata can be used to tie search results into the information architecture of a web site. We use the term faceted metadata to mean orthogonal descriptors within a metadata system. For example, different facets associated with architecture include Materials (concrete, brick, wood, etc.), Styles (Baroque, Gothic, Ming, etc.), View Types (interior view, exterior view, etc.), People (architects, artists, developers, etc.), and so on.

Although much study has been done on how to create metadata, very little has been done on how to use it explicitly in search user interfaces, and whether or not doing so is even a good idea. Our design goals are to use metadata to create the navigation structure of a web site; to organize the search results; and to suggest, via query previews [2], the next steps a user might take within a search session. The interface should allow users to use hyperlinks, rather than, or in addition to, keyword search, to flexibly explore a collection’s contents along several different dimensions simultaneously. The interface should also allow an easy flow between refining and broadening the query, and should support both directed and undirected exploration.

As a prelude to designing our own interface, we conducted a small exploratory study of a commercial recipe interface offering three search options: a standard search form, a search form with faceted metadata, and a browsing interface that makes use of faceted metadata and dynamic query previews [1]. Our results suggest that for many tasks, the metadata-based approaches are superior to a standard search form and linear results listing. They also suggest that, when given a choice between a search-centric and a browse-centric interface, users recognize the utility of switching to the interface that best supports the current task.

Although the study results indicated the utility of explicit metadata, the collection used was of only moderate size (about 4000 items and 90 metadata choices), and the metadata was organized into flat (non-hierarchical) facets. The question remains of how to make such an approach scale to larger collections; thus, we are applying iterative design principles to the problem of how to incorporate hierarchical faceted metadata and query previews to create an intuitive, accessible search interface. We are using our own software to allow for direct contrasts between different interface features. Although our software will work with any collection for which faceted metadata is available, the initial test collection consists of over 40,000 images from an architecture slide library. Each slide has approximately 10 items of metadata assigned to it, and the metadata hierarchy contains 9 facets and several thousand metadata terms.

INTERFACE DESIGN
We have iterated on the design of this interface several times. In August 2001 we examined three versions against a control search-only interface. The overall results revealed an interest in the metadata approach, as well as which features succeeded and which failed, but two of the preliminary interfaces elicited generally poor scores for ease of use and other preference measures. However, one of the experimental interfaces, which we called the Matrix view, generated somewhat more enthusiastic responses.

Informed by that study, we made significant changes to the Matrix view, and incorporated other results of the study. We highlight important features of this interface in Figure 1. Ad-
Refine your results further within these categories:

**Locations**
- Western Europe
- France
  - Côte d'Azur
  - Cannes
  - Castres
- Europe Orientale
- Europe du Nord
- Europe du Sud
- France
- Hérault
- Île-de-France
- Lyon
- Marseille
- Nantes
- Paris
- Province France
- Provence
- Rhône-Alpes
- Toulouse
- Toulon
- Versailles
- Vichy
- Vincennes

**Structure Types**
- open spaces
- gardens
  - formal (2)
  - public (5)
  - roof (2)
- sculpture
  - 11
- water
  - 1

**Materials**
- building materials
  - 5
tile (4)
- concrete (4)
- glass (4)
- metal (4)
- plant material (3)
- rock (8)
- water (4)

**Periods**
- 17th C
- 18th C
- 19th C
- 20th Century
- 21st century
- Modern

**Styles**
- European (1)
- North American (1)
- Postmodern (International)

**View Types**
- city details
- city general views
- city views
- exterior views
- exterior drawings
- models
- plans

**Concepts**
- [1]
- [2]
- [3]

**USABILITY STUDY**

We are currently (December 2001) running new studies, again with architects, and the response (from 12 participants) is now highly enthusiastic. Participants are assigning an average of at least 6 on a 7 point scale on nearly every measure, including likelihood of future use, ease of use, and usefulness for: design work, exploring a collection, finding a particular image, and seeing relationships. Several participants have expressed a strong desire to have access to the interface immediately. This is especially significant since users are often reluctant to switch from a simple search form and results listings to more complex or innovative interfaces. Thus this work suggests that hyperlinked, faceted, dynamically-generated metadata can be used as a viable alternative to keyword based queries for web site search.

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**REFERENCES**

