Universität Konstanz

MedioVis

A Visual Interface for Searching and Exploring Multimedia Libraries

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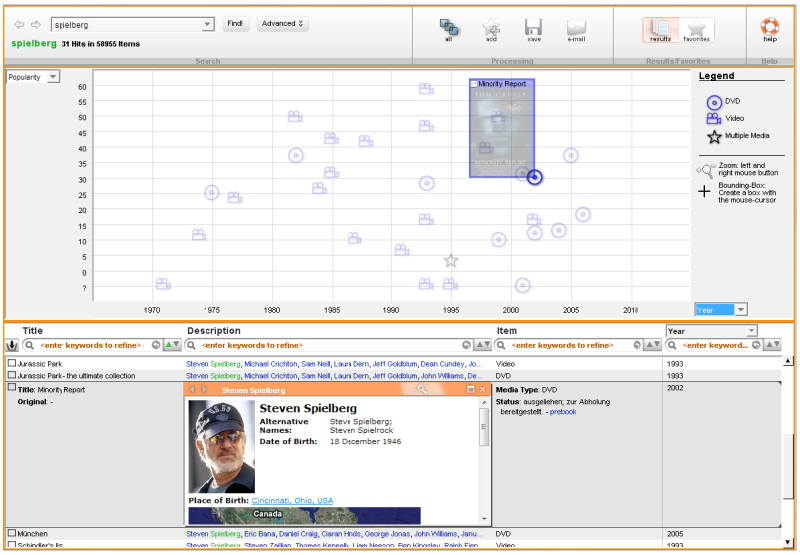
Motivation



Users of digital libraries are nowadays confronted with information spaces that are rapidly growing in quantity, heterogeneity and dimensionality. Therefore, more effective tools are required to facilitate the exploration and search in these information spaces. As a visual information seeking system, MedioVis attends to resolve this issue. Therefore, it provides analytical as well as browsing oriented ways of exploration by integration different views on the information space and visual as well as textual filtering mechanisms. Besides, based on the concept of zoomable user interfaces, MedioVis provides a consistent and usable interaction style.

User-Centered Design Process

MedioVis follows a strictly user-centered design process. Our requirements analysis showed that many users have severe problems to interact with complex OPAC applications, e.g. in terms of query formulation or result presentation. Our intention was to design MedioVis especially for these rather casual or novice users, who in general don't have any in-depth knowledge of search and retrieval or information visualization. Therefore, we decided to use and combine visualizations that base on well-known and straightforward concepts (e.g. tables or scatter plots). The development process was based on iterative design and usability evaluation cycles. Besides, an early version of the system was installed in the media library (about 70.000 items) of the University of Konstanz more than three years ago. Since then, continuous feedback has been gathered through interviews with users, built-in questionnaires and log-file analysis. On a regular basis, updated stable MedioVis versions are deployed to the library while more visionary concepts are evaluated in our usability lab.

Design Principles

Four design principles provide the foundation as well as the research agenda for the MedioVis system. These are based on more than nine years of experience with the design and evaluation of visual information seeking systems:

mediovis

BASE

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Support various ways of formulating an information need. Humans have different needs when searching for information. Therefore we think it is essential that the system provide different ways of formulating such an information need depending on the kind of information the user already has. For example overview visualizations like our HyperScatter (a scatter-plot) allow users to gradually refine their information need through zooming and filtering.

Integrate analytical and browsing oriented ways of exploration. Searching is not a straight forward activity. In reality, users often switch between different search modes, requiring design solutions that inherit a seamless integration of analytical as well as browsing-oriented ways of exploration. Based on a traditional table view, the HyperGrid visualization in MedioVis for example provides sorting and textual filtering possibilities, giving the user an analytical access to the information space. At the same time it allows the user to zoom into table cells and access further details on demand (using semantic zooming). By even integrating web-browser capabilities, each cell can be the used as a starting point for intensive exploration and browsing.

Provide views to different dimensions of an information space. Today's information spaces are often multi-dimensional (social relationships, temporal or geo-spatial). Offering just a single dimension when searching is often not enough (e.g. searching for an object based on the title). Instead, a system should allow users to switch between different dimensions without losing the context. MedioVis is based on a multiple coordinated views approach that allows users to access several dimensions simultaneously. Furthermore, we seamlessly allow the integration of web services, such as Google Maps, Youtube, or social bookmarking sites. By directly interlinking these with catalog objects we approach the Web 2.0 or Mashup concept from a whole new direction.

Make search a pleasurable experience. Over the last decade people are more and more aware that the success of a product depends not only on the functionality and usability but also on several other factors, such as an aesthetically appealing visual design, joy of use, or other hedonic qualities. Paying attention to these factors, which are often subsumed under the term user experience (UX), is not an easy task. In general it requires the knowledge of domain experts. Hence, MedioVis was and is developed in close coordination with communication designers to better address this issue.

New Data Management and Retrieval Techniques

A fast and flexible data backend is essential when it comes to the realization of highly interactive visualization techniques. We can be pleased to look back on a successful cooperation with the Database and Information Systems Group in Konstanz, which is focusing its efforts on the development of BaseX, a native, open-source XML database system. BaseX benefits from feedback of a wide diversity of user groups all over the globe. It features a versatile XML store, accompanied by efficient XPath and XQuery implementations. Last but not least, BaseX will be one of the first products to support the upcoming W3C XQuery Full-Text recommendation.

More Information at:

http://hci.uni-konstanz.de/MedioVis

http://sourceforge.net/projects/mediovis

http://basex.org

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