

# A Fluid Treemap Interface for Personal Digital Libraries

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## ABSTRACT

The UC system employs hybrid quantum/continuous treemaps for fluidly interacting with documents in a personal digital library. By incorporating a document reader application within the visualization workspace, UC supports multi-document reading tasks that have been traditionally accomplished by laying out documents on a physical desk. One of the overall goals of the system is to eliminate the boundary between acquiring and using documents.

## Categories and Subject Descriptors

H.5.2 [Information Interfaces and Presentation]: User Interfaces – graphical user interfaces.

## General Terms

Design, Human Factors, Performance.

## Keywords

Computer-aided reading, visualization, zoomable user interfaces, personal digital library, desktop search

## 1. INTRODUCTION

The current practice in electronic reading is premised on the idea that users will interact with a single document at once. This makes it difficult to perform reading tasks that involve multiple sources such as writing a research paper or analyzing intelligence reports. In the physical world, these multi-source reading tasks are normally accomplished by spreading out a set of documents on a table, using head and eye movements to compare passages between documents or to get an overview of the entire collection.

At the same time, user interfaces to digital libraries often separate the finding of documents from their use. This can force users to prematurely transfer documents into their current workspace before having fully judged their relevance. Moreover, it can also increase the cost of incorporating new documents into their working set by requiring users to first perform task-unrelated steps such as saving, converting, or even opening the document.

The UC system allows the user to search, browse, read, and manipulate documents in a digital library via zoomable hybrid quantum/continuous treemap visualizations. The interface supports incremental keyword searching of document collections as well browsing and exploration based on document appearance and spatial location. The treemap visualizations provide meaningful overviews of document collections while providing

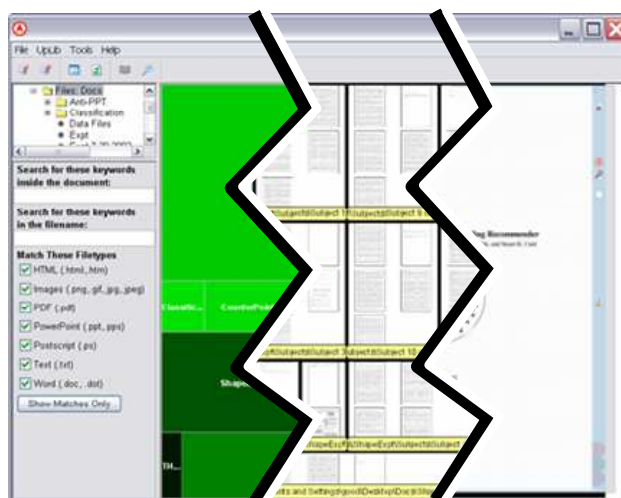


Figure 1: Interacting with documents in UC via continuous treemaps, quantum treemaps, and a document reader.

fast, intuitive navigation between multiple documents in a working set. In addition, because the document reader appears integrated within the visualization workspace, it moves the interaction paradigm away from one of “opening” documents to one where all documents are always available for reading and manipulation.

For each document in the workspace, the UC system uses an instance of a single consistent reader application called ReadUp. ReadUp provides functionality that simulates and extends many of the affordances of paper, including thumbnail overviews, highlighting, freehand scribbles, sticky notes, bookmarks, and interactive keyword search. The use of this common interface for interacting with individual documents ensures a consistent set of functionality for reading any document in the system while limiting the number of unique tools the user must learn to use.

UC is currently implemented as a client application that interacts with documents in an UpLib personal digital library repository. As such, it is able to connect to existing UpLib repositories, such as those that have been manually constructed. However, it also provides a utility to find documents in a user’s file system and automatically add them to a specified UpLib repository. This allows the user to quickly populate their UpLib repository with their existing document collections. A single UC instance can also scan multiple file systems and connect to multiple UpLibs.