

It's been over 10 years since the Human Interface Group at Apple explored a new UI widget—the pile—as a means of organizing information on the digital desktop.

Since then, the idea has fallen by the wayside, even though using piles to organize documents instead of hierarchical file systems seems to be an obvious extension of the desktop metaphor and is how many people naturally work. It's time to revisit this idea.

Using new research, another design for these piles of digital documents has been developed and prototyped, one that tries to emulate the natural use of paper documents on physical desktops. Users have responded positively to tests of a prototype of the new system.

# FILE PILES

## Revisiting the Piling Metaphor for Digital Document Organization

### R E S E A R C H

**SUMMER 2004**  
Literature Review  
Product Review

**SEPTEMBER 2004**  
Observations  
First Questionnaire  
Draw Your Experience

**OCTOBER 2004**  
Interviews  
Second Questionnaire  
Conceptual Models

#### RESEARCH METHODS

I utilized a variety of methods for research:

**Questionnaires, Observations, and Interviews**  
My research began with a pair of questionnaires. The first asked general questions about how the subjects used paper documents and digital documents. A second questionnaire asked more specifically about piling habits. Combined, there were over 70 responses in a six-week period.

I visited several work places to observe and document how people used piles in their day-to-day work activities, and interviewed 10 subjects (seven female, three male) about their piling habits and document usage, both in digital environments and in physical spaces.



An observed desk with piles

#### "Draw Your Experience"

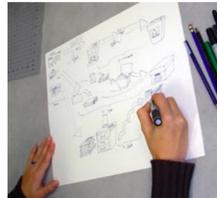
Another technique utilized was one developed at consultancy IDEO called "Draw Your Experience." In this exercise, a group of subjects are given a topic and asked to draw their experience with it in a 30 minute session. Then each subject has to explain their drawing to the group.

I did this exercise three separate times with a total of eight subjects, two males and six females. Each time, I gave them the same topic: The Life-Cycle of Paper. Many deep thoughts and feelings about documents were uncovered using this technique.

#### Related Systems

Many other researchers aside from the Human Interface Group at Apple have also explored alternate ways of organizing digital documents, and as part of my investigations, I reviewed several that seemed directly related. These included Data Mountain, MessyDesk, Presto, TimeScape, Lifestreams, Stuff I've Seen, and Microsoft's Multiblending.

A subject "drawing her experience"



#### RESEARCH FINDINGS

My findings were not dissimilar from the findings from other researchers, the only difference being that many users have become more sophisticated about finding workarounds for the lack of a piling system on their computers.

**Piles vs. Files**  
Many subjects still relied on piles of documents for organizing "active" or "recent" documents, typically clustered by project, although occasionally by time. Files (or folders) were used mainly for long-term storage.

Subjects liked the ability to browse their piles quickly and, because of their visibility, know at a glance what was being worked on last, what the pile is about, and how many documents are in the pile. Although the piles might seem disorganized, most claimed to know the location of specific documents within specific piles.

#### Pile Anatomy

The documents at the top of piles are those that are accessed frequently and/or are important. As a document becomes less relevant, the lower it becomes in a pile.



A sampling of related systems. Clockwise from top left: Lifestreams, MessyDesk, WorkScape, Data Mountain, Presto, Stuff I've Seen, and Apple's Piles.

#### Pile Workarounds

Several subjects had devised ways of creating their own version of a piling system on their computers. One method was to simply make the desktop one large pile of items. Another was to create multiple users for a single computer, with each "user's" desktop being its own pile.

#### Feelings about Piles

One surprising revelation was how ashamed many people were of their piles, as though they were being incorrect in using them. Many expressed outright embarrassment at using piles.

### D E S I G N

**NOVEMBER 2004**  
Personas  
Scenarios and Task Analysis  
Mood Board

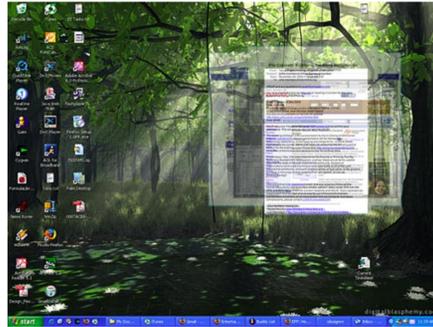
**DECEMBER 2004**  
"Paper" Prototype  
"Paper" Prototype Testing

**JANUARY 2005**  
Interactive Prototype Development

**FEBRUARY 2005**  
Interactive Prototype Development  
Interactive Prototype Testing



A FILEPILE on a Windows XP desktop



A FilePile being manually browsed. Items on the top of a pile become transparent to see items deeper in the pile.



A scattered FilePile. Piled files scale themselves to be all visual at once.

#### FILEPILES

The design solution that I devised is one that builds off the earlier work of Apple's Human Interface Group, updating it for modern operating systems, and taking into account my own design research.

#### Creating a Pile

Piles can be made in two ways. The first way is the same way that folders are made: when documents are saved, the save menu will give the option of creating a new pile. The document can then become part of the new pile. The second way is to simply place one desktop file directly on top of another until both files are selected. This will automatically create a pile.

#### Basic Features of a FILEPILE

Unlike folders or most previous incarnations of digital piles, instead of a file-type icon, FilePiles places a thumbnail image of a user's document for faster recognition and easier browsing. The image is created at the time the document is saved on the pile.

Clicking on a pile and thus selecting it allows the user to do things with it like move it, browse it, scale it, scatter it, file it, sort it, or delete it. Clicking and dragging a pile moves it. Users can delete a pile (and its associated files) by dragging it to the trash or pressing the delete key.

Since FilePiles places a thumbnail image of documents, sometimes users will need to make the pile larger for easier browsing or shrink it down for more space on the desktop. Either way, by grabbing a corner of a selected pile with the cursor, users can scale the pile larger or smaller.

#### Browsing a Pile

Piles can be browsed in two ways. After selecting a pile, a user can press the down arrow (or, on a PC, the scroll wheel on the mouse), to begin browsing it. Files at the top of the pile will become transparent to see the files beneath, one file for every press of the key. When a file is found, clicking on it with the mouse will move it to the top of the pile, where it can be opened in an application with a double-click.

#### Scattering

Another way of browsing a pile is to scatter it, getting an overview of every document in the pile. After selecting a pile, quickly moving the mouse back and forth over top of it will scatter the pile over your desktop, showing the entire contents of the pile, scaling the documents as necessary.

#### Adding Documents

There are three ways to add files to a pile. The first is to simply save the file to a pile just as you would to a folder, choosing the pile as the location to save to in the save menu. It will be added to the top of the pile.

The second way is to drag a file from a folder, application, or desktop onto a pile. When the file and the pile are both selected, the file is added to the top of the pile.

The third way possible way is to have the pile create a list of keywords from already piled documents, then automatically add documents from folders that also contain those keywords to the bottom of the pile.

#### Removing Documents

To remove a document from a pile, a user can either right-click on the top document and select Remove or, if it is deeper in the pile, must first scatter the pile. Then files can be selected, either individually or as a group, and deleted by pressing the delete key or dragging them to the trash or placed on the desktop using the Remove menu item. The scattered pile will then reconfigure.

#### Sorting a Pile

After selecting a pile, users can sort it in several ways: by file type, oldest to newest, and newest to oldest.

#### Filing a Pile

When a user is finished with a pile and ready to file it away for storage, they can simply select the pile and drag it into a folder. Once inside a folder, a pile can dissolve into its separate documents or else remain clustered as a pile.

### T E S T I N G

**MARCH 2005**  
Interactive Prototype Testing  
Interactive Prototype Refinement

**APRIL 2005**  
Interactive Prototype Testing  
Interactive Prototype Refinement

**MAY 2005**  
Final Documentation

A proof-of-concept prototype, made with HTML and animated images and containing explanatory text was put online in December 2004. As of the creation of this poster, it has been viewed over 200 times and feedback on the prototype has been arriving daily.

Feedback has generally been very positive, although wary. Test subjects have suggested the adding of functionality to turn a folder into a pile, the ability to add shortcuts/aliases to piles, and the ability to annotate the pile.



A subject testing the "paper" prototype

More formalized testing, particularly with less-experienced computer users is planned. In early 2005, a more interactive prototype of FilePiles will be built, tested with users, and revised.