Parallel Faceted Browsing

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Abstract

The widely used paradigm of faceted browsing is limited by the fact that only one query and result set are displayed at a time. This demonstrator introduces an interaction design for *parallel faceted browsing* which enables the user to construct and view the results of multiple interrelated queries on a single display. The paradigm offers general benefits for a variety of application areas.

Keywords

faceted browsing, subjunctive interfaces, event modeling

ACM Classification Keywords

H.5.2 Information Interfaces and Presentation: User interfaces – Evaluation / methodology

General Terms

Design, Human Factors

Parallel Faceted Browsing

Faceted browsing (or faceted search; see, e.g., [1]) is a widely used paradigm for the exploration of a large repository of entities which has been used successfully in types of system ranging from e-commerce sites to applications for personal information management. It presupposes that each entity has a number of attributes (or facets), each of which can take different values. In the simplest case, a user starts with a keyword search, which yields a large set of results; the user then specifies values of one or more facets in order to narrow the focus down to some subset of the entities in the repository, which are then displayed. The user can then proceed to specify values of additional facets to narrow the focus further, until he or she has identified a sufficiently small set of interesting items.

The many different realizations of faceted browsing (see, e.g., [4]) have so far shared one general limitation: At any given time, the user can see the results corresponding to only one query (i.e., one set of constraints on values of facets).

With the new paradigm of *parallel faceted browsing* (PFB) introduced here, the user can create in parallel a number of interrelated queries and see their results displayed

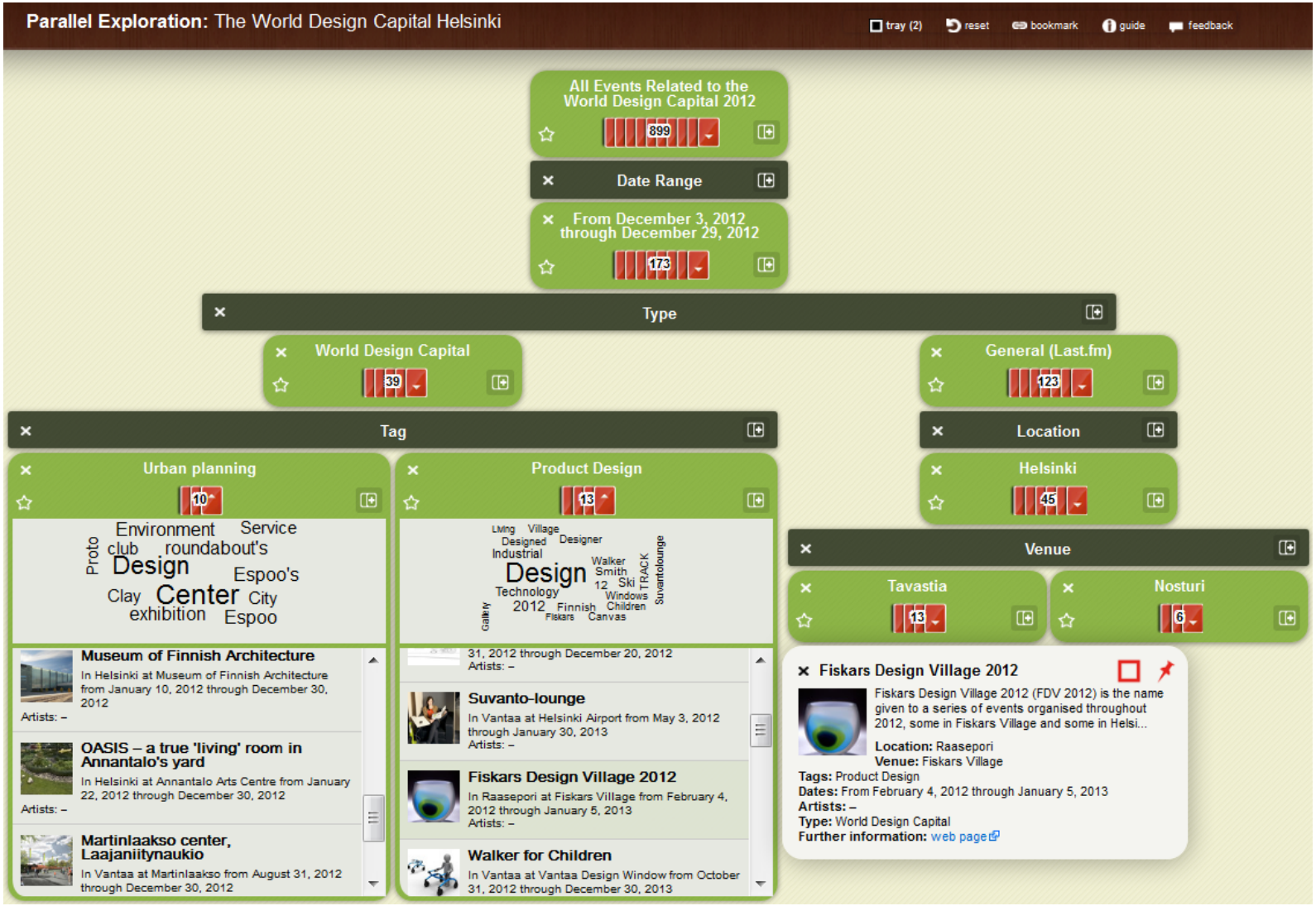

Figure 1: Screenshot of the parallel faceted browsing demonstrator.

(The interface is based on a card sorting metaphor: Each event in the repository is described on a single card. Starting with the pile of 899 cards covering all events, the user can pull out smaller piles that fulfill particular conditions. Consequently, each of the 9 piles shown in the screenshot corresponds to a different query that could be formulated within normal faceted browsing system. The user can examine the results of each such query by clicking on the pile of cards to see thumbnail descriptions. Clicking on a thumbnail description causes a longer description to be shown..)

simultaneously in a way that visualizes their relationships to each other.

Example Scenario

The demonstrator[1] serves people who are interested in the events involved in Helsinki's role as the 2012 World Design Capital.[2] Figure 1 shows how the screen might look in the middle of the following scenario: Alice and Bob will be visiting Helsinki in December. Alice is interested in design and intends to visit a number of World Design Capital events in Helsinki and nearby towns. Bob is more interested in music and would like to get to know the major concert venues of Helsinki.

Working from top to bottom, Alice and Bob have first narrowed their focus to a particular range of dates, via a (popup) menu like those familiar from normal faceted browsing. Working toward the left, Alice has zoomed in on the events concerning the World Design Capital. Noticing in the popup menu that these events fall into various categories (labeled with tags), she didn't know right away which categories are of most interest to her, so she chose to examine the two most promising-looking ones in parallel. She has opened up views of the results for both of these categories, which she can evaluate quickly using the word clouds or more thoroughly by scrolling through the brief thumbnail descriptions. These result lists are much smaller than those found in normal faceted browsing systems, but she can click on the thumbnail description of any event to see a larger description, which in turn includes a link to the full web page describing the event. The two icons in the upper right-hand corner of the more detailed description allow her to save the description in a "tray" of events that she would like to return to (like a shopping cart)—or, more temporarily, "pin" the description to keep it visible on the display while she is exploring other events.

Meanwhile, on the right Bob has been focusing on a more general set of events that have been acquired from the event site Last.fm, zooming in on events in the two main concert venues in Helsinki. Alice and Bob can communicate as needed to ensure that the plans that they make will be compatible in terms of space and time.

At any time, Bob and/or Alice can create a bookmark to the current state of the display, which they can save as a normal bookmark in order to be able to refer to their results later or to continue their explorations. They can also send the link by email to others or embed it in a web page or blog.

Benefits of Parallel Faceted Browsing

This scenario illustrates several types of subtask that users can perform more effectively with parallel faceted browsing than with normal faceted browsing interfaces:

Comparing Subsets of Results Since two or more sets of query results can be viewed at the same time, the user can make comparative assessments, such as that of which location or category seems most promising to examine further.

Finding Two or More Items That Fit Together Well Often, people are searching not for a single item but for two or more items that have to be generally compatible (e.g., Christmas presents for three sibling children). Doing the searches in parallel can be an effective way of ensuring that the compatibility constraint is met.

Creating a Useful Structure for Future Reference or Further Exploration The type of structure shown in Figure 1 can serve both as a useful structured overview of

[1] Publicly available at least through the time of CHI 2013 via http://eventmap-ui.appspot.com

[2] `http://wdchelsinki2012.fi/en`

subsets of items in a domain and as a basis for further exploration at a later time.

Supporting Collaborative Exploration Although the benefits just mentioned can be enjoyed by a single user, parallel faceted browsing also supports synchronous or asynchronous collaborative exploration.

Table 1 illustrates how these general benefits can look in a variety of application areas currently served by normal faceted browsing.

Table 1: Application areas for parallel faceted browsing.

E–Commerce	
	Shopping for products within a very large selection: Considering different brands and/or types in parallel
	Shopping for a set of different products that need to be compatible (e.g., a smartphone and accessories)
Personal information management	
	Organizing photos in a collection
	Getting an overview of previous email correspondence
Education and research	
	Using parallel exploration as an alternative to Advanced Search in a digital library
	Semiautomatically creating organized sets of Wikipedia pages related to a given topic

Related Work

The most closely related development in previous research is Lunzer and Hornbæk's ([3]) concept of *subjunctive interfaces*, which "provide mechanisms for the parallel setup, viewing and control of scenarios". This concept has been realized in various domains but not (to our knowledge) applied to faceted browsing.

Platforms and Implementation

The demonstrator's user interface, implemented in the Google Web Toolkit, essentially runs in any web browser, including those on medium-sized tablets, though greater benefits of parallel faceted browsing can be achieved on normal-sized and large screens.

To put together the dataset for this demonstrator, we built an event collector working on RSS feeds and on the APIs of large event directories ([2]). To enrich the data, we used Harava[3] and then performed several interlinking processes to discover connections between the various facets and to reconcile the various information sources.

[3] `http://www.seco.tkk.fi/tools/harava/`

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