Exhibit 2
Part 2 of 2

Patent No. 6,638,318) from the ’227 patent. The ’999 patent claims to be a continuation–in–part from the ’313 patent. Because of their relationship, the specifications of the ’227, ’313 and the ’427 patents are substantially the same.

The Mirror Worlds patents purportedly describe its inventors’ vision of a next–generation computer operating system. It was 1996, and the specification reflects the inventors’ characteristic frustrations with the operating systems of the time:

> [C]onventional operating systems are not well suited to the needs to most users. For example, conventional operating systems utilize separate applications which require file and format translations. In addition, conventional operating systems require the user to invent pointless names for files and to construct organizational hierarchies that quickly become obsolete. Named files are an invention of the 1950’s and the hierarchical directories are an invention of [the] 1960’s.

’227 patent at 1:23–30.

The inventors’ claimed frustrations extended to the “desktop metaphor,” which allowed users to interact with a computer using “the familiar language of the paper–based world, that is, paper documents as files, folders as directories, … etc.” (’227 patent at 1:34–36):

> [T]he paper–based model is a rather poor basis for organizing information where the state of the art is still a messy desktop and where one’s choices in creating new information paradigms is constrained.

’227 patent at 1:36–40.

The Mirror Worlds patents identify six apparent “disadvantages” of “conventional operating systems,” three of which are particularly relevant to the issues here:

> (1) a file must be “named” when created and often a location in which to store the file must be indicated resulting in unneeded overhead;
>
> (2) users are required to store new information in fixed categories, that is directories or subdirectories, which are often an inadequate organizing device;…

(6) the historical context of a document is lost because no tracking of where, why and how a document evolves is performed.

'227 patent at 1:42–52. The Mirror Worlds patents' apparent solution to these problems was a "document stream operating system." '227 patent at 2:12–16. This system organizes information and presents it to the user using the metaphor of "stream" instead of the metaphor of a "desktop" with hierarchically nested directories. "A visual representation of the stream metaphor" is shown in FIG 1. See, e.g., '227 patent at 6:30–32.

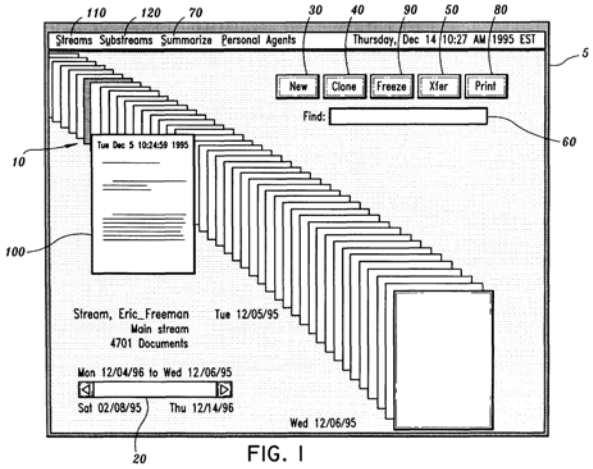


FIG. 1

"Every document created and every document sen[t] to a person" is automatically stored in that person's "main stream." '227 patent at 4:8–10. This "stream" of documents is kept in chronological order. See, e.g., '227 patent at 1:6–10. Thus, a "stream" is "a time–ordered sequence of documents that functions as a diary of a person or an entity's electronic life." '227 patent at 4:6–8. As time passes, the stream continuously accumulates the documents that a person is receiving or generating, and pushes earlier documents farther away, just as a stream continuously passes by an observer, pushing objects seen floating in it earlier farther away.

According to the patents, this stream–based operating system has numerous advantages. It does not require naming documents, because it uses a time, not a name, to identify them. See, e.g., '227 patent at 4:42–45 ("because documents, by default, are added to the

[stream] at the present time point.., no name is required from the user for the document."). Users are not restricted to storing information in "fixed categories, that is directories or subdirectories," because it replaces folders and directories with "stream filters" (i.e., search queries), which produce subsets, or "substreams," of a user's main stream. See, e.g., '227 patent at 3:62–65. The "substreams" produced by these searches are more flexible than conventional folders because they can "overlap," allowing a document to be in more than one substream at once. See, e.g., '227 patent at 4:47–61. Finally, a stream–based operating system solves the problem that there is "no tracking of where, why and how a document evolves" because, "like a diary, a stream records evolving work, correspondence and transactions." See, e.g., '227 patent at 4:27–30.

As shown below, the Mirror Worlds patents' description of the purported invention, and the problems it was intended to solve, provides important context for the present disputes.

A. U.S. Patent No. 6,006,227

U.S. Patent No. 6,006,227 to Freeman and Gelernter was filed on June 28, 1996 and was issued on December 21, 1999. The '227 patent is generally directed to an operating system in which documents are stored in one or more chronologically ordered "streams" instead of in the familiar hierarchical folder structure typical of many operating systems. See, e.g. '227 patent at Abstract; 4:6–8.

In this system, the user does need not know the type of document or in which folder it is stored. See, e.g., '227 patent at Abstract; see also, e.g., 1:26–28 ("conventional operating systems require the user to invent pointless names for files and to construct organizational hierarchies that quickly become obsolete."). The '227 patent states that "the information is organized as needed instead of at the time the document is created," and that large

groups of related documents are summarized in an overview when requested by the user. See, e.g., ’227 patent at Abstract. The ’227 patent also contemplates that archiving of documents is automatic. See, e.g., ’227 patent at Abstract.

A “stream” as defined by the preferred embodiment is a “time–ordered sequence of documents that functions as a diary of a person or an entity’s electronic life” and that is designed to have three main portions: past, present, and future. See, e.g., ’227 patent at 4:6–8; see also, e.g., Court’s Claim Construction Order, p. 2 (herein referred to as “CC Order”.) Every document created, or otherwise referred to as a data unit, received or generated by a person or entity’s computer comprises the “main stream.” See, e.g., ’227 patent at 4:8–10; see also, e.g., CC Order, p. 2. A data unit is any item of information of significance to the user that the user considers as a unit. See CC Order, p. 2.

The ’227 patent provides that a user can use a “find” function to organize a subsets of documents found in the mainstream into a “substream.” See, e.g., ’227 patent at 4:47–56, and 5:1–19. “Substreams” are yielded by a filter on a stream that identifies certain documents within the stream. See, CC Order, p. 2. Documents within the main stream and substreams are organized according to when the documents were created. See, e.g., ’227 patent at 5:53–6:7. Thus, each document is identified with a “timestamp,” or a date and time value that uniquely identifies each document. See, CC Order, p. 2. Documents are each associated with a “chronological indicator,” which is a data structure containing at least a timestamp. See, e.g., ’227 patent at 3:3–10; 5:53–6:7; see also, e.g., CC Order, p. 2. For example, a document that is considered a “working document” may be associated with the “present” portion of the stream if the document has a timestamp that is within the time range associated with the “present” portion of the stream. See, e.g., ’227 patent at 5:54–57.

Likewise, older documents may be associated with the "past" portion of the stream if they have an older timestamp, and documents a sufficiently old chronological indicator may also be archived. See, e.g., '227 patent at 5:57–60. Similarly, documents having a timestamp with a future date may be associated with the "future" portion of the stream. See, e.g., '227 patent at 5:66 – 6:3. In this way, the system of the preferred embodiment maintains a time ordered sequence of stored files. At least the main stream and one substream are maintained as "persistent streams", which means the streams are dynamically updated. '227 patent at 5:1–13, see also, CC Order, p. 3. "Once created, substreams operate dynamically, that is, if a user allows a substream to persist, the substream will collect new documents that match the search criteria as documents arrive from outside the operating system or as the user creates the document." '227 patent at 5:1–5. The '227 patent also provides for representation on a display device of streams as visual streams. See, e.g., '227 patent at Claim 15; see also, e.g., CC Order, p. 3.

Originally, Mirror Worlds asserted claims 1–6, 9–12, 13–17, 20, 22, and 25–29 of the '227 Patent, however, claims 1–6, 9–12 and 25–29 have been found to be indefinite. See Summary Judgment Opinion by Judge Davis. Thus, the claims at issue in this litigation are claims 13–17, 20 and 22.

Independent claim 13 recites:

> A method which organizes each data unit received by or generated by a computer system, comprising the steps of:
>
> generating a main stream of data units and at least one substream, the main stream for receiving each data unit received by or generated by the computer system, and each substream for containing data units only from the main stream;
>
> receiving data units from other computer systems;
>
> generating data units in the computer system;
>
> selecting a timestamp to identify each data unit;

> associating each data unit with at least one chronological indicator having the respective timestamp;
>
> including each data unit according to the timestamp in the respective chronological indicator in at least the main stream; and
>
> maintaining at least the main stream and the substreams as persistent streams.

'227 patent at Claim 13.

B. U.S. Patent No. 6,638,313

U.S. Patent No. 6,638,313 to Freeman and Gelernter was filed on September 17, 1999 and was issued on October 28, 2003, and is a continuation application of the '227 patent. Thus, as noted above, the specifications for the '313 and '227 patents are substantially identical.

Similar to the '227 patent, the '313 patent is generally directed to a document stream operating system, which is "an operating system that is based on a time–ordered sequence of documents that functions as a diary of a person or an entity's electronic life and that is designed to have three main portions: past, present, and future." See, e.g., CC Order p. 2. The operating system in the '313 patent will automatically associate time–based indicators with the documents, and store and display the documents. See, e.g., '313 patent at Claim 1. The '313 patent also provides for a method of automatically archiving documents received from diverse applications that can be searched for selected criteria. See, e.g., '313 patent at Claim 9.

As in the '227 patent, every document created by or sent to a person or entity's computer is stored in the "main stream" according to when it was created, so that the main stream serves "as a diary of a person or an entity's electronic life." See, e.g., '313 patent at 4:9–13 and 5:57–6:11. The system also utilizes substreams, which contain subsets of the documents found in the mainstream. See, e.g., '313 patent at 5:5–23. Documents in the main stream and

substreams may be sorted according to the documents' chronological indicators, as described above for the '227 patent. See, e.g., '313 patent at 3:1–16; 5:57–6:11.

The '313 patent also describes user interface features to be used in conjunction with the storage system described above. For example, Figure 1 shows an embodiment in which the user interface is "based on a visual representation of the stream metaphor:"

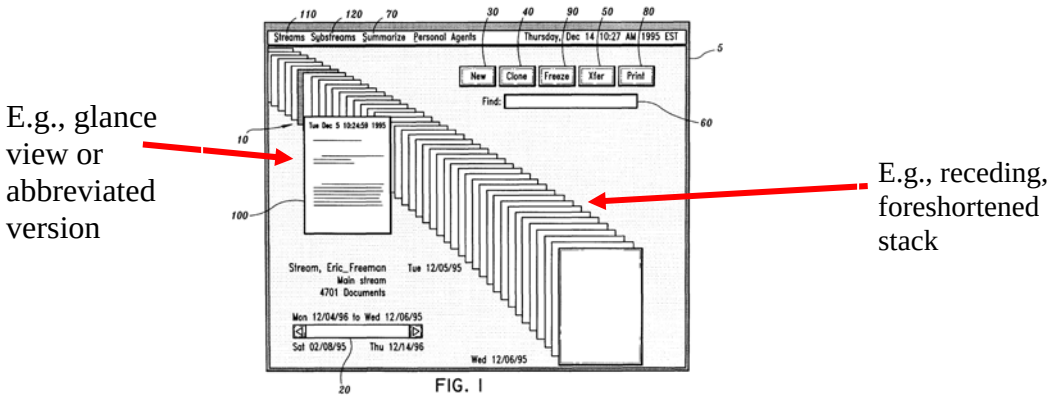


FIG. 1

'313 patent, Figure 1. The visual representation displays the documents in "a receding, foreshortened stack of partly overlapping documents so that only a part of each of said documents in the displayed stack, after the first document in the stack, is visible to the user." See, e.g., '313 patent Figure 1 and Claim 1. In this embodiment, the "[u]sers can slide the mouse pointer **10** over the [receding, foreshortened stack of] document representations to 'glance' at each document" by calling up the more detailed document representation labeled 100 in Fig. 1. See, e.g., '313 patent at Figure 1, see also, e.g., 6:38–40; 8:3–8:16. A Glance view is an abbreviated presentation of a document. See CC Order, p. 2. The '313 patent claims also provide for displaying a cursor or pointer, controlled by the user, that when moved over the displayed stack the system displays a glance view of a document without clicking the document. See, e.g., '313 patent at Claim 1.

The claims at issue for the ’313 patent are claims 1–4 and 9–11. Independent claim 1 recites:

> A method of utilizing a document stream operating system that in turn utilizes subsystems from at least one other operating system, comprising:
>
> receiving documents from diverse applications in formats that are specific to the respective applications and differ as between at least some of said applications;
>
> automatically associating time–based indicators with the documents received in the receiving step from the diverse applications;
>
> automatically archiving the received documents;
>
> automatically creating glance views that are abbreviated versions of respective ones of said documents;
>
> selectively displaying at least some of said documents as a receding, foreshortened stack of partly overlapping documents so that only a part of each of said documents in the displayed stack, after the first document in the stack, is visible to the user;
>
> said displaying further including displaying a cursor or pointer and responding to a user sliding the cursor or pointer over said displayed stack to display the glance view of the document in the stack that is currently touched by the cursor or pointer, without requiring clicking on the document; and
>
> utilizing, in said document stream operating system, subsystems from said at least one other operating system for operations including writing documents to storage media, interrupt handling and input/output.

Independent claim 9 recites:

> A method of automatically archiving documents received from diverse applications in different formats such that the archived documents can be searched for documents meeting selected criteria, comprising:
>
> receiving documents from diverse applications in formats that are specific to the respective applications and differ as between at least some of said applications;

> automatically associating time–based indicators with the documents received in the receiving step from the diverse applications;
>
> automatically archiving the received documents together with said time–based indicators;
>
> selectively displaying at least some of said documents as a receding, foreshortened stack of partly overlapping documents so that only a part of each of said documents in the displayed stack, after the first document in the stack, is visible to the user; and
>
> said displaying further including displaying a cursor or pointer and responding to a user sliding the cursor or pointer over said displayed stack to display a glance view of the document in the stack that is currently touched by the cursor or pointer, wherein said glance view is an abbreviated version of the documents.

’313 patent at Claims 1 and 9.

C. U.S. Patent No. 6,725,427

The ’427 patent to Freeman and Gelernter was filed on December 10, 2001 and issued on April 20, 2004. As described above, the ’427 patent was a continuation application of the ’227 patent, with a substantially similar specification.

Similar to the ’227 and ’313 patents, the ’427 patent is generally directed to a stream–based operating system, in which documents are stored in time based, chronologically ordered “streams.” See, e.g., ’427 patent at Abstract; 4:10–12.

As in the ’227 and ’313 patents, the preferred embodiment of the ’427 patent is a computer storage system for storing files in “a time–ordered sequence,” or “stream.” See, e.g., ’427 patent at 4:10–12. Every document created by or sent to a person or entity’s computer is stored in the “main stream.” See, e.g., ’427 patent at 4:12–13. The system also utilizes substreams, which contain subsets of the documents found in the mainstream. See, e.g., ’427 patent at 5:5–23. Documents within the main stream and substreams are organized according to when the documents were created. See, e.g., ’427 patent at 5:53–65. Documents in the main

stream and substreams may be sorted according to the documents' chronological indicators. See, e.g., '427 patent at 5:1–5; 5:57–6:11.

In the '427 patent, the stream–based operating system comprises a document organizing facility, which is software that organizes documents. See, e.g., '427 patent, Claim 1; see also, e.g., CC Order, p. 2. The system runs in a client/server environment so that users can view documents stored on server computers from client computers. See, e.g., '427 patent at 2:58–67; 4:6–9. Thus, the '427 patent also claims a controlling operating system, which is an operating system that utilizes subsystems from another operating system. See, e.g., CC Order, p. 3. Additionally, the '427 patent claims that the operating system is configured to perform complex analysis, which is analysis of the content of a document involving selection of important words, pictures, and/or sounds in the document. See, e.g., '427 patent at 8:12–15.

The '427 patent also discloses various means for viewing the streams of documents such that the user may visualize the documents as a time ordered stack of papers, or may visualize the documents as a visual summary represented by figures or key terms. See, e.g., '427 patent at 2:44–52. In this embodiment, "users can slide the mouse pointer **10** over the document representations to 'glance' at each document, or use the scroll bar **20** in the lower left–hand corner to move through time." See, e.g., '427 patent at 6:38–42. The '427 patent also describes an embodiment in which "'browse cards' **100** are employed so that when the user touches a document in the stream–display with the cursor, a browse card appears." See, e.g., the '427 patent at 8:3–16.

D. U.S. Patent No. 6,768,999

U.S. Patent No. 6,768,999 to Prager and Sparago was filed on June 26, 2001 and was issued on July 27, 2004. The '999 patent is a purported continuation–in–part of the '313

patent (filed on September 17, 1999, issued on October 28, 2003), which is in turn a continuation of the ’227 patent (filed on June 28, 1996, issued on December 21, 1999). However, the specification of the ’999 patent is different from the ’313 and ’227 specification, and the inventors are different.

The ’999 patent is generally directed to a computer system that operates “an enterprise information management system comprising at least one server and a number of personal computers selectively communicating with each other”. See, e.g., ’999 patent at Abstract and Claim 1. An enterprise information management system is “a system that manages information for an enterprise or organization.” See CC Order, p. 2.

In contrast to traditional information management systems, which “store and retrieve documents on the basis of attributes such as the name and storage location of a document,” the ’999 patent describes an approach that relies “primarily on an intuitive, time–associated way of dealing with information.” See, e.g., ’999 patent at 1:45–65. Its system is “stream–based in that it creates time–ordered streams of information items or assets, beginning with the oldest and continuing through current and on to future items.” See, e.g., ’999 patent at 1:65–2:1.

The claimed embodiment of the ’999 patent includes creating a document object model (DOM) that is “selected information from and about information assets of diverse types, created by diverse software.” See, e.g., ’999 patent Claim 1; see also, e.g., CC Order, p. 3. Information assets (IA) are “data units of significance to the users in an enterprise”. See CC Order, p. 4. The DOM is created from the IA and is stored on a desktop computer or a server and is stored either independently or with a copy of the IA. See, e.g., ’999 patent at 5:14–17.

The system also generates "browse cards" or "glance views", each of which is a graphical depiction of a document or data unit providing information about its underlying IA to a user. See, e.g., '999 patent at 12:63–13:6. Figure 1 of the '999 patent below shows examples of "browse cards" or "glance views" on the left, with a 'full "browse card" or "glance view"' on the right (with red highlight and callout added):

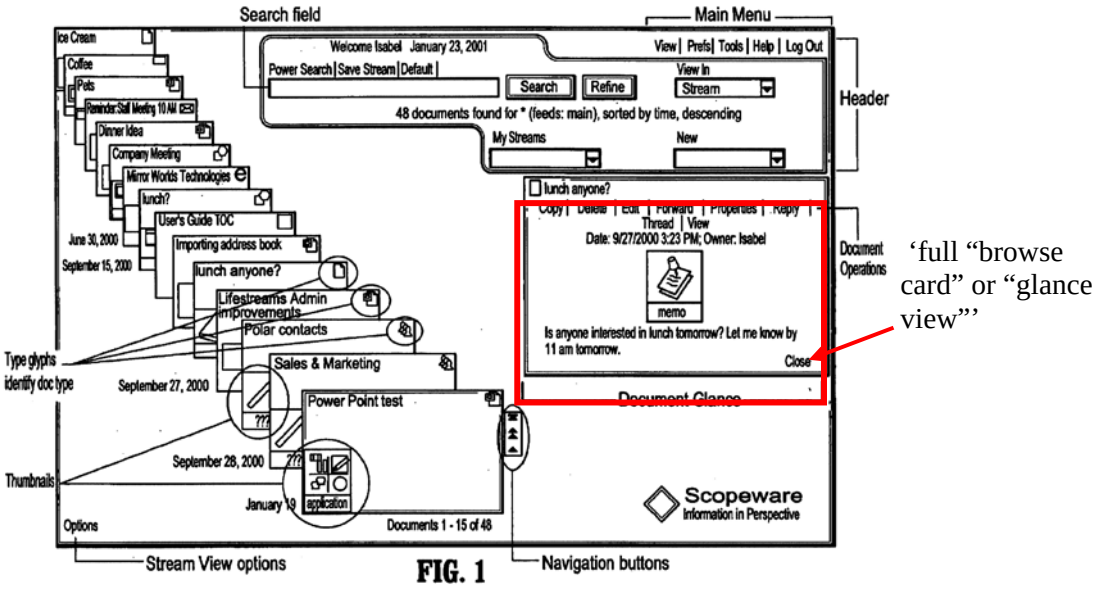


FIG. 1

'999 patent, Figure 1.

The browse cards or glance views are displayed in a time ordered stream to users. See, e.g., '999 patent at 13:13–30. When the mouse pointer passes over a browse card or glance view, a 'full "browse card" or "glance view"' is displayed "essentially in real time," or "without significant delay as perceived by a user." See, e.g., '999 patent Claim 1; see also, e.g., CC Order, p. 4. The system allows the client to perform actions on the "browse card" or "glance view" for which they have the proper permission. See, e.g., '999 patent at 13:31–42.

As issued, the '999 patent has only 1 claim, which reads:

> A method of operating an enterprise information management system comprising at least one server and a number of personal computers selectively communicating with each other comprising:

> creating document object models comprising selected information from and about information assets of diverse types, created by diverse software, said document object models having a consistent structure;
>
> displaying browse cards related to respective ones of the information assets in a time–ordered stream, together with glance views related to the document object models of the respective displayed documents, said glance views being displayed essentially in real time in response to passing a cursor over respective ones of the browse cards.

'999 patent, Claim 1.

According to one of the inventors, Peter Sparago, the operations of the Mirror Worlds Scopeware application is covered by claim 1 of the '999 patent. Transcript of P. Sparago May 4, 2010 Deposition at 121:16–19.

VII. INVALIDITY: ANTICIPATION AND OBVIOUSNESS

A. Legal Standards

I am not an attorney. However, the law of invalidity has been explained to me, and my understanding is as follows.

I understand that the claims of issued U.S. patents are presumed to be valid and invalidity of a particular claim must be proven by clear and convincing evidence.

1. Anticipation

It is my understanding that under 35 USC §102 a claim may be found to be "anticipated," and therefore invalid, when a single prior art reference discloses each and every limitation of the claim.

Determining whether a prior art reference discloses each and every limitation of a claim is a two step analysis:

(i) determining the meaning of the claim limitations; and

(ii) comparing those limitations (according to their determined meaning) with the prior art.

The disclosure of a limitation in a prior art reference may be explicit or inherent. Explicit means that the limitation or feature is expressly described in the reference. Inherent means that the limitation or feature is necessarily present in the disclosure (i.e., the feature is a deliberate or necessary consequence of the reference's disclosure) even if the reference does not expressly describe the feature. One of ordinary skill in the art must recognize that the feature is inherent to the disclosure, but inherency does not require that the person of ordinary skill in the art would have necessarily recognized the inherent disclosure at the time of the reference. Thus, a prior use of an invention that was accidental, unrecognized, or unappreciated can still be an invalidating anticipation.

To anticipate, the reference must also enable one of skill in the art to make and use the claimed invention. In other words, it must sufficiently describe the claimed invention to have placed the public in possession of it.

2. Obviousness

Under 35 USC § 103, a claim may be found to be obvious, and therefore invalid, when the differences between the claim and the prior art reference or references would have been obvious at the time the invention was filed to a person having ordinary skill in the art to which the patent pertains. Like anticipation, obviousness must be shown by clear and convincing evidence.

Obviousness is determined based on an analysis of four factors:

(1) the scope and content of the prior art;

(2) the differences between the prior art and the claims at issue;

(3) the level of ordinary skill in the pertinent art; and

(4) secondary considerations of nonobviousness.

The use of this four–factor test is designed to prevent the tendency of a later reviewer, in hindsight, to believe an invention was obvious.

With respect to the first factor, the scope and content of the prior art includes references in the relevant art, and analogous arts.

Determining the differences between the prior art and claims (as discussed above with regard to anticipation) is a two–step analysis: (i) determining the meaning of the claim elements; and (ii) comparing those terms with the prior art.

The level of ordinary skill in the art is determined by analyzing such things as: (i) the prior art; (ii) the types of problems encountered in the art; (iii) the rapidity with which innovations are made; (iv) the sophistication of the technology involved; and (v) the educational background of those actively working in the field, as well as the inventors.

Secondary considerations include evidence regarding the circumstances surrounding the inventive process including, but not limited to: (i) whether the claimed invention met a long–felt need; (ii) the inventors' success despite the failure of others; (iii) commercial success; (iv) copying of the claimed invention by others; (v) praise and recognition for the invention; (vi) unexpected results; and (vii) significant effort and serendipity.

a. Motivation to Combine

When comparing the claims with the prior art, it is generally necessary to combine the teachings of multiple prior art references to show all claimed features. But, obviousness is not proven simply by showing that all of the claimed elements are present in the combination. One must also show that a person of ordinary skill in the relevant field had a reason to combine the elements in the manner claimed. The reasons may vary, and can include such things as: (i) if the combination is a predictable variation; (ii) if the combination has been used to

improve similar devices; (iii) if it would have been obvious to try the combination; (iv) if the combination merely applied a known technique to a known device to yield predictable results; (v) if the references themselves teach or suggest that the combination was possible; and (vi) common sense.

In addition to showing a reason for combination, one must also show that there is a reasonable expectation of success when creating the proposed combination. One must also consider any teaching in the prior art references that the proposed combination should not be made.

Even if all of the claimed features can be found in the prior art, and there is some reason to combine them as claimed, the patentee can still show non–obviousness by presenting secondary considerations. A strong secondary consideration is commercial success, which is generally proven by showing that there is commercial success, and that the product is commercially successful because of the features claimed in the patent (i.e., that there is a nexus between the claimed invention and the secondary considerations). Marketplace success can be shown by proving significant sales in a relevant market. Other factors are also relevant, such as: (i) market share; (ii) growth in market share; (iii) replacement of earlier products sold by others; (iv) the desire of customers to switch to the inventive product; (v) the producer's lack of previous market power or experience in the relevant market combined with its high sales of the patented product; and (vi) industry licensing. Commercial success can be shown by both U.S. and foreign sales.

I am also aware that another way to decide whether one of ordinary skill in the art would combine what is described in various items of prior art is whether there is some teaching, suggestion, or motivation in the prior art for a skilled person to make the combination covered by

the patent claims. Motivation can be implicit. In other words, such motivation need not be explicit.

It is also my understanding that using a well established apparatus or technique to replace a claimed element or step is not novel but, rather, is obvious. In other words, when a claim element can be substituted with a prior art apparatus or technique known to one of ordinary skill in the are to be to be a substitute for that claim element (and performs the same or similar function as the claim element), then a combination that includes the prior art apparatus or technique renders the claim obvious.

It is also my understanding that to determine whether it would have been obvious to combine known elements in a manner claimed in a patent, one may consider such things as the interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, and the background knowledge of one with ordinary skill in the art.

b. Expansive and Flexible Approach

It is also my understanding that determining obviousness is expansive and flexible. I have been told that granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility. I have also been informed that there is no requirement for an obviousness analysis to find precise teachings that are directed to specific subject matter of a claim. Rather, common sense, inferences, and creative steps that one of ordinary skill in the art would employ may be taken into account. In other words, an analysis of obviousness does not require rigid rules that ignore common sense.

It is also my understanding that a need or problem known in the field at the time of an invention can provide an obvious reason to combine elements in the manner claimed. A patent's subject matter is obvious if at the time of the invention, there was a known problem for which the patent claims encompassed an obvious solution. Furthermore, if a patent claims a structure known in the prior art that only substitutes one element for another that is known in the field, I understand that the combination is obvious unless the result is unexpected and fruitful. Therefore, a predictable variation of prior art is obvious.

It is also my understanding that if a technique was used to improve a device or method, and if a person of ordinary skill in the art would recognize that the technique would improve similar devices or methods in the same way, using the technique is obvious unless applying it is beyond the person's skill.

It is my further understanding that an alleged improvement claimed in a particular patent must be more than just predictably using prior art elements according to their established functions. I have been informed that when a patent is simply an arrangement of old elements, with each performing the same function it had been known to perform, and yields no more than one would expect from such an arrangement, the combination is obvious. Furthermore, items may have obvious uses beyond their primary purposes. For example, common sense teaches that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle. I understand that neither a particular motivation nor an avowed purpose of a patentee controls how a piece of prior art may be used.

I also understand that if a combination was obvious to try, it may be obvious. Thus, obviousness is not confined to a formalistic conception of teaching, suggestion, and

motivation or by overemphasizing published publications and the explicit content of issued patents.

It is also my understanding that in developing opinions as to whether or not certain claimed subject matter would have been obvious, each claim of a given patent should be considered in its entirety and separately from any other claims. In so doing, it is my further understanding that while I should consider any differences between the claimed invention and the prior art, I should also assess the obviousness or non–obviousness of the entirety of a claim covering an alleged invention, not merely some portion of it. I also understand that one acceptable way to decide whether one of ordinary skill in the art would combine what is described in various prior art references is to determine whether it was obvious to try such a combination.

Also, when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill would have good reason to pursue the known options within his or her technical grasp. If that pursuit likely leads to the anticipated success, it is likely the alleged invention is a product—not of innovation—but of ordinary skill and common sense. In that instance, the fact that a combination was obvious to try might show that it was obvious.

I have also been informed that, when a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation matching a patent's claim, it is likely that the claim is invalid for being obvious. For the same reason, if a technique has been used to improve one device and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using that technique is obvious

unless its actual application is reasonably considered to be beyond his or her level of ordinary skill. It is also common sense that familiar items may have obvious uses beyond their primary purposes, and that a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle.

It is my further understanding that multiple prior art references can be combined to show that a claim is obvious. Any need or problem known in the field and addressed by a patent claim can provide a reason for combining multiple references in the manner claimed. To determine whether there was an apparent reason to combine those references in the way a patent claims, it is my understanding that I can look to interrelated teachings of multiple patents, to the effects of demands known to the design community or present in the marketplace, and/or to the background knowledge possessed by a person of ordinary skill in the art. I also understand that neither a particular motivation nor the alleged purpose of the patentee controls the investigation of obviousness.

It is my further understanding that one of ordinary skill in the art is not confined to prior art that attempts to solve the same problem as the patent claim, since common sense teaches that familiar items may have obvious uses beyond their primary purposes.

B. Claim Construction

On February 16, 2010, the Court issued a Preliminary Claim Construction Order ("CC Order") construing various terms and limitations of the Mirror Worlds patents. A copy of the February 16, 2010 Preliminary Claim Construction Order is attached as Attachment 5.

1. Construed Terms

In conducting my analysis in this report, I followed and applied the Court's constructions as set forth in the CC Order and reproduced in the table below:

’227, ’313, ’427, and ’999 patents	
Term or Phrase (Patent and Claim)	**Court’s Construction**
stream (’227 patent, Claim 13; ’313 patent, Claim 1; ’427 patent, Claims 1, 20–25, and 37–39; ’999 patent, Claim 1)	a time–ordered sequence of documents that functions as a diary of a person or an entity’s electronic life and that is designed to have three main portions: past, present, and future
main stream (’227 patent, Claim 13; ’313 patent, Claim 2)	a stream that is inclusive of every data unit, or document, received by or generated by the computer system
including each data unit according to the timestamp in the respective chronological indicator in the main stream (’227 patent, Claim 13)	No Construction
substream (’227 patent, Claim 13; ’313 patent, Claims 2 and 11)	a stream that is a subset of data units, or documents, yielded by a filter on a stream, the filter identifying certain documents within the stream
stream–based operating system (’427 patent, Claim 1) **document stream operating system** (’313 patent, Claim 1; ’427 patent, Claim 25)	an operating system that is based on a time–ordered sequence of documents that functions as a diary of a person or an entity’s electronic life and that is designed to have three main portions: past, present, and future
timestamp to identify (’227 patent, Claim 13)	a date and time value that uniquely identifies each document
glance views (’313 patents, Claims 1 and 9; ’427 patent, Claims 1, 8, 16, 25, and 32; ’999 patent, Claim 1)	an abbreviated presentation of a document
receding, foreshortened stack (’313 patents, Claims 1 and 9; ’427 patent, Claims 1, 10, 18, and 25)	No Construction
archiving (’313 Patents, Claims 1 and 9; ’427 Patent, Claims 1 and 8)	copying or moving documents to a secondary storage medium
document organization facility (‘427 Patent, Claims 1, 8, 16, and 25)	software that organizes documents
All eighteen disputed “**means for** . . .” terms in the ’227 patent	Indefinite
data unit (’227 patent, Claim 13)	an item of information of significance to the user that the user considers as a unit

’227, ’313, ’427, and ’999 patents	
Term or Phrase (Patent and Claim)	**Court’s Construction**
enterprise information management system (’999 patent, Claim 1)	a system that manages information for an enterprise or organization
abbreviated form ’227 patent, Claim 20) **abbreviated version** (’313 patent, Claims 1 and 9; ’427 patent, Claims 5, 13, 22, 29, and 37)	No Construction
archiving the documents and indicators in consistent format for selective retrieval (’427 patent, Claims 1 and 8)	No Construction
controlling operating system ’427 patent, Claims 8 and 16)	an operating system that utilizes subsystems from another operating system
complex analysis (’427 patent, Claims 7, 15, 24, 31, and 39)	analysis of the content of a documents involving selection of important words, pictures, and/or sounds in the document
document object model (‘999 patent, Claim 1)	a consistent structure containing information about information assets of diverse types, created by diverse software
chronological indicator (’227 Patent, Claim 13; ’427 patent, Claim 25)	[AGREED] a data structure containing at least a timestamp
persistent streams (’227 Patent, Claim 13)	[AGREED] streams that are dynamically updated
visual streams (’227 Patent, Claim 15)	[AGREED] a representation on a display device of a stream
document representation (’427 patent, Claims 1, 8, 16, 25, and 32)	[AGREED] a graphical depiction of a document, or data unit
operating system (’313 patent, Claims 1 and 10; ’427 Patent, Claims 1, 8, 16, and 25)	[AGREED] the software that handles basic computer operations (e.g. managing input/output, memory, applications, etc.) and presents an interface to the user

'227, '313, '427, and '999 patents	
Term or Phrase (Patent and Claim)	**Court's Construction**
document '313 patent, Claims 1 and 9; '427 patent, Claims 1, 8, 16, 25, and 32)	[AGREED] Except as set forth below, "a data unit" In the '313 Patent, Claim 1 at col. 15:25, 15:26, 15:31, and 15:33 (i.e. each appearance of "document" in the fifth and sixth paragraphs of the claim after the preamble) and Claim 9 at col. 16:28, 16:29, and 16:34 (i.e. each appearance of "document" in the final two paragraphs of the claim, except the word "documents" in line 16:36), "a document representation"
selected indicators ('427 patent, Claims 1, 8, and 16)	[AGREED] data structures that contain information relating to respective documents
interrupt ('427 patent, Claims 1, 8, and 16)	[AGREED] an external signal to a program or process that may cause the program or process to take some action
a set of commands applicable to the document representations in the stack ('427 patent, Claim 32)	[AGREED] commands associated with operations that can be performed on the documents whose document representations are in the stack
marking being common to a class of documents ('427 patent, Claim 34)	[AGREED] marking in the same way document representations associated with documents having the same type or other characteristic
time–based indicators ('313 patent, Claims 1 and 9; '427 patent, Claims 2, 9, 17, and 32)	[AGREED] chronological indicators
a substream that persists ('313 patent, Claim 3)	[AGREED] a substream that is dynamically updated
information assets ('999 patent, Claim 1)	[AGREED] data units of significance to the users in an enterprise
browse card ('999 patent, Claim 1)	[AGREED] a graphical depiction of a document, or data unit
time–ordered stream '999 patent, Claim 1)	a time–ordered sequence of documents that functions as a diary of a person or an entity's electronic life and that is designed to have three main portions: past, present, and future
essentially in real time ('999 patent, Claim 1)	[AGREED] without significant delay as perceived by a user

For those terms that the Court found "No Construction" or which are not discussed in the CC Order, I applied the Court's construction for any separately construed

elements found within these terms and for any remaining words or phrases within these terms, I followed their plain and ordinary meaning to one of ordinary skill in the art.

In its infringement contentions, Mirror Worlds has applied various claim limitations in an overly-broad manner, in an attempt to read those limitations on the accused products. While Apple disputes that approach, in addition to following the Court's claim construction, I have also considered the breadth of Mirror World's infringement contentions to the prior art for the purposes of this report. Nothing in this report should be interpreted as an acquiescence to or assertion of a particular claim construction.

I reserve the right to amend and/or supplement my report should the Court change, revise or supplement any of its claim constructions.

2. Indefinite Terms

The Court also found several claims of the ’227 Patent invalid for indefiniteness: claims 1 and 25 and all associated dependent claims, including claims 5, 6, 9–12, 26, and 29. See Claim Construction Order, p. 1. Because these claims are invalid, I did not conduct an analysis as to whether any of these claims are anticipated or rendered obvious in view of the references discussed in this report. Should any of these claims be subsequently found not to be indefinite (i.e., definite), then I reserve the right to supplement my report to include an analysis under anticipation and obviousness of these claims.

C. Level of Ordinary Skill in the Art

I understand that claims are to be interpreted from the point of view of a hypothetical person of “ordinary skill in the art” as of the time of the invention, which is typically the priority date of the patent. I understand that Mirror Worlds asserts that the ’227, ’313, ’427 and the ’999 patents all claim priority to June 28, 1996. I also understand that Apple believes that that the ’999 patent is only entitled to a priority date of June 26, 2001.

In view of the Court's claim construction for the terms "stream–based operating system" and "document stream operating system" as simply an operating system that is based on a time-ordered sequence of documents that functions as a diary of a person or an entity's electronic life and that is designed to have three main portions: past, present, and future," I believe that a person of ordinary skill in the art in 1996 would have had a Ph.D. in computer science or some combination of education and experience that provided sufficient competence in the appropriate aspects of computer science, such as graphical user interface design, and some knowledge of document processing, software design and development, data structures, operating systems, backup and archiving systems, and client–server computing.

My opinion about the level of ordinary skill in the art is based on my personal experience working and teaching in computer science before, during, and after the filing of the Mirror Worlds patents, my knowledge of colleagues and others working in the field at the time the Mirror Worlds patents were filed, my study of the Mirror Worlds patents and related materials, and my knowledge of: (i) the level of education and experience of persons (including the named inventors) actively working in the field at the time the subject matter at issue was developed; (ii) activities of others working in the field; (iii) the sophistication of the relevant technology; (iv) prior art including patents and publications; and (v) the types of problems encountered in the art at the time the subject matter was developed.

To the extent that the level of ordinary skill in the art is determined to be somewhat higher or lower than the standard I have articulated, I do not expect that such a determination would change any of the analyses and opinions herein, since the conclusions I have reached do not hinge on subtle distinctions likely to be lost on a person whose skill level is

slightly higher or lower. Thus, for example, I do not believe such a change in the level of ordinary skill in the art would affect any of my obviousness analysis.

Finally, I understand that Mirror Worlds' expert, Dr. John Levy, expressed his opinion during claim construction that a person of ordinary skill in the art would have had a bachelor's degree in computer science, computer engineering or the equivalent, and 3–5 years of experience in the field of computer operating systems, or a post-graduate degree in computer science, computer engineering or the equivalent, and 1–2 years of experience in the field of computer operating systems. See Declaration of John D. Levy, Ph.D. Regarding Claim Construction dated November 27, 2009, p. 11, paragraph 11. I believe that the number of years of experience in the field of computer operating systems that he articulated is too high and is a narrower requirement than warranted by the range of technical areas related to the asserted claims of the Mirror Worlds patents as I discussed above.

D. Anticipation/Obviousness References

In general, the various elements of the apparatuses and methods claimed in the Mirror Worlds patents were already well known to those in the art by 1996. In the following sections, I discuss several prior art references that anticipate and/or render obvious the asserted claims of the Mirror Worlds patents.

For purposes of my analysis, any citations to a printed publication or other reference that describe a prior art system that was actually reduced to practice and/or implemented should also be construed to refer to the printed publication, as well as to the system itself. For example, when I refer to the HFS file system, Lotus Magellan, and Retrospect, SDMS, On Location, Memoirs, Piles, Workscape, my references refer to portions of the manuals, books, and/or screenshots describing the functionality of those systems that were sold and/or in public

use. Accordingly, I reserve the right to show, analyze or review the actual systems in front of the jury, in addition to discussing the publications themselves during my testimony.

Further, in its infringement contentions, Mirror Worlds has applied various claim limitations in an overly–broad manner, in an attempt to read those limitations on the accused products. While I dispute that approach, I have, for the purposes of my invalidity analysis applied the same breadth of Mirror World's infringement contentions to the prior art. However, my consideration of the breadth of Mirror Worlds infringement contentions should not be construed or treated as any kind of admission with respect to any subsequent opinions I may provide regarding non–infringement of the asserted claims by Apple products.

The asserted claims of the Mirror Worlds patents are anticipated and/or rendered obvious by the following prior art references and/or combinations:

1. Mander 724/Piles Project

As discussed in my report and the attached claim charts, U.S. Patent No. 6,243,724 to Richard Mander, et al. ("Mander '724") (APMW0000001–APMW0000049) and/or the Piles project implemented by Apple's ATG (as described in Mander '724, SIGIR '93 ("Content Awareness in a File System Interface: Implementing the 'Pile' Metaphor for Organizing Information" by Rose, Mander, Oren, Ponceleon, Salomon and Wong (APMW0000812–APMW0000821)), CHI '92 ("A 'Pile' Metaphor for Supporting Casual Organization of Information," by Mander, Salomon and Wong (APMW0000846–APMW0000862)), the March 1992 Piles Metaphor Video by ATG (BSTZ–MW008398), and the deposition testimony of R. Mander and G. Salomon) anticipate and/or render obvious the following claims of the Mirror Worlds patents:

1. '227 patent claims 13, 14, 15, 16, 17, 20;

2. ’427 patent claims 16, 17, 18, 19, 22, 24, 25, 26, 29, 31, 32, 33, 34, 37, 39; and
3. ’999 patent claim 1.

Mander ’724 and/or the Piles project render obvious the following claims of the Mirror Worlds patents in view of Retrospect, Lucas ’330/Workscape, Thompson–Rohrlich ’852/Smart Folders, Lotus Magellan, SDM/SDMS, On Location, and/or Memoirs:

1. ’227 patent claims 13, 14, 15, 16, 17, 20, 22;
2. ’313 patent claims 1, 2, 3, 4, 9, 10, 11;
3. ’427 patent claims 1, 2, 5, 7, 8, 9, 10, 13, 15,16, 17, 18, 19, 22, 24, 25, 26, 29, 31, 32, 33, 34, 37, 39; and
4. ’999 patent claim 1.

To the extent that the above combinations do not render the asserted claims of the Mirror Worlds patents obvious, the additional prior art references and/or state of the art discussed in my report—in addition to the above identified combinations involving Mander ’724 and/or the Piles project—render obvious all asserted claims of the Mirror Worlds patents.

2. Lucas ’330/Workscape

As discussed in my report and the attached claim charts, U.S. Patent No. 5,499,330 to Peter Lucas, et al. (“Lucas ’330”) (APMW0000705–APMW0000732) and/or Workscape system implemented by DEC/Maya Design Group (as described in Lucas’330; 1993 Workscape Video (http://www.youtube.com/watch?v=H9F17JrG–SE) (APMW0076598); Lucas CHI ’94 (“Workscape: A Scriptable Document Management Environment” by Peter Lucas et al. CHI’94 April 24 28, APMW00199475775–APMW0075776)), 1990 “200 Points of Light” video (http://www.youtube.com/watch?v=H5 T_S50Sr4) (APMW0076599); Bailay CHI’94 (“Designing Workscape™: An Interdisciplinary Experience” by Joseph M. Bailay et al, CHI ’94 April 24 28, 1994 (APMW0075777–APMW0075782); U.S. Patent No. 5,528,739 (APMW0077244–APMW0077271); U.S. Patent No. 5,600,833 (APMW0077272–

APMW0077298); U.S. Patent No. 5,613,134 (APMW0077385–APMW0077412); U.S. Patent No. 5,621,874 (APMW0077299–APMW0077323); U.S. Patent No. 5,905,992 (APMW0077324–APMW0077348); U.S. Patent No. 6,012,072 (APMW0077413–APMW0077442); U.S. Patent No. 6,012,074 (APMW0077349–APMW0077376); U.S. Patent No. 6,151,610 (APMW0076691–APMW0076738); U.S. Des. No. D395,297 (APMW0077377–APMW0077378); and U.S. Des. No. D398,299 (APMW0077379–APMW0077384)) anticipate and/or render obvious the following claims of the Mirror Worlds patents:

1. ’227 patent claims 13, 14, 15, 16, 17, 18, 19, 20.

Lucas ’330 and/or Workscape render obvious the following claims of the Mirror Worlds patents in view of Lotus Magellan, Mander ’724/Piles project, Retrospect, SDM/SDMS, On Location, and/or Memoirs:

1. ’227 patent claims 13, 14, 15, 16, 17, 20, 22;
2. ’313 patent claims 1, 2, 3, 4, 9, 10, 11;
3. ’427 patent claims 1, 2, 5, 7, 8, 9, 10, 13, 15,16, 17, 18, 19, 22, 24, 25, 26, 29, 31, 32, 33, 34, 37, 39; and
4. ’999 patent claim 1.

To the extent that the above combinations do not render the asserted claims of the Mirror Worlds patents obvious, the additional prior art references and/or state of the art discussed in my report—in addition to the above identified combinations involving Lucas ’330 and/or Workscape—render obvious all asserted claims of the Mirror Worlds patents.

3. Smart Folders

As discussed in my report and the attached claim charts, U.S. Patent No. 5,504,852 by Thompson–Rohrlich et al. (Thompson–Rohrlich ’852 or the “’852 patent”) (APMW0000752–APMW0000759) or the Smart Folders file system (“Smart Folders”) implemented by Apple (as described in Thompson–Rohrlich ’852 and Inside Macintosh: Files

1992 (APMW000001147–APMW0001662) in view of Mander ’724/Piles project, Lucas ’330/Workscape, Lotus Magellan, Retrospect, SDM/SDMS, On Location, and/or Memoirs render obvious the following claims of the Mirror Worlds patents:

1. ’227 patent claims 13, 14, 15, 16, 17, 20, 22;
2. ’313 patent claims 1, 2, 3, 4, 9, 10, 11;
3. ’427 patent claims 1, 2, 5, 7, 8, 9, 10, 13, 15,16, 17, 18, 19, 22, 24, 25, 26, 29, 31, 32, 33, 34, 37, 39; and
4. ’999 patent claim 1.

To the extent that the above combinations do not render the asserted claims of the Mirror Worlds patents obvious, the additional prior art references and/or state of the art discussed in my report—in addition to the above identified combinations involving Thompson–Rohrlich ’852 and/or Smart Folders—render obvious all asserted claims of the Mirror Worlds patents.

4. MEMOIRS

As discussed in my report and the attached claim charts, “MEMOIRS: A personal Multimedia Information System,” by M.W. Lansdale, D.R. Young, & C.A. Bass, The Proceedings of the Fifth Conference of the British Computer Society Human Computer Interaction Specialist Group University of Nottingham 5–8 September 1989 (APMW0076640–APMW0076649) (“MEMOIRS”) anticipate and/or render obvious the following claims of the Mirror Worlds patents:

1. ’227 patent claims 13, 14, 15, 16, 17, 20.

MEMOIRS renders obvious the following claims of the Mirror Worlds patents in view of Retrospect, Lucas ’330/Workscape, Thompson–Rohrlich ’852/Smart Folders, Lotus Magellan, SDM/SDMS, On Location, and/or Mander ’724/Piles project:

1. ’227 patent claims 13, 14, 15, 16, 17, 20, 22;

2. ’313 patent claims 1, 2, 3, 4, 9, 10, 11;
3. ’427 patent claims 1, 2, 5, 7, 8, 9, 10, 13, 15,16, 17, 18, 19, 22, 24, 25, 26, 29, 31, 32, 33, 34, 37, 39; and
4. ’999 patent claim 1.

To the extent that the above combinations do not render the asserted claims of the Mirror Worlds patents obvious, the additional prior art references and/or state of the art discussed in my report—in addition to the above identified combinations involving MEMOIRS—render obvious all asserted claims of the Mirror Worlds patents.

5. AAAI Fall ’95 Symposium Paper

As discussed in my report and the attached claim charts, the AAAI Fall ’95 symposium paper by Eric Freeman and Scott Fertig, “Lifestreams: Organizing your Electronic Life,” AAAI Fall 1995 Symposium on AI Applications in Knowledge Navigation and Retrieval. (YALE 000551–000558, APMW0012897–APMW0012903) (“AAAI” or “AAAI Fall ’95 symposium paper”) anticipates and/or renders obvious the following claims of the Mirror Worlds patents:

1. ’227 patent claims 13, 14, 15, 16, 17, 20, 22;
2. ’313 patent claims 1, 2, 3, 4, 9, 10, 11;
3. ’427 patent claims 1, 2, 5, 7, 8, 9, 10, 13, 15,16, 17, 18, 19, 22, 24, 25, 26, 29, 31, 32, 33, 34, 37, 39; and
4. ’999 patent claim 1.

The AAAI Fall ’95 symposium paper renders obvious the following claims of the Mirror Worlds patents in view of Mander ’724/the Piles Project, Retrospect, Lucas ’330/Workscape, Thompson–Rohrlich 852/Smart Folders, Lotus Magellan, SDM/SDMS, On Location, and/or Memoirs:

1. ’227 patent claims 13, 14, 15, 16, 17, 20, 22;
2. ’313 patent claims 1, 2, 3, 4, 9, 10, 11;

3. ’427 patent claims 1, 2, 5, 7, 8, 9, 10, 13, 15,16, 17, 18, 19, 22, 24, 25, 26, 29, 31, 32, 33, 34, 37, 39; and
4. ’999 patent claim 1.

To the extent that the above combinations do not render the asserted claims of the Mirror Worlds patents obvious, the additional prior art references and/or state of the art discussed in my report—in addition to the above identified combinations involving the AAAI Fall ’95 symposium paper—render obvious all asserted claims of the Mirror Worlds patents.

6. TR–1070/Lifestreams

As discussed in my report and the attached claim charts, the paper TR–1070 (“The ‘Lifestreams’ Approach to Reorganizing the Information World,” YALEU/DCS/TR 1070 (1995) (YALE000430–YALE000441, APMW0014792–APMW0014802, APMW0026102–APMW0026116)) and/or the Lifestreams implementation (as described in TR–1070, RR–1083 (“Lifestreams: Organizing Your Electronic Life,” YALEU/DCS/RR–1083 (1995) (YALE000551–YALE000558)), TR–1083 (“Lifestreams: Organizing Your Electronic Life,” YALEU/DCS/TR–1083 (1995) (YALE000577–YALE000584), and the deposition testimony of Eric Freeman and David Gelernter) anticipate and/or render obvious the following claims of the Mirror Worlds patents:

1. ’227 patent claims 13, 14, 17, 20, 22; and
2. ’999 patent claim 1.

TR–1070 and/or Lifestreams render obvious the following claims of the Mirror Worlds patents in view of Mander ’724/the Piles Project, Retrospect, Lucas ’330/Workscape, Thompson–Rohrlich ’852/Smart Folders, Lotus Magellan, SDM/SDMS, On Location, Memoirs, and/or the AAAI Fall ’95 symposium paper:

5. ’227 patent claims 13, 14, 15, 16, 17, 20, 22;
6. ’313 patent claims 1, 2, 3, 4, 9, 10, 11;

7. ’427 patent claims 1, 2, 5, 7, 8, 9, 10, 13, 15,16, 17, 18, 19, 22, 24, 25, 26, 29, 31, 32, 33, 34, 37, 39; and
8. ’999 patent claim 1.

To the extent that the above combinations do not render the asserted claims of the Mirror Worlds patents obvious, the additional prior art references and/or state of the art discussed in my report—in addition to the above identified combinations involving TR–1070 and/or Lifestreams—render obvious all asserted claims of the Mirror Worlds patents.

7. ’227 Patent

As discussed in my report and the attached claim charts, Mirror Worlds’ own patent, the ’227 patent anticipates and/or renders obvious claim 1 of the ’999 patent.

In addition, the ’227 patent renders obvious claim 1 of the ’999 patent in view of Mander ’724/the Piles Project, Retrospect, Lucas ’330/Workscape, Thompson–Rohrlich ’852/Smart Folders, Lotus Magellan, SDM/SDMS, On Location, Memoirs, the AAAI Fall ’95 symposium paper and/or TR–1070:

To the extent that the above combinations do not render the asserted claims of the Mirror Worlds patents obvious, the additional prior art references and/or state of the art discussed in my report—in addition to the above identified combinations involving the ’227 patent—render obvious claim 1 of the ’999 patent.

8. Additional Prior Art References

In addition to the above-enumerated references, there are also several other references that render the claims of the Mirror Worlds patents obvious when combined with the references identified above. The following two tables identify the additional references, along with the references enumerated above:

Ref. No.	Prior Art Reference
1.	United States Patent No. 6,243,724 (Mander et al.) – Method and Apparatus for Organizing Information in a Computer System (piles) (APMW0000001–APMW0000049) (“hereinafter “the ‘724 patent” or “1”)
2.	The Lotus Magellan product, as described in, e.g., Using Lotus Magellan (1989); as well as the book Using Lotus Magellan (1989) (APMW0000050–APMW0000366) and United States Patent No. 5,303,361 (APMW0018307–APMW0018326) (hereinafter “Lotus Magellan” or “2”)
3.	The Retrospect software product, as described in, e.g., Retrospect User’s Guide (1995), as well as the book Retrospect User’s Guide (1995) (APMW0000367–APMW0000704) (hereinafter “1995 Retrospect User’s Guide” or “3”) as well as the book Retrospect User’s Guide (1993) (APMW0076037–APMW0076263) (hereinafter “1993 Retrospect User’s Guide”)
4.	United States Patent No. 5,499,330 (Peter Lucas, DEC) – Document Display System for Organizing and Displaying Documents as Screen Objects Organized Along Strand (APMW0000705–APMW0000732) (hereinafter “the ‘330 patent” or “4”)
5.	English translation of Japanese Patent No. 6–180661 (Yumiko et al.) (APMW0000733–APMW0000751) (hereinafter “the JP ‘661 patent” or “5”)
6.	United States Patent No. 5,504,852 (Thompson–Rohrlich) – Method for Creating a Collection of Aliases Representing Computer System Files (Smart Folders) (APMW0000752–APMW0000759) (hereinafter “the ‘852 patent” or “6”)
7.	United States Patent Number 5,621,906 (O’Neill et al.) – Perspective–Based Interface Using An Extended Masthead (APMW0000760–APMW0000769) (hereinafter “the ‘906 patent” or “7”)
8.	United States Patent No. 5,758,324 (Hartman et al.) – Resume Storage and Retrieval System (APMW0000770–APMW0000796) (hereinafter “the ‘324” or “8”)
9.	United States Patent No. 6,396,513 (Helfman et al.) – Electronic Message Sorting and Notification System (APMW0000797–APMW0000811) (hereinafter “the ‘513 patent” or “9”)
10.	SIGIR ‘93 – “Content Awareness in a File System Interface: Implementing the ‘Pile’ Metaphor for Organizing Information” by Rose, Mander, Oren, Ponceleon, Salomon & Wong (APMW0000812–APMW0000821) (hereinafter “the SIGIR ‘93 article” or “10”)
11.	United States Patent No. 5,724,567 (Rose et al.) – System for Directing Relevance Ranked Data Objects to Computer Users (APMW0000822–APMW0000834) (hereinafter “the ‘567 patent” or “11”)
12.	United States Patent No. 6,202,058 (Rose et al.) – System for Directing Relevance Ranked Data Objects to Computer Users (APMW0000835–APMW0000845) (hereinafter “the ‘058 patent” or “12”)
13.	“A ‘Pile’ Metaphor for Supporting Casual Organization of Information,” by Mander, Salomon and Wong (CHI ‘92) (APMW0000846–APMW0000862) (hereinafter “the CHI ‘92 article” or “13”)
14.	United States Patent No. 5,649,188 (Nomura et al.) – Electronic Filing Apparatus Which Allows Information to be Retrieved Based on a Box, a Date, or a Card Associated with the Information (APMW0000863–APMW0000978)) (hereinafter “the ‘188 patent” or “14”)
15.	The HyperCard Basics (Apply Computer, 1990) and HyperCard Stack Design Guidelines

Ref. No.	Prior Art Reference
	(Addison Wesley, 1989) (APMW0000979–APMW0001019)
16.	United States Patent No. 6,006,227 (Freeman et al.) – Document Stream Operating System (APMW0014222–APMW0014237) (hereinafter "the '227 patent" or "16")
17.	TR–1070 – "The 'Lifestreams' Approach to Reorganizing the Information World," YALEU/DCS/TR 1070 (1995) (YALE000430–YALE000441, APMW0014792–APMW0014802, APMW0026102–APMW0026116) (hereinafter "TR–1070" or "17")
18.	"Semantic File Systems," by Gifford, Jouvelot, Sheldon and O'Toole (ACM'91) (APMW0018268–APMW0018277) (hereinafter "the SFS article" or "18")
19.	On Location 2.0.1, by ON Technology, Inc. (1990 91) (APMW0018278–APMW0018306, APMW0080549–APMW0080564) (hereinafter "On Location" or "19")
A.	AAAI – "Lifestreams: Organizing your Electronic Life," AAAI Fall 1995 Symposium on AI Applications in Knowledge Navigation and Retrieval. (YALE 000551–000558, APMW0012897–APMW0012903) (hereinafter "AAAI" or "A"))
B.	"Spatial Data Management" by Richard A. Bolt ("SDM"), 1979, Massachusetts Institute of Technology (APMW0076297–APMW0076359) (hereafter "SDM" or "B")
C.	"MEMOIRS: A personal Multimedia Information System," by M.W. Lansdale, D.R. Young, & C.A. Bass, The Proceedings of the Fifth Conference of the British Computer Society Human Computer Interaction Specialist Group University of Nottingham 5 8 September 1989 (APMW0076640–APMW0076649) (hereafter "MEMOIRS" or "C")

Patent No./Title of Prior Art Reference and/or Public Use	**Date of Issue/ Publication/ First Use**	**Inventor/Author/ Publisher/Entity That Made the Information Known**	**Country of Origin**	**Anticipate or Render Obvious**
Piles Project and Implementation, as described in:		Apple Computer, Inc.		
U.S. Patent No. 6,243,724 "Method and Apparatus for Organizing Information in a Computer System"	June 5, 2001	Richard Mander, Daniel Rose, Gitta Salomon, Yin Yin Wong, Timothy Oren, Susan Brooker, and Stephanie Houde; Apple Computer, Inc.	US	Anticipates & Renders Obvious
"Content Awareness in a File System Interface: Implementing the 'Pile' Metaphor for Organizing Information"	1993	Daniel Rose, Richard Mander, Tim Oren, Dulce B. Ponceleon, Gitta Salomon, and Yin Yin Wong; Apple Computer, Inc. SIGIR '93	US	Anticipates & Renders Obvious

Patent No./Title of Prior Art Reference and/or Public Use	Date of Issue/ Publication/ First Use	Inventor/Author/ Publisher/Entity That Made the Information Known	Country of Origin	Anticipate or Render Obvious
"A 'Pile' Metaphor for Supporting Casual Organization of Information"	1992	Richard Mander, Gitta Salomon and Yin Yin Wong; Apple Computer, Inc.. CHI '92	US	Anticipates & Renders Obvious
"Video – Piles Metaphor ATG"	March 1992	Gitta Salomon Apple Computer, Inc.	US	Renders Obvious
Workscape Project and Implementation, as described in:		Maya Design Group		
U.S. Patent No. 5,499,330 "Document Display System for Organizing and Displaying Documents as Screen Objects Organized Along Strand Paths"	Issued: Mar. 12, 1996 Filed: Sept. 17, 1993	Peter Lucas Jeffery Senn	US	Anticipates & Renders Obvious
Workscape	Pre–1993 as seen in Workscape video	Maya Design Group Peter Lucas	US	Renders Obvious
Workscape Video	1993	http://www.youtube.com/watch?v=H9F17JrG–SE; Commentator is Peter Lucas	US	Renders Obvious
"Workscape: A Scriptable Document Management Environment"	April 24–28, 1994	Peter Lucas Lauren Schneider Maya Design Group Conference Companion CHI'94	US	Renders Obvious
"200 Points of Light"	1990	http://www.youtube.com/watch?v=H5–T_S50Sr4	US	Renders Obvious
"Designing Workscape™: An Interdisciplinary Experience"	April 24–28, 1994	Joseph M. Ballay Maya Design Group Proceedings of CHI'94	US	Renders Obvious

Patent No./Title of Prior Art Reference and/or Public Use	Date of Issue/ Publication/ First Use	Inventor/Author/ Publisher/Entity That Made the Information Known	Country of Origin	Anticipate or Render Obvious
U.S. Patent No. 5,613,134 "Document display system using documents having ephemeral attributes for sharing information regarding the location of the display of each document on multiple display devices"	Issued: Mar. 18, 1997 Filed: Nov. 29, 1995	Peter Lucas, Jeffrey A. Senn, Andrew D. Brown	US	Renders Obvious
U.S. Patent No. 5,621,874 "Three dimensional document representation using strands"	Issued: Apr. 15, 1997; Filed: June 7, 1995	Peter Lucas, Jeffrey A. Senn	US	Renders Obvious
U.S. Patent No. 5,905,992 "Document display system for organizing and displaying documents as screen objects organized along strand paths"	Issued: May 18, 1999 Filed: Nov. 25, 1996	Peter Lucas, Jeffrey A. Senn	US	Renders Obvious
U.S. Patent No. 6,012,072 "Display apparatus for the display of documents in a three–dimensional workspace"	Issued: Jan. 4, 2000 Filed: Jan. 5, 1996	Peter Lucas, Jeffrey A. Senn, Rashi Khanna	US	Renders Obvious
U.S. Patent No. 6,012,074 "Document management system with delimiters defined at run–time"	Issued: Jan. 4, 2000 Filed: Mar. 4, 1997	Peter Lucas, Jeffrey A. Senn	US	Renders Obvious
U.S. Patent No. 6,151,610 "Document display system using a scripting language having container variables setting document attributes"	Issued: Nov. 21, 2000 Filed: Dec. 27, 1995	Jeffrey A. Senn, Peter Lucas, Rashi Khanna	US	Renders Obvious
U.S. Des. No. D395,297 "Screen display with icon"	Issued: June 16, 1998 Filed: Sept. 17, 1993	Hugo T. Cheng, Joseph M. Ballay, Peter Lucas	US	Renders Obvious
U.S. Des. No. D398,299 "Video screen with a combined pile and scroll icon for a video monitor"	Issued: Sept. 15, 1998 Filed: Sept. 17, 1993	Joseph M Ballay, Peter Lucas, Hugo T. Cheng	US	Renders Obvious

Patent No./Title of Prior Art Reference and/or Public Use	Date of Issue/ Publication/ First Use	Inventor/Author/ Publisher/Entity That Made the Information Known	Country of Origin	Anticipate or Render Obvious
U.S. Patent No. 5,613,134 "Document display system using documents having ephemeral attributes for sharing information regarding the location of the display of each document on multiple display devices"	Issued: Mar. 18, 1997 Filed: Nov. 29, 1995	Peter Lucas, Jeffrey A. Senn, Andrew D. Brown	US	Renders Obvious
U.S. Patent No. 5,621,874 "Three dimensional document representation using strands"	Issued: Apr. 15, 1997; Filed: June 7, 1995	Peter Lucas, Jeffrey A. Senn	US	Renders Obvious
Retrospect Software, as described in:		Dantz Development Corporation		
Retrospect User's Guide, version 3	1995	Dantz Development Corporation	US	Renders Obvious
Retrospect User's Guide, version 2	1993	Dantz Development Corporation	US	Renders Obvious
Retrospect User's Guide version 1	1989	Dantz Development Corporation	US	Renders Obvious
Retrospect Press Release "Announcing Retrospect and Retrospect Remote 3.0; the number one Macintosh backup software now easier to use and more powerful"	August 8, 1995	Business Wire	US	Renders Obvious
Retrospect Press Release	June 10, 1989	Henry Norr MacWEEK, Inc.	US	Renders Obvious
"Dantz Delivers Retrospect Archives, (Dantz Development Corp.'s Retrospect Backup Software)" "Archiving Easy on Retrospect: Uniform Interface to Storage Devices… (includes related article) …:"	February 21, 1989	Henry Norr MacWEEK, Inc.	US	Renders Obvious
"Mac the Knife, GMBH Rumors"	January 31, 1989	MacWEEK, Inc.	US	Renders Obvious

Patent No./Title of Prior Art Reference and/or Public Use	Date of Issue/ Publication/ First Use	Inventor/Author/ Publisher/Entity That Made the Information Known	Country of Origin	Anticipate or Render Obvious
Retrospect Press Release	December 11, 1995	David Morgenstein MacWEEK, Inc.	US	Renders Obvious
"Dantz, CharisMac drive over to CD–R" "System 7.5.2 fixes…."	October 1, 1995	Gene Steinberg MacWORLD	US	Renders Obvious
"Dantz to waltz in with friendlier Retrospect…."	July 31, 1995	MacWEEK, Inc.	US	Renders Obvious
Retrospect Press Release "System 7.5.2 Fixes"	1995, October	Gene Steinberg MacWORLD, Vol. 12, No. 10, p. 34(2) Vance McCarthy InfoWorld, Vol. 15, No. 12, p. 34(1)	US	Renders Obvious
"Dantz eases Mac network backup; Retrospect features improved scripting, performance"	January 11, 1993	Gale, Cergage learning Business & Company Resource Center Article: A17277617	US	Renders Obvious
Retrospect QuickStart	1989	Dantz Development Corporation	US	Renders Obvious
Lotus Magellan Product, as described in:		Lotus Development Corporation		
Using Lotus Magellan	1989	David P. Gobel; Que Corporation	US	Renders Obvious
Lotus Magellan Explorer Guide	1989	Lotus Development Corporation	US	Renders Obvious
U.S. Patent No. 5,303,361	Issued: Apr. 12, 1994 Filed: Jan. 18, 1990	Steve Colwell, Lawrence Gross, William Gross, Lee Hasiuk, David Rolfe; Lotus Development Corporation	US	Renders Obvious
Smart Folders, as described in:		Apple Computer, Inc.		
U.S. Patent. No. 5,504,852 "Method for Creating a Collection of Aliases Representing Computer System Files"	Issued: Apr. 2, 1996 Filed: Mar. 2, 1995	John Thompson–Rohrlich;	US	Anticipates & Renders Obvious
Inside Macintosh, describing Hierarchical File System (HFS)	August, 1992	Apple Computer, Inc.	US	Renders Obvious

Patent No./Title of Prior Art Reference and/or Public Use	Date of Issue/ Publication/ First Use	Inventor/Author/ Publisher/Entity That Made the Information Known	Country of Origin	Anticipate or Render Obvious
Lifestreams system, as described in:				
TR–1070 "The 'Lifestreams' Approach to Reorganizing the Information World"	1995	YALEU/DCS/TR–1070	US	Anticipates & Renders Obvious
RR–1083 "Lifestreams: Organizing your Electronic Life"	1995	Published for AAAI Fall 1995 Symposium YALEU/DCS/RR–1083	US	Anticipates & Renders Obvious
Spatial Data Management System and related work, as described in:				
"Spatial Data–Management"	1979	Richard A. Bolt Massachusetts Institute of Technology	US	Renders Obvious
"'Put–That–There': Voice and Gesture at the Graphics Interface."	1980	Richard A. Bolt Architecture Machine Group Massachusetts Institute of Technology Cambridge Mass ACM	US	Renders Obvious
"Gaze–Orchestrated Dynamic Windows"	August 1981	Richard A. Bolt Architecture Machine Group Massachusetts Institute of Technology Cambridge Mass ACM Computer Graphics, Vol. 15, No. 3	US	Renders Obvious
"Pages Without Paper"	Dec. 1978	Christopher Martin Schmandt Bachelor of Science thesis at the Massachusetts Institute of Technology	US	Renders Obvious

Patent No./Title of Prior Art Reference and/or Public Use	Date of Issue/ Publication/ First Use	Inventor/Author/ Publisher/Entity That Made the Information Known	Country of Origin	Anticipate or Render Obvious
"Memoirs: A personal Multimedia Information System" pp. 315–327.	Sept., 1989	M. W. Lansdale, D.R. Young and C.A. Bass; Cognitive Ergonomics Research Group, Department of Human Science, Loughborough University of Technology.	UK	Anticipates & Renders Obvious
"Spatial Management of Data"	Sept. 1977	William Campbell Donelson Mass. Institute of Technology (1975) Submitted Re Master's Degree	US	Renders Obvious
JP 6–180661 (and translation) "A File Search Method"	Published: Jun. 28, 1994	Hirose Tadashi	Japan	Anticipates & Renders Obvious
U.S. Patent No. 5,724,567 "System For Directing Relevance Ranked Data Objects to Computer users."	Issued: Mar 3 1998 Filed: Apr. 24, 1995	Daniel E. Rose, Jeremy J. Bornstein, Kevin Tiene. Cupertino, Dulce B. Ponceleon.		Anticipates & Renders Obvious
U.S. Patent No. 5,649,188 "Electronic Filing Apparatus Which Allows Information To Be Retrieved Based on a Box, A date or A card Associated with the Information."	Issued: July 15, 1997 Filed: Aug. 10, 1993	Keiichi Nomura, Hirofumi Endo, Yasubiro Ii, Yuko Ogasawara, Mitsubiro Kawai, Yasuyosbi Onoue, Masabiro Kurita, Akira Imai, Mitsuaki Takeuchi.	US	Anticipates & Renders Obvious
U.S. Patent No. 5,738,324 "Resume Storage and Retrieval System"	Issued: May 26, 1998 Filed: Feb. 8, 1996	Richard Hartman, Mary Hartman and Roy Messena	US	Renders Obvious
U.S. Patent No. 6,396,513 "Electronic Message Sorting and Notification System"	Issued: May 28, 2002 Filed: May 14, 1996	Jonathan Helfman and Charles Isbell	US	Renders Obvious
U.S. Patent No. 5,621,906 "Perspective–Based Interface Using an Extended Masthead"	Issued: Apr. 15, 1997 Filed: Feb. 13, 1995	Rory O'Neil and Eden Muir	US	Renders Obvious
HyperCard	1990	Apple Computer, Inc.	US	Renders Obvious

Patent No./Title of Prior Art Reference and/or Public Use	Date of Issue/ Publication/ First Use	Inventor/Author/ Publisher/Entity That Made the Information Known	Country of Origin	Anticipate or Render Obvious
U.S. Patent No. 6,006,227 "Document Stream Operating System."	Issued: Dec. 21, 1999 Filed: Jun. 26, 1996	Eric Freeman, and David Gelernter; Yale University	US	Anticipates
Semantic File Systems	1991	David K. Gifford, Pierre Jouvelot, Mark A. Sheldon, and James W. O'Toole, Jr. ACM	US	Renders Obvious
On Location v. 2.0.1	1990–1991	ON Technology, Inc.	US	Renders Obvious

9. Claim Charts

Attached to my report in a Claim Charts Attachment are the following claim charts, showing where each of the limitations of the asserted claims of the Mirror Worlds patents may be found in the corresponding prior art reference(s) identified in the chart[2]:

1. Invalidity Charts for U.S. Patent No. 6,243,724 (Ex. 1A–D)
2. Invalidity Charts for U.S. Patent No. 5,499,330 (Ex. 4A–D)
3. Invalidity Charts for U.S. Patent No. 5,504,852 (Ex. 6A–D)
4. Invalidity Chart for U.S. Patent No. 6,006,227 (Ex. 16D)
5. Invalidity Charts for "The 'Lifestreams' Approach to Reorganizing the Information World" ("TR–1070") (Ex. 17A–D)
6. Invalidity Charts for "On Location" (Ex. 19A–D)
7. Invalidity Charts for "Lifestreams: Organizing your Electronic Life" ("AAAI") (Ex. AA–D)
8. Invalidity Charts for "Spatial Data–Management" (Ex. BA–D)

[2] These claim charts follow the numbering conventions followed in Apple's contentions.

9. Invalidity Charts for “MEMOIRS: A Personal Multimedia Information System” (Ex. CA–D)

In addition, I hereby adopt and incorporate by reference all of the claim charts presented in Apple’s Second Amended Invalidity Contentions dated May 18, 2010, along with the claim charts set forth in Apple’s (First) Amended Invalidity Contentions dated May 11, 2009 and those in Apple’s Amended Invalidity Contentions dated November 3, 2008.

The additional claim charts from Apple’s First and Second Amended Invalidity Contentions include (but are not limited to):

1. Invalidity Chart for “Using Lotus Magellan” and U.S. Patent No. 5,303,361 (Ex. 2A–D)
2. Invalidity Chart for “Retrospect User’s Guide” (1993 and 1995) (Ex. 3A–D)
3. Invalidity Chart for Japanese Patent Publication JP 6–180661 (Ex. 5A–D)
4. Invalidity Chart for U.S. Patent No. 5,621,906 (Ex. 7A–D)
5. Invalidity Chart for U.S. Patent No. 5,758,324 (Ex. 8A–D)
6. Invalidity Chart for U.S. Patent No. 6,396,513 (Ex. 9A–D)
7. Invalidity Chart for “Content Awareness in a File System Interface: Implementing the ‘Pile’ Metaphor for Organizing Information” (“SIGIR ’93”) (Ex. 10A–D)
8. Invalidity Chart for U.S. Patent No. 5,724,567 (Ex. 11A–D)
9. Invalidity Chart for U.S. Patent No. 6,202,058 (Ex. 12A–D)
10. Invalidity Chart for “A ‘Pile’ Metaphor for Supporting Casual Organization of Information” (“CHI ’92”) (Ex. 13A–D)
11. Invalidity Chart for U.S. Patent No. 5,649,188 (Ex. 14A–D)
12. Invalidity Chart for “HyperCard Basics” (Ex. 15A–D)
13. Invalidity Chart for “Semantic File Systems” (Ex. 18A–D)

All the above identified charts are hereby incorporated into my report by reference and are included in the Claim Charts Attachment.

I also hereby adopt and incorporate by reference all the claim charts (including the obviousness and state of the art claim chart) presented in Apple's Second Amended Invalidity Contentions dated May 18, 2010, along with the claim charts set forth in Apple's (First) Amended Invalidity Contentions dated May 11, 2009 and Apple's Invalidity Contentions dated November 3, 2008.

VIII. SUMMARY OF PRIOR ART REFERENCES

A. Mander '724

United States Patent No. 6,243,724, entitled "Method and Apparatus for Organizing Information in a Computer System," (also referred to in my report as "Mander '724," "the '724 patent," or simply "Mander") was issued to Richard Mander, Daniel Rose, Gitta Salomon, Yin Yin Wong, Timothy Oren, Susan Booker and Stephanie Houde, and assigned to Apple Computer, Inc. A copy of Mander '724 is found at APMW0000001–APMW0000049. Mander '724 was filed on August 8, 1994 as a continuation of application No. 07/876,921 (filed on April 30, 1992), and issued on June 5, 2001. It is my understanding that Mander '724 is prior art under 35 USC §102(b). Mander '724 was not before the Examiner during the prosecution of the '227 patent.

Mander '724 discloses all of the essential concepts claimed in the Mirror Worlds patents. More particularly, Mander '724 anticipates, under 35 USC §102(b), at least claims 13–17, and 20 of the '227 patent; claims 1–4, 10 and 11 of the '313 patent; claims 1, 2, 5, 7–10, 13, 15–19, 22, 24–26, 29, 31–34, 37 and 39 of the '427 patent; and claim 1 of the '999 patent. My analysis comparing Mander '724 element–by–element to the asserted claims of the Mirror Worlds patents is provided in Exhibits 1A–1D in the Claims Chart Attachment.

Mander ’724 is related to the Piles research conducted by the inventors during their time in Apple’s ATG. Mander ’724 discloses a system that indexes all files along with any metadata, and associates these files with folders called “piles.” Mander ’724, FIG. 15. An example of a “pile” of documents is shown in FIG. 13a Mander ’724 as reproduced below:

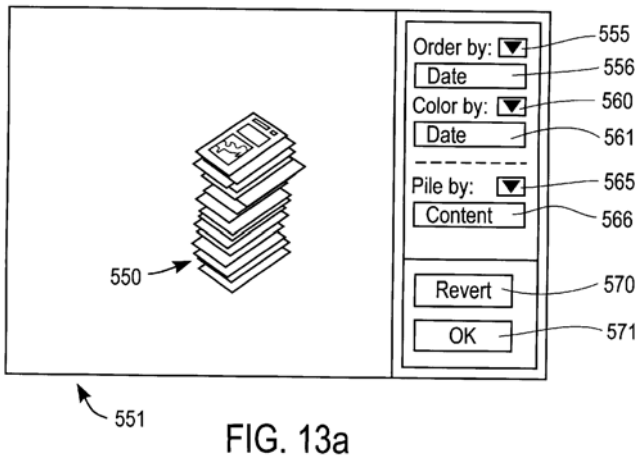


FIG. 13a

Specifically, Mander ’724 discloses a system that organizes data units that are received by a computer system (e.g., electronic mail documents) or generated by a computer system (e.g., word processing documents). See, e.g., Mander ’724, Abstract; 2:63–66; 24:8–18. Each data unit, or new document, in the system is stored in a filing system that includes indexed data information, and the data units are placed into piles that may be further organized into one or more subpiles. See, e.g., Mander ’724, 5:42–6:4; 25:21–27; and FIG 15. The index stores information about the file that is useful in categorizing the file into a “pile,” such as the frequency of each word’s occurrence in a file. Mander ’724, 24:34–42 and 25:38–26:19.

It should be noted that during his deposition, Richard Mander noted that under the philosophy of the Piles project, the number of documents that could be contained in a pile was not limited to a particular or small number of documents or what could be seen on a small screen but, rather, could contain a large number of document (e.g., 10,000 documents). See, e.g.,

Transcript of the R. Mander March 11, 2010 Deposition at 114:8–116:18, 141:6–142:2, 179:13–23.

Just as in the ’227 patent, each file is associated with a timestamp, which is either selected by the system or by the user, and recorded in a date line field of the document or is recorded by the file system. See, e.g., Mander ’724, 33:34–43. Documents may further be sorted into categories based on date. See, e.g., Mander ’724, 23:39–24:5 and 33:35–36. One example of such a category is a label categorizing the documents in a pile using, for example, the script/criteria control window shown in FIG. 14:

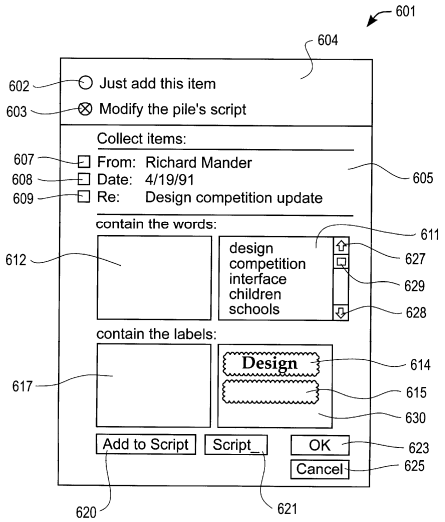


FIG. 14

Mander ’724 discloses that piles are described by scripts and may be controlled by labels. Mander ’724, 23:39–51. The labels are existing controls or criteria that may be selected, and upon selection, control the functioning of a pile. Mander ’724, 23:39–51; 33:35–36. For example, a user may choose to include only files created after a certain date. Another example of a category based on date is a color coding scheme. Each data unit timestamped with an older date may be colored blue, while each data unit timestamped with a new date may be a

brighter color. Mander ’724 at 33:42–62 (“the user selects the command “color by date” …”). Another example is creating a pile based on date. Mander ’724 at 22:43–47 (“if the user selects the option of collecting items which are dated April 19, 1991 …”).

Mander ’724 also discloses a variety of visualization options for piles and the documents within them. Not only does Mander ’724 disclose scripts which describe the contents and/or organization of a particular pile, but Mander ’724 also discloses document views, called proxies. See, e.g., Mander ’724, FIGS. 2a–2l, 3, 4a–4f, 13a, 22e, and 3:21–25, 7:1–10. The proxies can be any number of different forms, including a miniature representation of the document itself which can be paged through, or can be a sampling of the information in the document. See, e.g., Mander ’724 at FIGS. 4a–4f (depicting several different embodiments). Further, Mander discloses displaying the proxies in a time–ordered stream. Mander ’724. FIGS. 2a–2d, Abstract, 33:34–36.

In the preferred embodiment of Mander ’724, the proxies can be displayed using a variety of view cones. See, e.g., FIGS. 4b, 4e, 4f, 22e, 10:36–11:2.

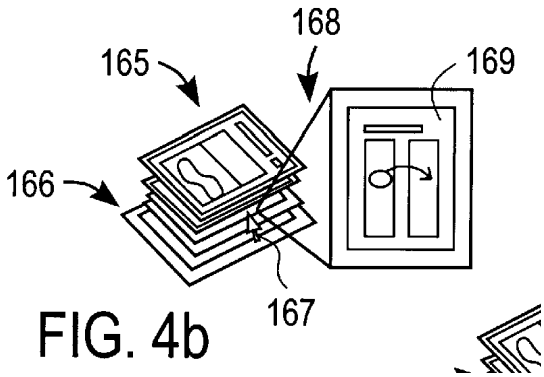


FIG. 4b

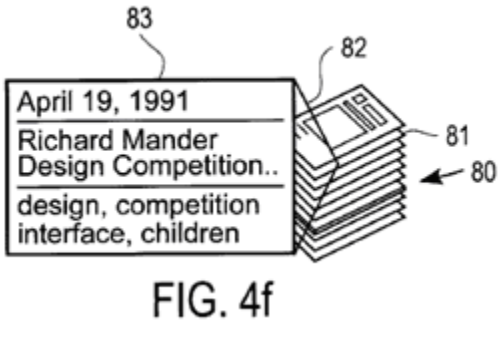


FIG. 4f

A user may view proxies in a pile via the view cone in real time by putting a cursor/pointer over the pile and then moving the cursor up or down to navigate between the proxies—without having to click on the pile or any of the proxies. Mander ’724, FIG. 16, 3:20–25; 10:15–20.

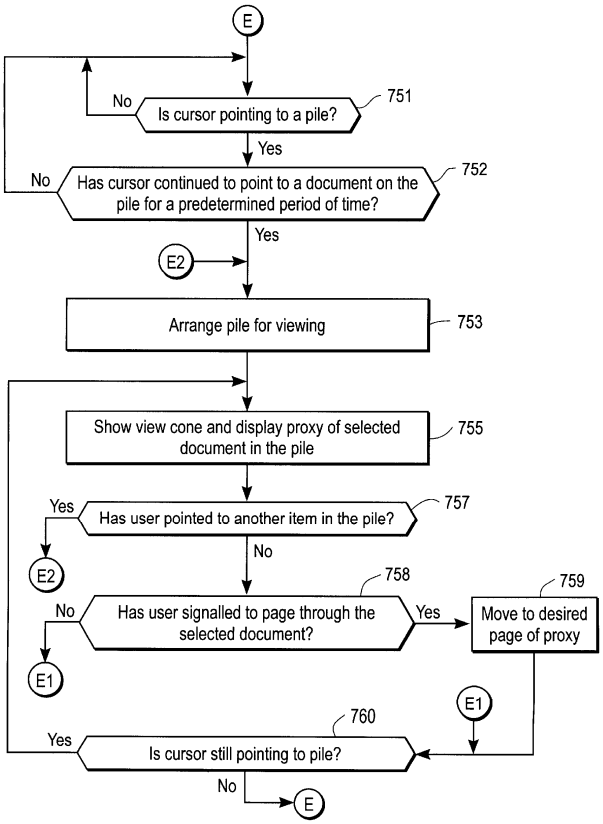


FIG. 16

Mander ’724 is capable of seamless operation with an operating system, such as an Apple operating system. Mander ’724 at 36:56–37:4. Mander ’724 will utilize certain programs of the operating system to perform some of its functions. Mander ’724 is also capable of operating in a networked environment. Mander ’724 at 8:14–16. Mander ’724 may be present on a client computer and rely on a network email server’s email program to generate email documents to be received and indexed by Mander ’724. Mander ’724 at 8:22–24.

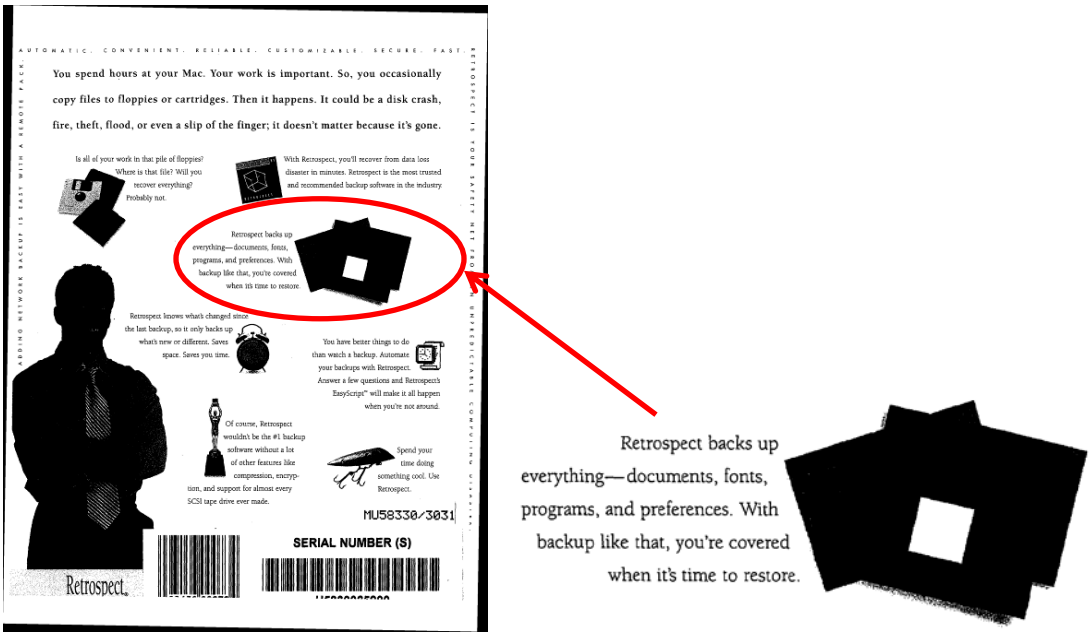
B. Retrospect

Retrospect is a Macintosh software application made by Dantz Development Corporation for automatic backup of files that was widely distributed in the 1990s. A copy of the 1995 Retrospect User’s Guide is found at APMW0000367–APMW0000704. Earlier versions of Retrospect were released in 1989 and 1993. It is my understanding that a copy of the 1993

Retrospect User's Guide has also been produced (APMW0000367–APMW0076037–APMW0076263) It is my understanding that the Retrospect User's Guides (also referred to as "Retrospect") are printed publications that are prior art to the Mirror Worlds patents. Retrospect was not before the Examiner during the prosecution of the '227, '313, '427 or '999 patents.

Retrospect in combination with Mander '724 (see above) renders obvious, under 35 USC §103, at least claims 13–17, 20 and 22 of the '227 patent; claims 1–4 and 9–11 of the '313 patent; claims 1, 2, 5, 7, 9, 10, 13, 15, 17, 19, 26 and 34 of the '427 patent, and claim 1 of the'999 patent. My analysis comparing Retrospect to the claims of the Mirror Worlds patents is provided in the Mander '724 claim charts mentioned above (Exhibits 1A–1D in the Claims Chart Attachment) and to the extent necessary, in the claim charts Exhibits 3A–3D in Apple's Second Amended Invalidity Contentions.

Retrospect allows users to archive documents (in a variety of different formats and for a variety of different applications) as often as the user desired. Furthermore, Retrospect helps ensure that the backed up files are not deleted or written over unless desired. See, e.g., Retrospect User's Guide, pp. v/AMPW0000327 and back cover/AMPW0000704 ("Retrospect backs up everything documents, fonts, programs, and preferences").



[Retrospect @ back cover/AMPW0000704, with emphasis and callout added]

Retrospect was designed to perform automatic unattended backups once the user schedules scripts to execute automatically. Retrospect User's Guide, p. v/AMPW0000327. Retrospect can automatically archive received documents in many different ways. See e.g., Retrospect User's Guide 95 pp. 23–25, 81–87, 98, 104, 151, 155/ APMW0000398 APMW0000400, APMW0000372, APMW0000396–400, APMW0000405, APMW0000456–APMW0000460, APMW0000473, APMW0000479, APMW0000518, APMW0000526, APMW0000530, APMW0000529–537, APMW0000704, see also Retrospect User's Guide 93, p. 40, 42, 44. Retrospect copies or moves documents to a secondary storage medium, such as a tape or a disk. Retrospect User's Guide APMW000396, see also Retrospect User's Guide 93, pp. 14, 17, 18, 27, 28, 98, 107, 207.

1. Motivation to Combine Mander '724 with Retrospect

One of ordinary skill would be motivated to add (i.e., combine) the archiving functionality of Retrospect with the file organization and user interface of Mander for several reasons. First, it is desirable to archive files stored on a computer so that information can be

retrieved if it has been lost. Second, it is also desirable to provide this functionality automatically in order to minimize manual intervention and eliminates the problems that could be caused by a user forgetting to archive files. Third, automatic archival methods of backup help to ensure that backed up files are not accidentally deleted or written over. Retrospect at p. v/APMW0000372.

In addition, both Mander '724 and Retrospect are built for the Macintosh operating system. In fact, Retrospect User's Guide expressly states that its incremental backup method is intended for use with a Macintosh operating system. Retrospect User's Guide p. v/APMW0000372. One of ordinary skill in the art would expect Mander '724 to be either written as an application to be run on top of a Macintosh operating system or implemented as part of the Macintosh operating system itself.

If, Mander '724 was written as a Macintosh application, then one of ordinary skill in the art would expect both Mander '724 and Retrospect to work in their intended manners if they were installed on the same Macintosh computer. Thus, the results of such a combination would be entirely predictable to one of ordinary skill in the art.

On the other hand, if Mander '724 was implemented as a part of a new Macintosh operating system, then one of ordinary skill in the art would expect a compatible version of Retrospect to be made available for use with such an operating system. In both cases, since there is nothing in Mander '724 that eliminates the desire or need for data archiving, one of ordinary skill in the art would find it very desirable to use archiving functionality with the file system afforded by Mander '724.

In fact, since Retrospect was the "#1 backup software" for Apple Macintosh computers (1995 Retrospect User's Guide p. APMW0000704, 1993 Retrospect User's Guide,

p. 12), it is entirely predictable to expect the person of ordinary skill in the art to turn to Retrospect to provide archiving functionality to Mander ’724.

Furthermore, one of ordinary skill in the art would recognize that there are predictable positive results from providing the automatic archival backup of Retrospect to Mander ’724. For example, being automatic saves time, avoids relying on user memory and also avoids the need for user participation during the backup process. By copying and maintaining archived backup files on a secondary storage medium, a copy of these files are still available even if a user intentionally or accidentally deletes the original files on the user’s Macintosh.

One of ordinary skill in the art would also be motivated to combine Retrospect with Mander ’724 because moving seldom–used or old files to archival storage automatically is desirable to one of ordinary skill in the art to afford a convenient way to free up local hard drive space on a computer.

C. Lucas ’330

U.S. Patent No. 5,499,330 entitled “Document Display System for Organizing and Displaying Documents as Screen Objects Organized Along Strand Paths”, to Peter Lucas and Jeffrey Sean (referred to in my report as “Lucas ’330,” or the “’330 patent” or simply “Lucas”), was filed on September 17, 1993 and issued on March 12, 1996. A copy of Lucas ’330 may be found at APMW0000705–APMW0000732. I understand that Lucas ’330 is prior art under 35 USC §102(b) and is asserted under 35 USC § 103. The ’330 patent was not before the Examiner during the prosecution of the ’227, ’313, ’427 or’999 patents.

It is my opinion that Lucas ’330 in combination with Lotus Magellan and its manuals (described below) renders obvious, under 35 USC §103, at least claims 13–17, 20 and 22 of the ’227 patent; claims 1–3 and 9–11 of the ’313 patent; and claims 1, 2, 5, 7–10, 13, 15–

19, 22, 24–26, 29, 31–34, 37 and 39 of the ’427 patent. My analysis comparing Lucas ’330 (in view of Lotus Magellan) element–by–element to the asserted claims is provided in Exhibits 4A–4D in the Claim Charts Attachment. In addition, it is my opinion that at least claims 15 and 16 of the ’227 patent are rendered obvious by Mander ’724 in combination with Lucas ’330 (as set forth in Exhibit 1A in the Claim Charts Attachment).

Lucas ’330 discloses a system for displaying documents in three dimensions, particularly three–dimensional piles, to provide an “intuitively appealing” improvement over conventional user–interfaces where “folders or directories are used to organize files or documents into groups or hierarchies.” Lucas ’330, FIGS. 3 and 5, 1:14–40.

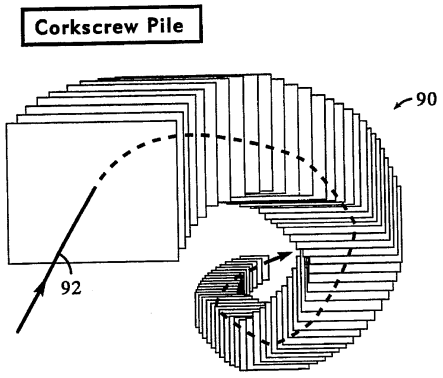


FIG. 5

As shown above, Lucas ’330 discloses a system that displays documents along a “strand” through a three–dimensional display space. Lucas ’330, 1:55–61. The strand path is defined by a strand function that determines the shape of the three–dimensional display of documents. Lucas ’330, 8:54–9:7. The strand mechanism can form any kind of continuous three–dimensional display of documents, including piles or documents “spiraling back to infinity.” Lucas ’330, 8:46–9:7; FIGS. 3 and 5.

Lucas ’330 also discloses a “pile and scroll tool” that allows a user to browse through a collection of documents displayed along a strand. Lucas ’330, FIG. 3, 10:43–51. The

pile and scroll tool allows the user to browse documents that are cycling through a U–shaped strand in response to input signals from a user–controlled mouse. Lucas ’330, FIG. 3, 10:61–11:17.

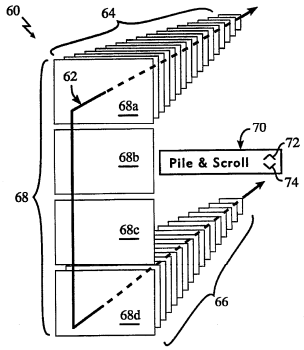


FIG. 3

Lucas ’330 describes using these piles as a generic tool able to present any type of collection of documents, including for example the output of a “FIND” command. See, e.g. Lucas ’330, 9:7–14. The user interface described in Lucas ’330 is designed to work with “repositories” and “workspaces” of documents, which can be kept either in local storage or accessed over a computer network. Lucas ’330, 7:40–67.

One design patent to Lucas even discloses a version of the pile and scroll icon in a variety of horizontal configurations. See e.g., U.S. Des. No. 398,299 FIG. 3:

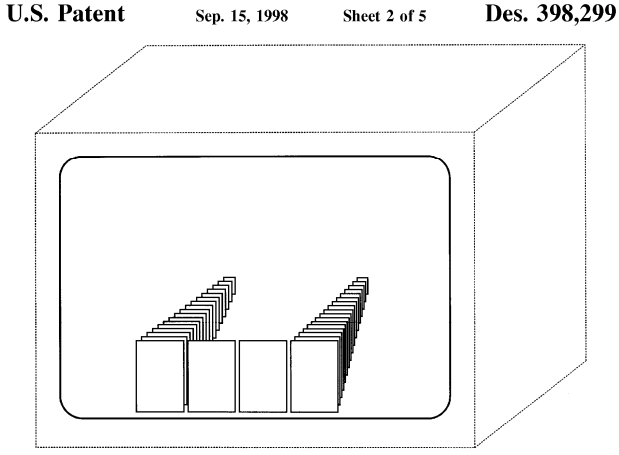


FIG. 3

1. Workscape

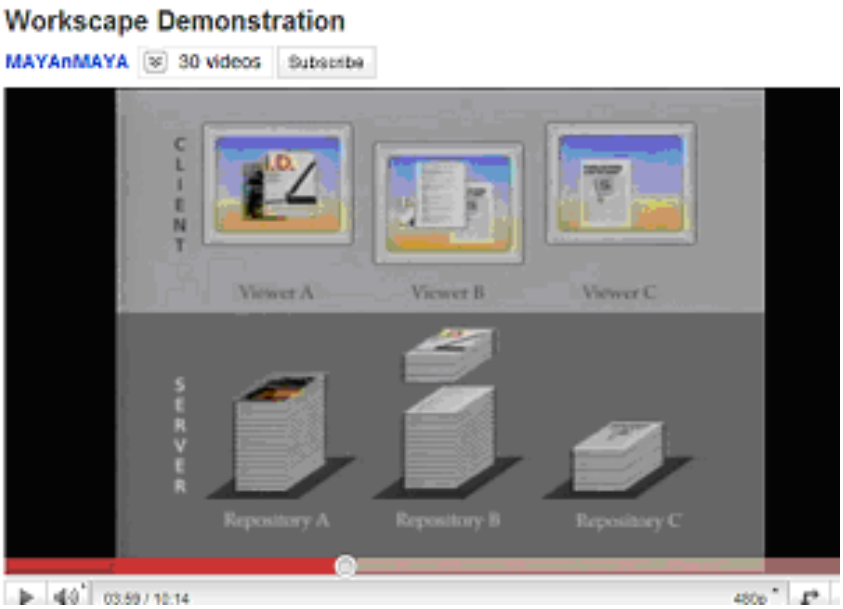
Lucas '330 is related to the work Peter Lucas and colleagues conducted at MAYA on the Workscape document management system. See http://www.maya.com/about/peter–lucas and http://www.maya.com/portfolio/dec–workscape. Workscape was a joint effort between Digital Equipment Corporation and Maya Design Group in the 1990s. At least three references describe the development of Workscape (collectively referred to as the "Workscape references" or simply "Workscape"):

1. "Workscape video" available on You Tube under the heading "Workscape Demonstration" (http://www.youtube.com/watch?v=H9F17JrG–SE) dates to 1993.
2. "Workscape: A Scriptable Document Management Environment" by Peter Lucas and Lauren Schneider is a published description of a demonstration presented at the CHI '94 Conference in April 1994.
3. "Designing Workscape: An Interdisciplinary Experience" by Joseph M. Ballay, is a paper presented at the CHI '94 Conference in April 1994.[3]

All of the Workscape references were publicly known and available more than one year before June 28, 1996 and are therefore, prior art to the Mirror Worlds patents.

The Workscape references describe a document management system that adheres to the client–server model. In this system, the client computers are able to receive and utilize documents from any number of repositories. See, e.g., Workscape: A Scriptable Document Management Environment, pp. 9–10, Workscape video at 3:27–4:20.

[3] This Ballay paper references and includes a screen shot of the Hypercard stack implementing the "200 Points of Light" demo, which is shown in the 200 Points of Light video.



["Workscape video" at 3:59]

The Workscape references describe a client system that displays the document representations in a 3D perspective view. See, e.g., "Designing Workscape: An Interdisciplinary Experience" at p. 12, Fig. 4; "Workscape video" at 3:25, 9:39; "Workscape: A Scriptable Document Management Environment" at p. 9.

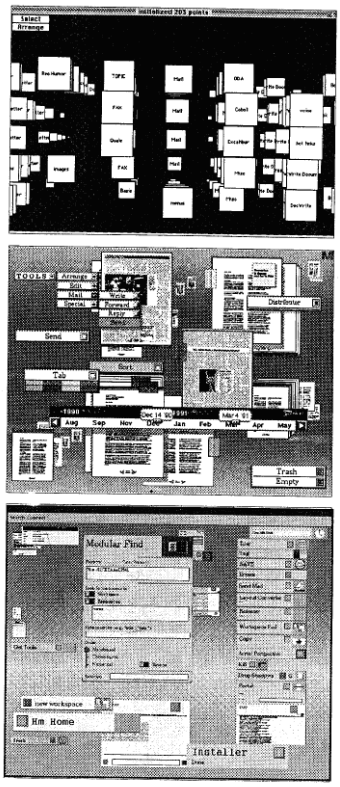
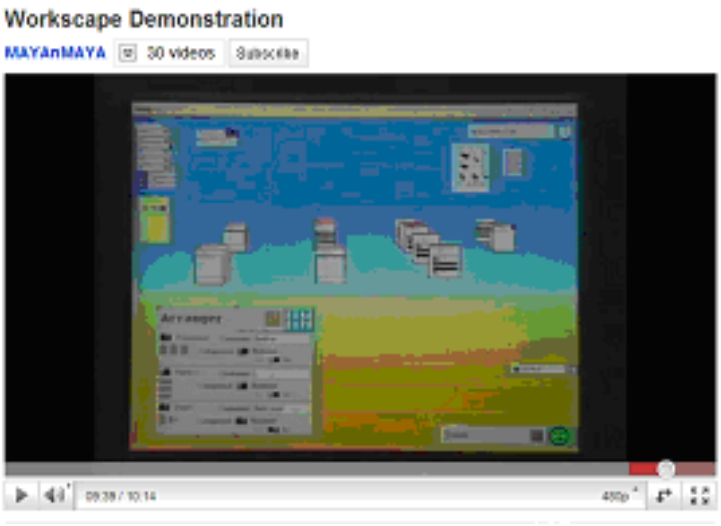


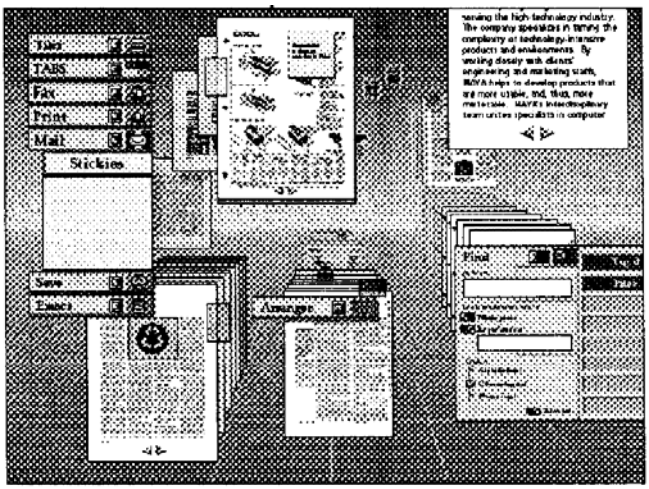
Figure 4. Three stages from a larger series of screen mockups for Workscape, arranged chronologically: *top* - an early Hyperfax display rendered in Hypercard; *middle* - a frame from a Macromind Director graphic mockup anticipating an advanced version of Workscape; *bottom* - a recent screen image taken from a running version of Workscape.

["Designing Workscape: An Interdisciplinary Experience," at Fig. 4.]



["Workscape video," 9:39.]

The Workscape references describe a document management method and system that arranges the document representations on the display in a receding, foreshortened partly overlapping stack. See, e.g., "Workscape: A Scriptable Document Management Environment" at p. 9; "Workscape video" at 9:39.

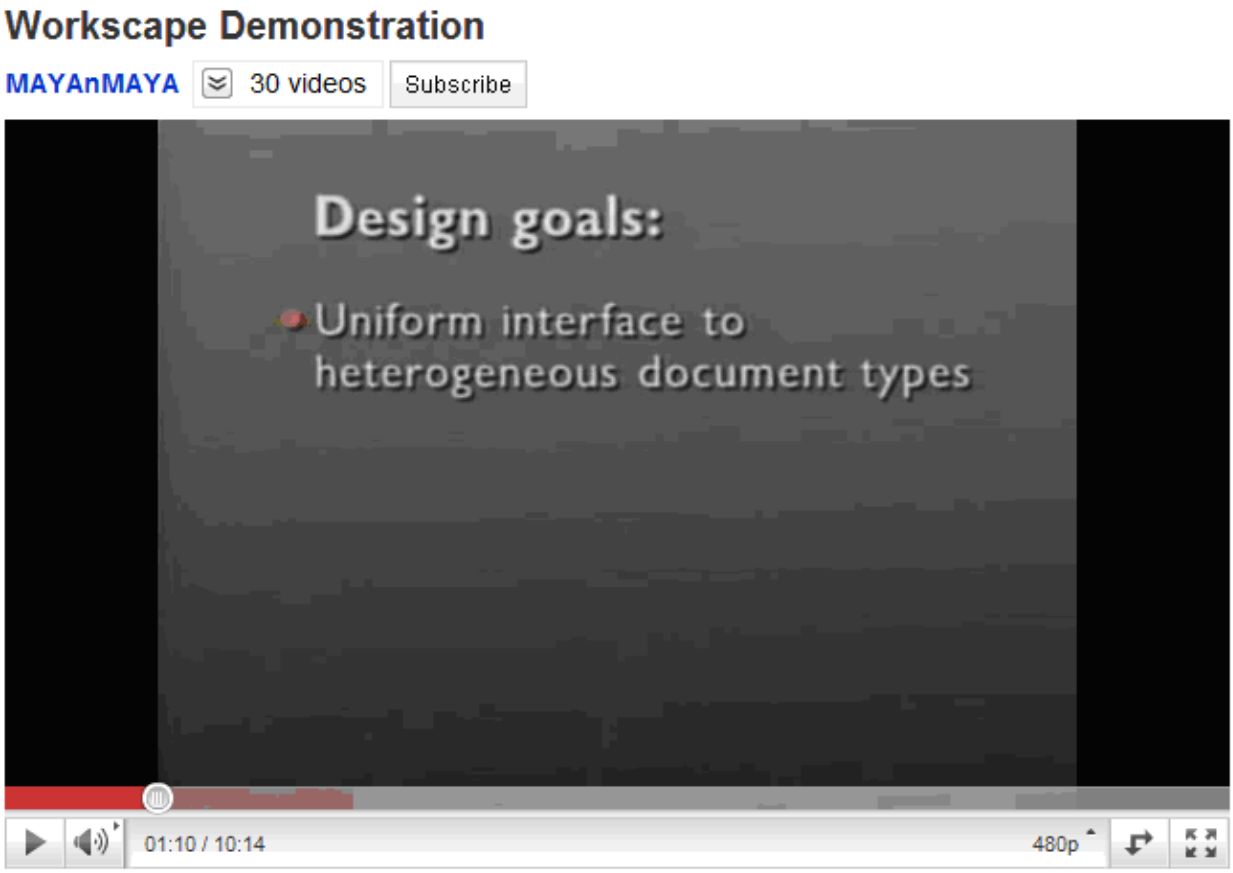


["Workscape: A Scriptable Document Management Environment," p. 9.]

The Workspace references describe that the documents can be ordered chronologically. See, e.g., "Designing Workscape: An Interdisciplinary Experience," p. 12,"Workscape video," 7:32–7:42.

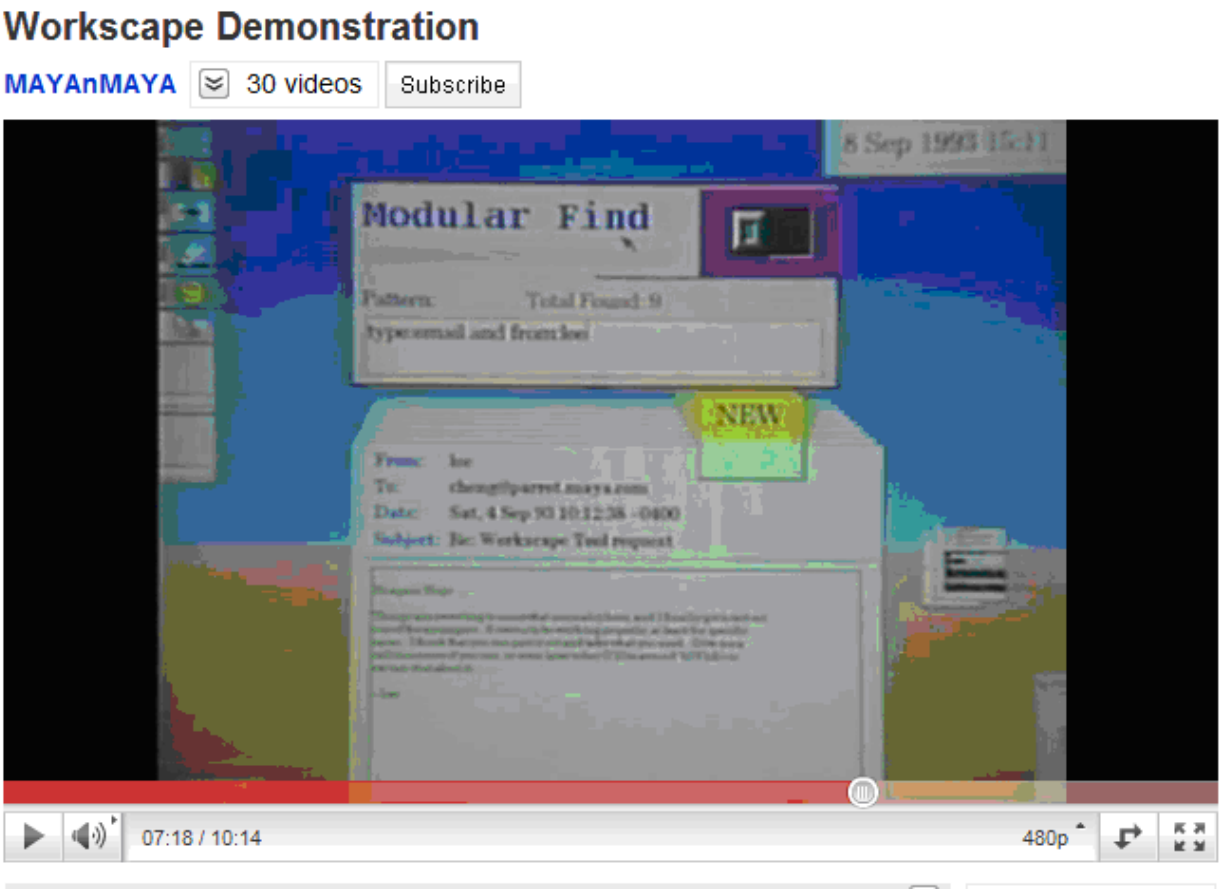
["Workscape video," 7:41.]

The Workscape references describe that the system manages heterogeneous document types. See e.g., "Workscape video" at 1:05–1:20.



["Workscape video," 1:10.]

The Workscape references describe a system that offers an end–user the ability to search for documents. See e.g., "Workscape video" at 6:21– 7:56.



["Workscape video," 7:18.]

In addition, U.S. Patent. No. 6,151,610 to J. Senn et al. discloses a registered search for a Workscape embodiment, as follows:

> A registered search is a search, having selection criteria, which does not terminate. The search executes in a repository, and the search then goes into a "blocked" state. In the event that a new document is received by the relevant repository, the registered search then executes again. In the event that there is a match between the document and the search criteria, then the document is retrieved from the repository and placed in the user's workspace.
>
> For example, a registered search for all of a user's "mail messages" may be launched. The search executes, finds all of the user's new mail, and then is blocked. In the event that a further new mail message is received by the repository, then the search is again executed and the new mail thereby retrieved into the user's workspace.

U.S. Patent No. 6,151,610 at 29:27–40.

In addition to Lucas ’330 and the Workscape references, Peter Lucas and Jeffrey A. Senn (the named inventors of Lucas ’330) are listed as inventors on several other patents (also assigned to Digital Equipment Corp.) describing their work on Workscape that enhances and compliments the disclosures of Lucas ’330 and the Workscape references. These patents (collectively referred to as the DEC/Maya patents”) include:

1. U.S. Patent No. 5,528,739 entitled “Documents having executable attributes for active mail and digitized speech to text conversion,” to Peter Lucas et al., filed September 17, 1993, issued June 18, 1996;
2. U.S. Patent No. 5,600,833 entitled “Attribute portion based document retrieval system with system query language interface,” to Jeffrey A. Senn et al., filed March 24, 1995 (Continuation of U.S. 08/123,541, filed Sept. 17, 1993), issued February 4, 1997;
3. U.S. Patent No. 5,613,134 entitled “Document display system using documents having ephemeral attributes for sharing information regarding the location of the display of each document on multiple display devices,” to Peter Lucas et al., filed November 29, 1995 (Continuation of U.S. 08/123,418, filed Sept. 17, 1993), issued March 18, 1997;
4. U.S. Patent No. 5,621,874 entitled “Three dimensional document representation using strands,” to Peter Lucas et al., filed June 7, 1995 (Continuation of U.S. 08/123,403 (now U.S. 5,499,330) filed Sept. 17, 1993), issued April 15, 1997;
5. U.S. Patent No. 5,905,992 entitled “Document display system for organizing and displaying documents as screen objects organized along strand paths,” to Peter Lucas et al., filed November 25, 1996 (Continuation of U.S. 08/476,792, filed June 7, 1995 (now U.S. 5,621,874) which is a continuation U.S. 08/123,403, filed Sept. 17, 1993 (now U.S. 5,499,330), issued May 18, 1999;
6. U.S. Patent No. 6,012,072 entitled “Display apparatus for the display of documents in a three–dimensional workspace,” to Peter Lucas et al., filed January 5, 1996 (Continuation of U.S. 08/123,416, filed Sept. 17, 1993), issued January 4, 2000;
7. U.S. Patent No. 6,012,074 entitled “Document management system with delimiters defined at run–time,” to Peter Lucas et al., filed March 4, 1997 (Continuation of U.S. 08/561,218, filed Nov. 21, 1995, which is a continuation of U.S. 08/123,542, filed Sept. 17, 1993), issued January 4, 2000;
8. U.S. Patent No. 6,151,610 entitled “Document display system using a scripting language having container variables setting document attributes,”

to Jeffrey A. Senn et al., filed December 27, 1995 (Continuation of U.S. 08/122,995, filed Dec. 27, 1993) issued November 21, 2000;

9. U.S. Des. No. D395,297 entitled "Screen display with icon," to Hugo T.Cheng et al., filed September 17, 1993, issued June 16, 1998; and
10. U.S. Des. No. D398,299 entitled "Video screen with a combined pile and scroll icon for a video monitor," to Joseph M. Ballay et al., filed September 17, 1993, issued September 15, 1998.

All of the above DEC/Maya patents were filed before or claim priority before the filing date of the Mirror Worlds patents. As a result, the DEC/Maya patents are prior art to the Mirror Worlds patents. One of ordinary skill in the art would have been motivated to combine any or all of the DEC/Maya patents with Lucas '330 and/or Workscape because all of these references have at least one common inventor and relate to the inventors' work on Workscape related technology, and many of the DEC/Maya patents share common priority claims to earlier patent applications.

2. Motivation to Combine Lucas '330/Workscape with Mander '724

One of ordinary skill would be motivated to combine the user interfaces of Lucas '330 and/or those described in the Workscape references with the file organization and user interface of Mander for several reasons.

Both Lucas '330/Workscape and Mander '724 discuss the use of piles for organizing documents stored in a computer. Both Lucas '330/Workscape and Mander '724 also highlight the benefit for using three–dimensional piles for displaying collections of documents. One of ordinary skill in the art searching for various ideas for implementing and displaying collections of documents in piles would be aware of the solutions discussed in both references. One of ordinary skill in the art would also understand that Lucas '330/Workscape describes methods to display a pile with multiple exemplary layouts including a perspective foreshortened, receding, corkscrew layout. Therefore, one of ordinary skill in the art would recognize that the

visual approaches presented in Lucas ’330/Workscape could be applied as acceptable substitutions for the visualizations of piles described in Mander ’724. Thus, one of ordinary skill in the art would find it desirable to use the teachings of Lucas ’330 and/or Workscape to present the piles of Mander ’724.

Further evidence that one of ordinary skill in the art would consider combining Lucas ’330 and Mander ’724 is that both references (as well as the ’227, ’313 and ’427 patents) cite to the 1983 paper by T.W. Malone entitled “How Do People Organize Their Desks? Implications for the Design of Office Information Systems”, which discusses the concept of organizing documents into piles. Further, Lucas ’330 cites to a paper by Stephanie Houde, one of the inventors of Mander ’724. Thus, one of ordinary skill in the art searching for references relating to the concept of piles and the work by the inventors of Mander ’330 would come across these references. Such linkages would be appreciated by one of ordinary skill in the art when considering which references to combine.

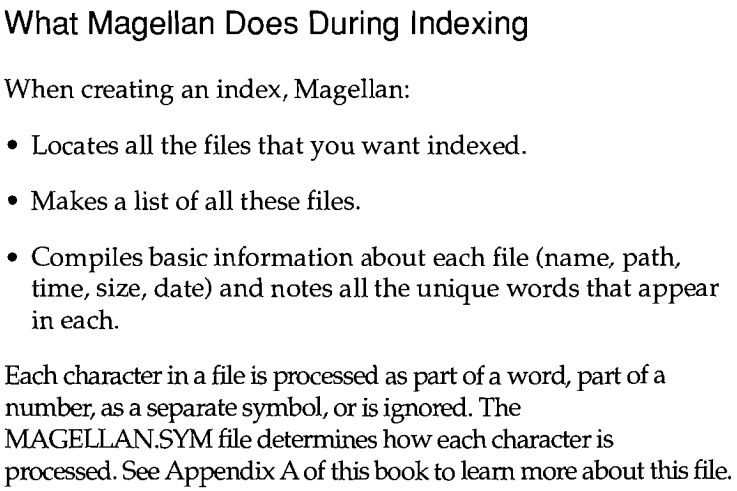
D. Lotus Magellan

Lotus Magellan is a software application first released in the 1980s by Lotus Development Corporation. Lotus Magellan is described in (among other references) “Using Lotus Magellan,” by David P. Gobel (Que Corporation, 1989). A copy of User Lotus Magellan is provided at APMW0000050–APMW0000366. Lotus Magellan is also described in “Lotus Magellan’s Explorer’s Guide,” by Lotus (Lotus Development Corporation, 1989). A copy of the Lotus Magellan’s Explorer’s Guide is provided at APMW0074803–APMW75039. Lotus Magellan is further described in U.S. Patent No. 5,303,361 (the “’361 patent”), entitled “Search and Retrieval System”, which was filed on January 18, 1990 and issued on April 12, 1994. A copy of the ’361 patent is provided at AMP0018307–AMP0018326. I collectively refer to these

references as “Lotus Magellan.” It is my understanding that Lotus Magellan is prior art under 35 USC § 102 and is asserted under 35 USC § 103. None of the Lotus Magellan references were before the Examiner during the prosecution of the ’227, ’313, ’427 or ’999 patents.

As previously mentioned, it is my opinion that Lucas ’330 in combination with Lotus Magellan renders obvious, under 35 USC §103, at least claims 13–17, 20 and 22 of the ’227 patent; claims 1–3, and 9–11 of the ’313 patent; and claims 1, 2, 5, 7–9, 10, 13, 15–19, 22, 24–26, 29, 31–34, 37 and 39 of the ’427 patent. My analysis comparing Lotus Magellan to the claims of the Mirror Worlds patents is provided in the Lucas ’330 claim charts (Exhibits 4A–4D of the Claim Charts Attachments), and to the extent necessary, in the claim charts Exhibits 2A–2D in Apple’s Second Amended Invalidity Contentions.

Lotus Magellan discloses a sophisticated indexing and searching system that could be used to index and search the entire contents of a computer, including every word of every document in the system, and even allows the indexing of networked storage. Using Lotus Magellan, pp. 1–2. After indexing all of the files on a user’s system, Magellan allows searching the index to find documents satisfying user–defined search criteria. Using Lotus Magellan, pp. xi–xii; Magellan Explorer’s Guide, p. 19. In addition to indexing the contents of the files, Magellan also indexes file metadata, such as name, path, time, size, and date. Magellan Explorer’s Guide at p. 186:



What Magellan Does During Indexing

When creating an index, Magellan:

- Locates all the files that you want indexed.
- Makes a list of all these files.
- Compiles basic information about each file (name, path, time, size, date) and notes all the unique words that appear in each.

Each character in a file is processed as part of a word, part of a number, as a separate symbol, or is ignored. The MAGELLAN.SYM file determines how each character is processed. See Appendix A of this book to learn more about this file.

1. Motivation to Combine Lotus Magellan with Lucas '330

One of ordinary skill would be motivated to combine the display features of Lucas with the search and archiving features of Lotus Magellan for at least the following reasons. One of ordinary skill in the art would be motivated to combine Lotus Magellan with Lucas '330 because such a combination would be considered by one of ordinary skill in the art to be the substitution of one known element for another in order to obtain a predictable outcome or result. At the time of Lucas '330, substituting the graphical user interface of Lotus Magellan with that of Lucas '330 would be simply be considered the substitution of an older user interface (i.e., the interface of Lotus Magellan in 1989) with the more user–friendly graphical user interface of Lucas '330 in 1993. One of ordinary skill in the art would view such a substitution as yielding a predictable and positive result, namely, providing an easier to use user interface to the features provided by Lotus Magellan. For example, substituting Lotus Magellan's user interface with that of Lucas '330 would allow users to "more easily manipulate documents in an environment like the real world of the desktop and to organize documents in a way that is intuitively appealing" and is "not based on artificial constructs imposed by the nature of computer storage of documents or two dimensional user interface designs." Lucas '330, 1:14–4. Thus, one skilled in

the art would be motivated to substitute the known three–dimensional user interface of Lucas to replace the older well known DOS–based user interface of Magellan in order to obtain an enhanced user interface. This is particularly true because Lucas ’330 expressly contemplates the use of searches (e.g., the FIND operation) to generate the content to be displayed. Lucas ’330, 9:8–14.

Another reason why one of ordinary skill in the art would have been motivated to combine Lotus Magellan with Lucas’330 is that such a person would have be motivated to use the embodiments described in Lucas ’330 with the search and archival features of Lotus Magellan. This is particularly true because the features of Lotus Magellan would be helpful in indexing and searching documents within a pile created using the system in Lucas ’330.

Further, one of ordinary skill in the art would be motivated by the direct teaching of Lucas ’330 to combine its features with Lotus Magellan. Lucas ’330 expressly contemplates the use of searches (e.g., the FIND operation) to generate the content to be displayed. Lucas ’330, 9:8–14. Lotus Magellan discloses a system for indexing the entire contents, including every word of every document, of a computer system and allowing the user to perform sophisticated searches to find documents satisfying user–defined search criteria. Using Lotus Magellan, pp. 1–2; Using Lotus Magellan pp. xi–xii; Magellan Explorer’s Guide pp. 19. One of ordinary skill in the art, reading the disclosure of high–level search functionality in Lucas, would be motivated by that teaching to identify known techniques for sophisticated searching such as those afforded by Lotus Magellan to then to combine its techniques and applications with the embodiments described in Lucas ’330 in order to further enhance the functionalities of Lucas ’330 with the well known and easily available functions of Lotus Magellan.

Thus, based on the capabilities of the Lucas ’330 and Lotus Magellan systems and the well–known nature of both systems’ user interfaces and searching functionalities, one of ordinary skill in the art—at the time the Mirror Worlds patents were filed—would have considered it obvious to combine the Lucas ’330 display techniques with the searching system disclosed in Lotus Magellan.

E. Thomson–Rohrlich ’852 and Inside Macintosh

U.S. Patent No. 5,504,852 (“Thompson–Rohrlich ’852” or the “’852 patent”), entitled “Method for Creating a Collection of Aliases Representing Computer System Files” issued to inventor John Thompson–Rohrlich and was assigned to Apple. A copy of Thompson–Rohrlich ’852 is provided at APMW0000752–APMW0000759. Thompson–Rohrlich ’852 was filed on March 2, 1995 and issued on April 2, 1996. Thompson–Rohrlich ’852 is a continuation of a continuation and claims a priority date of September 9, 1991. I understand that Thompson–Rohrlich ’852 is prior art at least under 35 USC §102(a) and §102(e) and is asserted under 35 USC § 103. Thompson–Rohrlich ’852 was not before the Examiner during the prosecution of the ’227, ’313, ’427 or ’999 patents.

The embodiments disclosed in Thompson–Rohrlich ’852 are expressly described for use with Apple’s System 7 Finder, which uses Apple’s HFS file system. Thompson–Rohrlich ’852, 5:13–14 (“The Viewers were built as a System 7 Finder extension.”). The manual Inside Macintosh describes the operation of various features of Apple’s HFS file system. A copy of Inside Macintosh (also referred to as “HFS”) is provided at APMW0001147–APMW0001662. I understand that Inside Macintosh, which is prior art under 35 USC § 102(b), was published in 1992, and is asserted under 35 USC § 103.

Thompson–Rohrlich ’852, especially in view of the teachings of Inside Macintosh, discloses many of the elements claimed in the ’227 patent, including: (1) organizing and displaying documents in a computer system according to timestamps and/or pre–assigned chronological labels; and (2) automatically organizing new documents. Thus, it is my opinion that the combination of Thompson–Rohrlich ’852 and Inside Macintosh renders obvious, under 35 USC §103, at least claims 13–17, and 20 of the ’227 patent. My analysis comparing Thompson–Rohrlich ’852 and Inside Macintosh element–by–element to the claims of the Mirror Worlds patents are provided in Exhibits 6A–6D of the Claim Charts Attachment.

Thompson–Rohrlich ’852, which describes a system for “organizing and displaying information about files stored on a computer,” aimed at providing an “automatic method of organizing and representing files in categories relevant to the computer user, and continuously updating this representation as the files change.” Thompson–Rohrlich ’852, 1:12–13; 1:27–30. Specifically, Thompson–Rohrlich ’852 discloses the use of a “Viewer” that “acts as an intelligent folder” (what Apple now calls a “smart folder”). Thompson–Rohrlich ’852, 1:59–60.

An “intelligent folder” is a folder whose contents are defined not by what was put into it by a user, but rather based on criteria established by the user input, for example, via a window such as the one shown in FIG. 4 of Thompson–Rohrlich ’852.

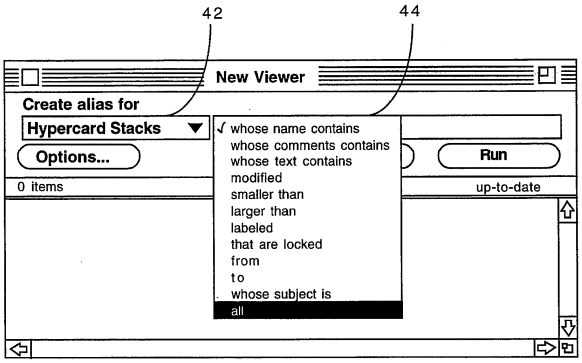


FIG. 4

Using the embodiments described in Thompson–Rohrlich ’852, a user could create an “intelligent folder” called “today” that included all files modified today, or one called progress reports that contained all documents whose text included the words “progress report.” Thompson–Rohrlich ’852, FIG. 2, 1:55–2:11, 2:54–67. These “intelligent folders” are kept up–to–date, even as new files are added to the file system. Thompson–Rohrlich ’852, 1:40–45. As shown by FIG. 2, these documents can also be in different file formats (see Kind column) and may even be sorted to be displayed according to date and time (see Last Modified column).

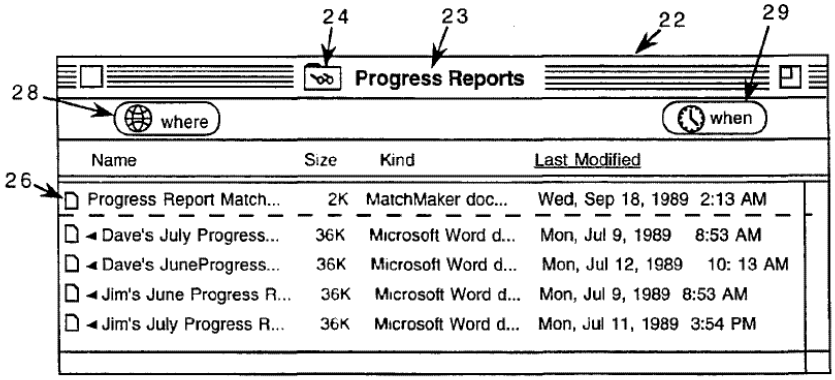


FIG. 2

Thompson–Rohrlich ’852, FIG. 2. The files in the list are aliases to files stored on the computer. Thompson–Rohrlich ’852, Abstract.

The HFS file system used on Macintosh computers organizes every file received by the computer on a volume–by–volume basis. Inside Macintosh, pp. 2–53. As described in Inside Macintosh, the HFS file system includes a catalog file containing metadata about each file, that could be searched using the function "pbCatSearch" in order to find files based on their metadata. Inside Macintosh, pp. 2–53. The HFS file system shows that the concepts of organizing every data unit, and organizing and searching those data units according to each file's metadata attributes were well known to one of ordinary skill in the art by as early as 1992.

The combination of Thompson–Rohrlich '852 and Inside Macintosh further discloses a means for generating a main stream of data units and at least one substream. Specifically, the HFS file system as described in Inside Macintosh, discloses a file system that indexes all files along with any metadata, and associates these files with aliases that can be displayed in Viewers as described in Thompson–Rohrlich '852. Thompson–Rohrlich '852 at 4:62–5:50. Inside Macintosh discloses that a main stream of data units can be received by or generated by a running System 7 computer in the form of a "catalog file [that] lists all the files and directories on a volume, as well as some of the attributes of those files and directories." Inside Macintosh at pp. 2–53. Thompson–Rohrlich '852 discloses the generating of at least one substream from this main stream. Thompson–Rohrlich '852, 1:55–2:11; 4:62–5:50.

Thompson–Rohrlich '852 specifically discloses a "method to create and represent this secondary organization occurs by … searching the stored files for specific characteristics," wherein each substream (e.g., "Viewer") contains only data units from the main stream. Thompson–Rohrlich '852, 4:62–5:50. Thompson–Rohrlich '852 also discloses the maintenance of its main stream and substreams as persistent streams. For example, as stated in Thompson–Rohrlich '852, "[t]he computer continues to perform these searching and organizing functions as

the computer is used, so that the information presented is current and up–to–date." Thompson–Rohrlich '852, 1:48–51. Keeping current and up–to–date information, means to one of ordinary skill in the art that the main stream and substreams (in the manner described in Thompson–Rohrlich '852, are persistent ("streams that are dynamically updated").

Thompson–Rohrlich '852 also discloses the steps of generating and receiving of data units, selecting a timestamp for the data units, and associating a chronological indicator with the data units as recited in the claims of the '227 patent. Thompson–Rohrlich '852, 2:58–67; 3:25–31; 1:66–2:6.

1. A Person of Ordinary Skill in the Art would be Motivated to Combine Thompson–Rohrlich and Inside Macintosh

One of ordinary skill would be motivated to combine the teachings of Thompson–Rohrlich '852 with those of Inside Macintosh to render obvious claims 13–17, and 20 of the '227 patent for at least the following reasons.

a. Combining Prior Art Elements According to Known Methods to Yield Predictable Results

One of ordinary skill in the art would be able to combine the file organization and display features of Thompson–Rohrlich '852 with features of the HFS file system described in Inside Macintosh. Such a combination would yield predictable results because both Thompson–Rohrlich '852 and Inside Macintosh described features implemented in and with the Apple System 7.0 file system. For example, Thompson–Rohrlich '852 describes the use of its method for organizing and displaying information in conjunction with a file system that supports an "alias" function, and specifically identifies the System 7.0 operating system for the Apple Macintosh family of computers as one such system. Inside Macintosh describes the hierarchical file system of the Macintosh Operating System, including System 7.0. Inside Macintosh, pp. xv, 1–3. Inside Macintosh even describes the use of the same alias function mentioned in

Thompson–Rohrlich ’852. Inside Macintosh p. xv (Chapter 4). One or ordinary skill in the art would understand that the features and functionality of System 7.0 expressly mentioned in Thompson–Rohrlich ’852 would operate in accordance with the information disclosed in Inside Macintosh.

The results from combining Thompson–Rohrlich ’852 and the file system described in Inside Macintosh would also be predictable to one of ordinary skill in the art. With the ability to organize documents more usefully, users of the embodiments described in Thompson–Rohrlich ’852 could automatically organize information in a file system based on searches or criteria crafted by the user and have that organization remain up–to–date even as the files in the file system change over time. Thompson–Rohrlich ’852, 1:27–30, 2:40–54. Thus, these features would enhance the usefulness and usability of a traditional file system and would overcome the drawbacks alluded to in Thompson–Rohrlich ’852, including the drawback that a user seeking to organize files would traditionally have to go to where a file is originally located in the file system to access it. Thompson–Rohrlich ’852, 1:16–26.

b. Teaching, Suggestion or Motivation in the Prior Art

Thompson–Rohrlich ’852 characterizes its invention as a method for organizing and displaying files that already exist in a file system, and in particular a Macintosh file system. Thus, one of ordinary skill in the art reading the disclosure in Thompson–Rohrlich ’852 would be motivated by its teaching to identify other references describing the features and functionality of the referenced file system as well as similar file systems available at the time. Thus, one of ordinary skill in the art would be motivated by the direct teaching of Thompson–Rohrlich ’852 to combine its file organization and display features with the file system described in Inside Macintosh.

Thus, based on the character of the embodiments disclosed in Thompson–Rohrlich ’852 as sitting atop a traditional Macintosh file system, a person of ordinary skill in the art would have considered it obvious to implement the file organization and display features of Thompson–Rohrlich ’852 with Apple’s HFS file system described in Inside Macintosh.

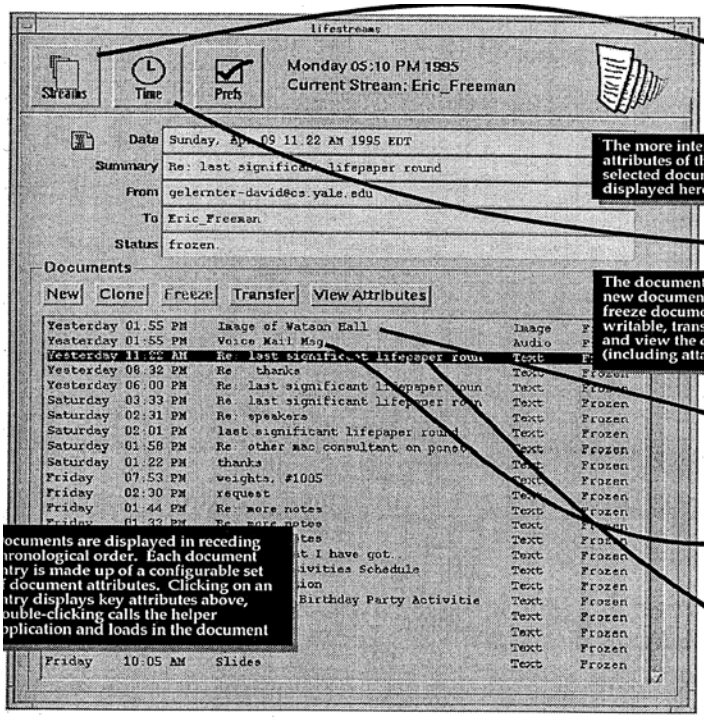
F. TR–1070

“The ‘Lifestreams’ Approach to Reorganizing the Information World” was apparently publicly disclosed at least as early as October 1995, and, thus, is prior art under 35 USC §102(a).

It is my understanding that TR–1070 qualifies as prior art under 35 U.S.C. § 102(a) and (b). I have been told Technical Report–1070 was a printed publication and/or was known or used by another in the United States on or around April 1995, more than one year before the June 28, 1996 filing of the application that lead to the ’227 Patent. I have been told that TR–1070 had been distributed to Technology Review with the initial intent that it be published and had also been distributed to at least one graduate student at the University of Toronto. In addition, I have been told that TR–1070 was available for distribution to any individual requesting it within one week of the April 1995 date on its face. See, e.g., February 5, 2009 Deposition of C. Hatchell (Exhibit E) at 134:18–135:17. I have further been told that a person visiting the Computer Science Department at Yale in the late 1980s to mid 1990s would be told what technical reports had been published by the department if they were requesting that information, and that technical reports were available without restriction to individuals requesting them during that time. See, e.g., February 5, 2009 Deposition of C. Hatchell (Exhibit E) at 120:14–25. I have also been told that Dr. Gelernter has testified that he sent TR–1070 to the

Technology Review with the intent of having it published. (June 18, 2009 Dep. Tr. at 90:25–91:6).

Just as in the ’227 patent, the TR–1070 discloses storing every “chunk of information of interest to its owner” in a stream called a “Lifestream.” See TR–1070 article, p. YALE 000431. A “chunk” is “any chunk of data that would ordinarily be treated as a unit: a document, email message, calendar item, software Rolodex card or fax image….” See TR–1070 article, p. YALE 000431. The lifestream is accessed from a “viewport” or “any computer running the necessary software,” wherein the user logs in to see the master “chunk” list. The master chunk list is scrollable, wherein the most recently created chunk is at the top of the list, and newly created or received chunks are added to list. See TR–1070 article, p. YALE 00433. This master chunk list may also be displayed as a “3D stream receding from the present into the past.” See TR–1070 article, p. YALE 00433.



Each document is associated with a collection of attributes, including the date and time at which the chunk was created. See TR–1070 article, p. YALE 000434. Thus, with the time and date, the system is able to associate each document as from the "past, present, or future." See TR–1070 article, p. YALE 000435–36. In addition to the main or master stream of chunks, the user can use the "find" button to generate one or more "substreams," which are lists of all chunks that satisfy some search criterion. See TR–1070 article, p. YALE 000434. In other words, they are directories that are created "on the fly," wherein a chunk may belong to one or more substream at the same time. See TR–1070 article, p. YALE 000432. These substreams are described as dynamic, meaning that each lives until it is killed, and newly created or received documents that fit the criterion will be added to the substream. See TR–1070 article, p. YALE 000435.

The TR–1070 article states that Lifestreams "overlaps many existing systems in many ways," such as Lotus Notes and other Disk catalogers and indexers. See TR–1070 article, p. YALE 000438.

The TR–1070 article anticipates, under 35 USC §102(a), at least claims 13–17, 20 and 22 of the '227 patent; claims 1–4 and 9–11 of the '313 patent; and claims 1, 2 and 5 of the '427 patent.

G. AAAI Fall '95 Symposium Paper

The "Lifestreams: Organizing your Electronic Life," by Eric Freeman and Scott Fertig, was presented at the AAAI Fall Symposium in November 1995 (herein referred to as the "AAAI symposium paper"), and is prior art under 35 USC §102(a).

The AAAI symposium paper discloses the "Lifestreams" system, which organizes files and documents in a time–ordered stream of documents, for replacing the conventional

organization system of directories. See AAAI symposium paper, p. YALE 000552. A Lifestream, as defined by the paper, is essentially "a diary of your electronic life; every document you create is stored in your lifestream, as are all the documents other people send you." AAAI symposium paper, p. YALE 000552. Documents of various types are stored in a stream of documents that are associated with either the past, present or future. See AAAI symposium paper, p. YALE 000552. When new documents arrive, the stream is updated accordingly. See AAAI symposium paper, p. YALE 000552.

Lifestreams is disclosed as a client/server architecture, wherein, it is imagined that a user could access Lifestreams over the Internet from any one of a number of Lifestream clients or viewports, such as high–end workstation, PC, PDA, or set–top box for accessing through a television. See AAAI symposium paper, p. YALE 000553. The AAAI symposium paper discloses, in Figure 1, the user interface one experiences from a workstation viewport:

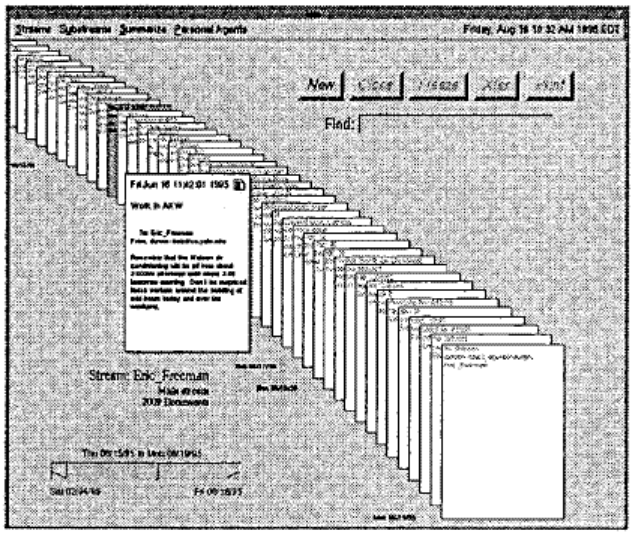


Figure 1: The UNIX Viewport.

See AAAI symposium paper, p. YALE 000554. As seen above, the AAAI symposium paper shows a set of documents overlapping each other with only the first line or so of each document showing. See AAAI symposium paper, p. YALE 000554. The documents at the back of the

stream are associated with the past, and documents in the front are associated with the present. See AAAI symposium paper, p. YALE 000552. The user may even move beyond the present to documents associated with the future, such as reminders, meeting schedules, and to do lists. See AAAI symposium paper, p. YALE 000552. The order of the Lifestream is time–based, and most newly created documents hang around in the "present" for some time before the documents are automatically archived into the "past." See AAAI symposium paper, p. YALE000553. A user "may slide the mouse pointer over the document representations to receive a 'glance' view of the contents of each document." See AAAI symposium paper, p. YALE 000554.

A user may create a "Substream," or a subset of the "Lifestream," which is a temporary collection of documents that is created by user created search criteria. See AAAI symposium paper, p. YALE 000553. The substreams may persist, meaning as new documents are created or received, if it fits within the search criteria, the new document will be added to the substream. See AAAI symposium paper, p. YALE 000553.

The AAAI symposium paper anticipates, under 35 USC §102(a), at least claims 13–17, 20 and 22 of the '227 patent; claims 1–4 and 11 of the '313 patent; claims 1, 2, 5, 7–10, 13, 15–19, 22, 24–26, 29, 31–34, 37 and 39 of the '427 patent; and claim 1 of the '999 patent.

H. Spatial Data–Management

"Spatial Data–Management" by Richard A. Bolt ("SDM") is a book published in 1979. APMW0076297–APMW0076359 (another copy produced as APMW0074722–APMW0074785 is available on the Internet at http://www.media.mit.edu/speech/sig_papers.html). SDM describes various aspects of the research on a Spatial Data Management System ("SDMS") conducted by the Architecture Machine Group at the Massachusetts Institute of Technology in the 1970s. A video of SDMS

from January 1980 has been produced on the disc APMW0076442 and is available on the Internet at http://www.media.mit.edu/speech/sig_videos.html).

Further references describing various aspects of SDMS include:

1. William C. Donelson, "Spatial Management of Information," Proceedings of the 5th Annual Conference on Computer Graphics and Interactive Techniques, 1978 (APMW0074125–APMW0074131);
2. William C. Donelson, "Spatial Management of Data" MS Thesis, Massachusetts Institute of Technology, September 1975 (APMW0074787–APMW0074802)
3. Christopher M. Schmandt, "Pages Without Paper" BS Thesis, Massachusetts Institute of Technology, December 1978 (APMW0074081–APMW0074124)

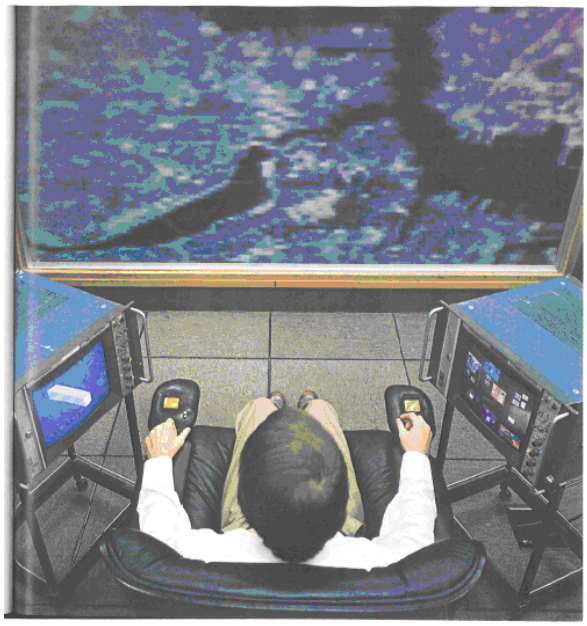
Further references describing additional research of the Architecture Machine Group generally at the same time as SDMS include:

1. Richard A. Bolt, "'Put–That–There': Voice and Gesture at the Graphics Interface," International Conference on Computer Graphics and Interactive Techniques, Proceedings of the 7th Annual Conference on Computer Graphics and Interactive Techniques, Seattle, Washington, July 14 – 18, 1980, pp. 262–270 (APMW0074132–APMW0074140)
2. Richard A. Bolt "Gaze–Orchestrated Dynamic Windows" ACM SIGGRAPH Computer Graphics, pp. 109–119, Volume 15 , Issue 3 August 1981 (APMW0074145–APMW0074155), (also published in International Conference on Computer Graphics and Interactive Techniques, Proceedings of the 8th Annual Conference on Computer Graphics and Interactive Techniques Dallas, Texas, August 3–7, 1981)

I understand that SDMS and the underlying SDMS and Architecture Machine Group references are prior art under 35 U.S.C. §102(b) SDMS was not before the Examiner during the prosecution of the Mirror Worlds patents. It is my opinion that SDMS/SDM either anticipates or renders obvious the claims of the Mirror Worlds patents either alone or in

combination with other prior art references such as Mander ’724/Piles and Lucas ’330/Workscape and my element–by–element analysis comparing SDMS to the asserted claims is provided in Exhibits BA–BD in the Claim Charts Attachment.

SDMS was a room–sized workstation with a wall sized display screen, and two touch–sensitive television display monitors. SDM, pp. 10, 42, see also W. Donelson, “Spatial Management of Information,” Proceedings of the 5th Annual Conference on Computer Graphics and Interactive Techniques, 1978, p. 206, FIG. 2 (APMW0074128).



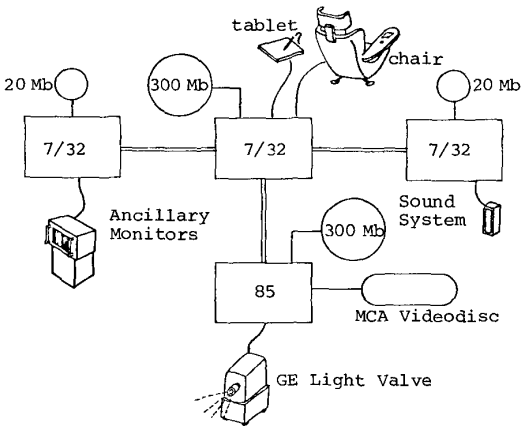


Fig. 2 - The SDMS Minicomputer Network

SDM expressly recognized that its SDM system is “not necessarily tied to a room–sized terminal” and could be implemented using a desktop arrangement. SDM, p. 10. Examples of such desktop arrangements are shown in the SDMS and Architecture Machine Group references. See, e.g., R. Bolt “Gaze–Orchestrated Dynamic Windows,” ACM SIGGRAPH Computer Graphics, Vol. 15, Issue 3, August 1981, p. 114, FIG. 4 (APMW0074160), and W. Donelson, “Spatial Management of Information,” Proceedings of the

5th Annual Conference on Computer Graphics and Interactive Techniques, 1978, p. 208, FIG. 7 (APMW0074130).

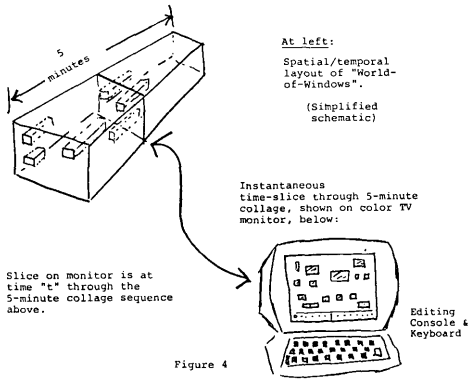


Figure 4

The editor monitor, with keyboard and graphics tablet, permitted editing into place of video snippets comprising the "World-of-Windows."

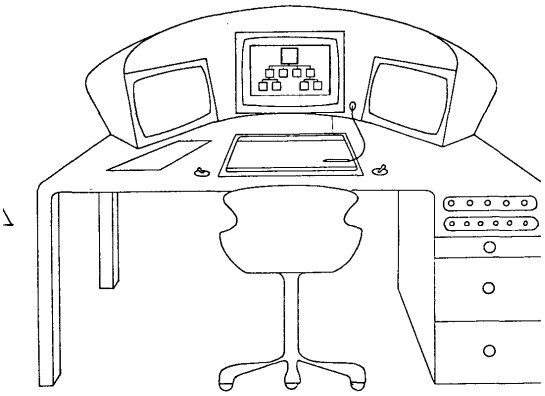


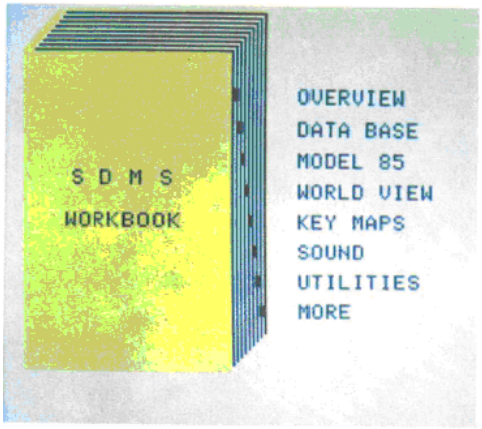
Fig. 7 - A possible desktop based SDMS. (Courtesy CCA)

Via its displays, the SDMS displayed various "key maps." One version of the key map presented documents (e.g., LANDSAT images of Boston) in a receding stack of partly overlapping documents. SDM, pp. 42–45.

SDMS also could also display documents as a book–like receding stack of partly overlapping pages behind a book cover. See e.g., SDM, pp. 28–31.

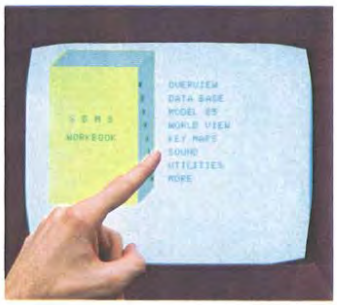
User interacts by touch with a "table of contents" key map for book-like data types.

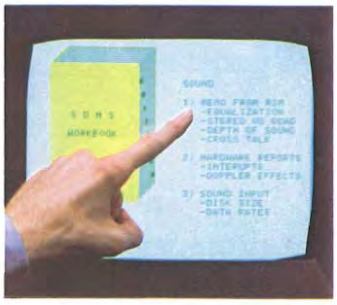
In close-up of this key map below, note touchable "tabs" aligned with heading taglines.



29

Upon touch indicating chapter heading of SOUND (top), the heading expands (bottom) to offer sub-headings under SOUND.





30

Notice that the table of contents can "expand" to show a finer breakdown of content area when the user selects a major heading of interest. In concert with the activity on the key map monitor screen, the main large-screen view will "go to" the section of the book selected by the user through the interactive key map so that the user may read the material.

There is yet further interaction with the data type of book: that of turning its pages. This action is initiated by a specific user action: a page-turning *gesture* given as a right-to-left, top-to-bottom stroke on either of the touch-sensitive pads on the arms of the user chair. Any page can be turned back by a stroke across the pad in the opposite direction. The accompanying visual action is the display of an "animation" of a page actually turning. The upper right-hand corner of the page on view progressively "lifts" away and sweeps leftwards across the screen, immediately revealing the new page below.

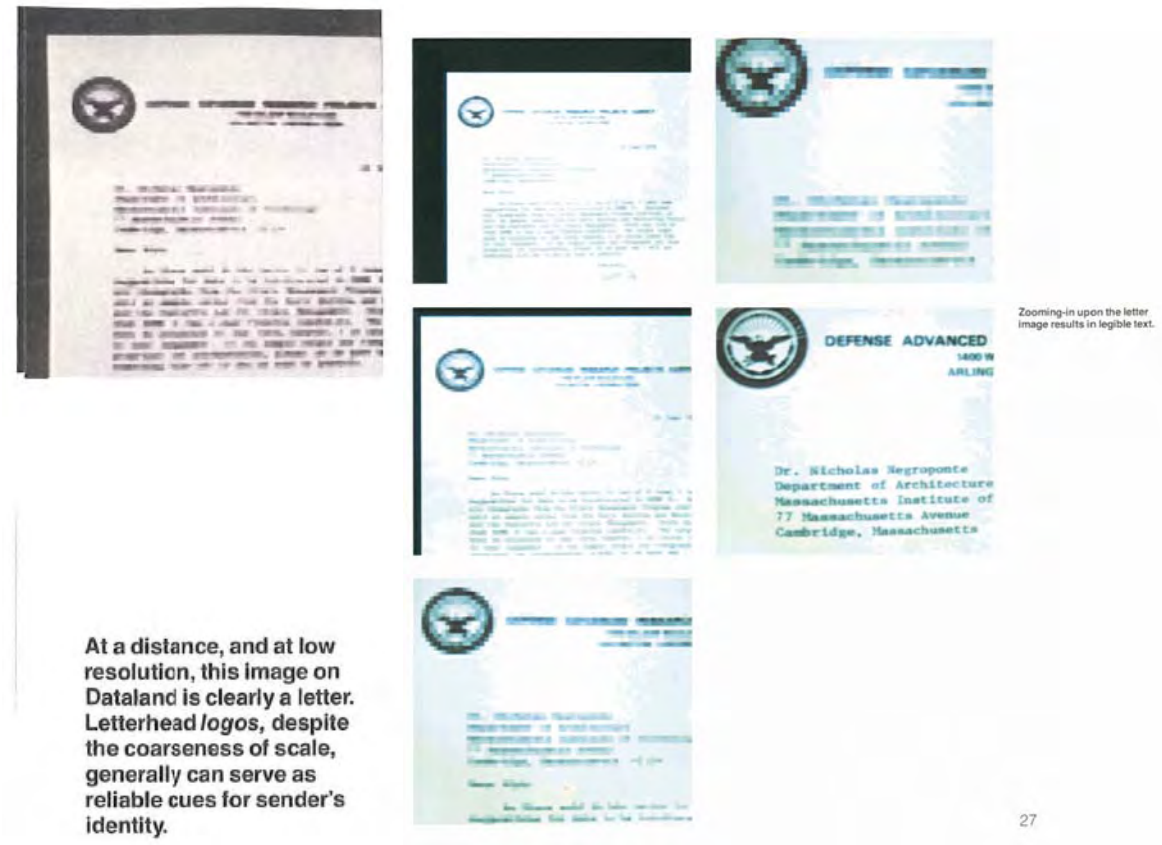
SDMS handled documents in diverse formats for use in diverse applications. For example, SDM describes television videos (pp. 33–34) and ASCII text, (p. 31) as well as digitized image files (p. 42).

SDMS was also capable of organizing and presenting document such as movies temporally. SDM, p. 36. SDMS also used several time based graphical user interfaces including a "dial" interface (SDM, p. 36) and a receding stack (SDM, pp. 44–45) that permitted a user to navigate through documents in a time–ordered manner.

SDMS also automatically created abbreviated glance views of documents. For example, SDMS could display abbreviated images of documents on a "world view" monitor to provide "sufficient detail to [readily] recognize items." SDM, pp. 13, 16–18. These documents included LANDSAT images (SDM, pp. 20–23), head shots (SDM, pp. 24–25), and letters (SDM, pp. 26–27).

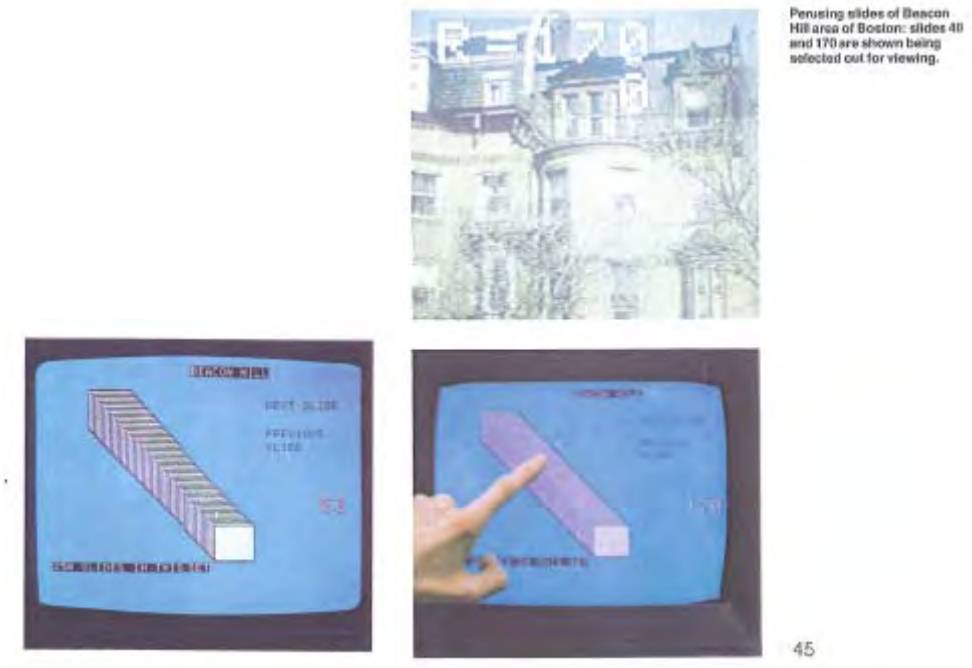
Zooming-in upon satellite image of Boston: In these views, approach is from the north over Cape Ann and Marblehead area. In first column, top-to-bottom, blocky image is replaced with finer resolution view (middle), while image expands and travel proceeds southward. In top and middle panels of the second column, approach continues over the peninsula of Nahant, with yet another image replacement (bottom).

40



These "zoomed-out" abbreviated versions of document could be viewed via several "perusal" modes that provided a variety of glance views to a user. SDM, pp. 28–46. SDM described a pixel based technique for displaying the zoomed-in and zoomed-out images. SDM, pp. 24–25. SDM also disclosed that an interpolative zoom technique was also being investigated for use with the SDMS zooming functionality. SDM, p. 25.

On the top of the key map, a movable cursor or pointer was displayed. A user could "[move] the cursor up and down" the stack to cause images corresponding to the slides in the stack to be flashed in succession on the large screen all without requiring clicking on the document. SDM, pp. 44–45.



I. MEMOIRS

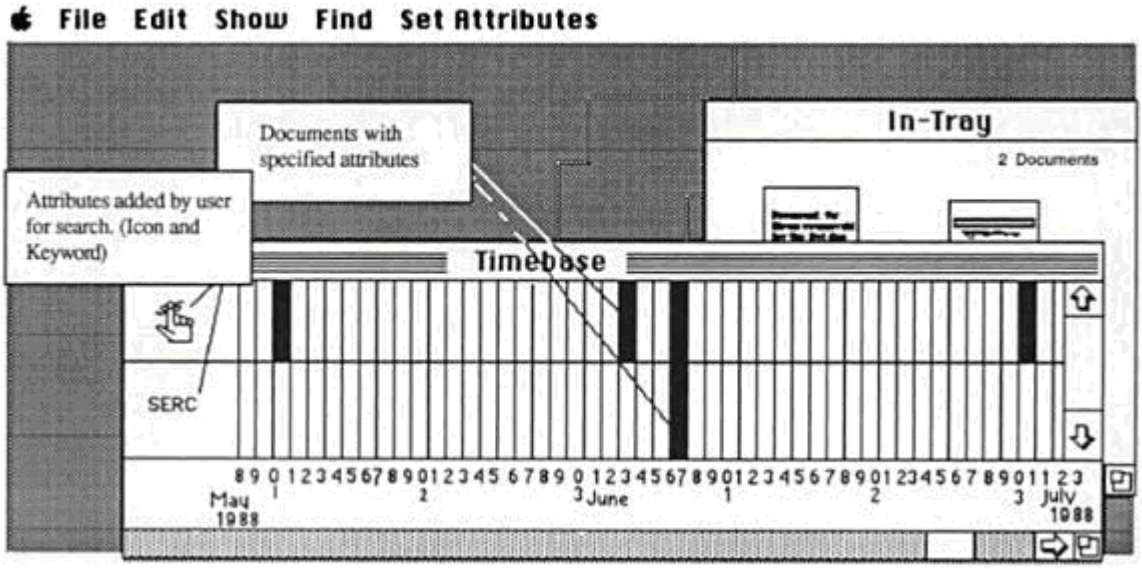
"MEMOIRS: A Personal Multimedia Information System" by M. W. Lansdale et al. ("MEMOIRS") was published in 1989 as part of the Proceedings of the Fifth Conference of the British Computer Society, Human–Computer Interaction Specialist Group on People and Computers V.[4] A copy of MEMOIRS is provided at APMW0076640–APMW0076649. I understand that MEMOIRS is prior art under 35 U.S.C. §102(b) and is asserted under §102 and §103. MEMOIRS was not before the Examiner during the prosecution of the '227 patent.

It is my opinion that MEMOIRS anticipates or renders obvious at least claims 13–17, and 20 of the '227 patent. An element-by-element analysis comparing MEMOIRS to the asserted claims is provided in Exhibits CA–CD in the Claim Charts Attachment. In addition,

[4] An article on the same subject with the same title was also published in 1989 in the Proceedings of the Third International Conference on Human–Computer Interaction on Designing and Using Human–Computer Interfaces and Knowledge Based Systems (2nd ed.)

MEMOIRS can be used to meet the time-ordered-stream–related elements in combination with other references including, for example, SDMS.

MEMOIRS discloses a system that, according to an inventor of the Mirror Worlds patents, is "the system that is closest in philosophy to Lifestreams." Freeman Dissertation, May 1997, p. 147. MEMOIRS teaches using chronology as an underlying storage scheme to organize documents. The MEMOIRS system is "based on what is in effect, an interactive diary (known as a 'timebase') showing, in suitable units, the chronological structure of the database." MEMOIRS, p. 318. Each document receives an "automatic date stamp." This stamp underlies the "primary link-type" ("the time link") in the MEMOIRS system, 'which provides a browse facility on a time axis", "mean[ing] that navigational links in the database are primarily time directed." MEMOIRS, p. 324. The MEMOIRS Timebase "is a chronologically structured view" that can display all available documents or be filtered by search attributes, resulting in a "selective display of data." MEMOIRS, p. 323. The following picture shows a visual representation of a Timebase in the MEMOIRS interface running on an Apple Macintosh computer:



"The Timebase can be viewed at different levels of magnification…This last magnification results in a 'blown up' overlay window (the 'Search' window) on the Timebase in which documents corresponding with the particular set of attributes are displayed as miniatures of the original inputs." MEMOIRS, p. 323. In the picture displayed above, document miniatures are shown in the "In–Tray."

The MEMOIRS system is described as a multimedia information system and supports "a multimedia database (colour, data, graphics, images, text and sound), a (near conventional) electronic diary and various office tools." MEMOIRS, pp. 319–320. The electronic diary's "entries can be transferred to the database where they exist as data points alongside the documents and other data." MEMOIRS, p. 323. MEMOIRS discloses a system that accommodates heterogeneous file types (e.g.,"[e]lectronic mail messages, scanned paper documents, memos, telephone messages transcribed" MEMOIRS pp. 324–325), and includes objects "such as alarms and reminders." MEMOIRS, p. 325. Finally, the Timebase is also taught to be "live," allowing for data to be continually added. MEMOIRS, p. 324.

In a related reference, Lansdale depicts an image of Timebase in an Hypertalk prototype in which an expandable "current day" window accommodates miniature document representations with attached attribute labels for documents in the highlight slot in the Timebase as in the image below:

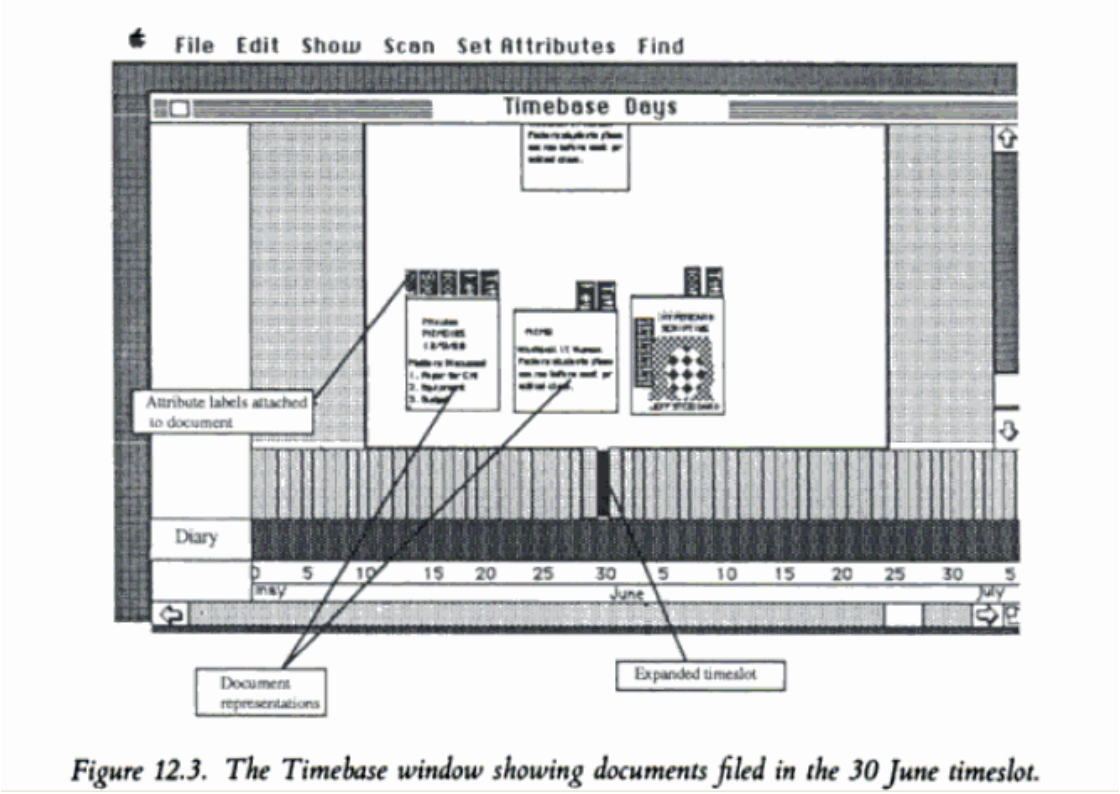


Figure 12.3. The Timebase window showing documents filed in the 30 June timeslot.

D. Young, MW Lansdale, and CA Bass., "Using HyperTalk as a Specification Tool and a Simulation Vehicle in the Development of a Personal Data Base System," in Simulation and the User Interface, Taylor Francis, 1990, pp. 169–180 (ISBN 0-85066-803-4).

One of ordinary skill in the art would be motivated to combine the teachings of MEMOIRS, especially its description of a time-ordered stream, with many other references. In particular, one of ordinary skill in the art would especially consider combining the teachings of MEMOIRS with those in SDMS because MEMOIRS expressly discusses SDMS in its background section. MEMOIRS, p. 316.

J. Additional Prior Art References

In addition to the prior art references discussed above, there are several other prior art references that either describe further aspects of the research and teachings of the above

discussed prior art or that in combination render obvious the asserted claims of the Mirror Worlds patents.

1. SIGIR ’93 “Content Awareness in a File System Interface: Implementing the ’Pile’ Metaphor for Organizing information” by Rose, Mander, Oren, Ponceleon, Saloon and Wong (APMW0000812–APMW0000821)

In 1993, Daniel E. Rose, Richard Mander, Tim Oren, Dulce B. Ponceleón, Gitta Salomon, and Yin Yin Wong of the Advanced Technology Group at Apple Computer, Inc. presented this paper at the 16th Annual ACM Conference on Research and Development in Information Retrieval. This paper was published in 1993, and therefore is prior art under 35 U.S.C § 102. This paper is herein referred to as “the SIGIR ’93 article.” (APMW0000812–APMW0000821). The SIGIR ’93 article was not before the Examiner during the prosecution of the ’227, ’313, ’427 or ’999 patents.

The SIGIR ’93 article describes how documents can be organized and searched through use of an internal representation of metadata attributes. In particular, the SIGIR ’93 article describes Apple’s “Piles” system for document organization using a graphical user interface. According to this article “[t]wo versions [of the piles system] were implemented [at the time of this paper presentation], one in Fall 1991 and one in Spring 1992.” See, e.g., SIGIR ’93 article at p. 265.

According to the described system, documents are organized into piles. A “pile” of documents as displayed on the graphical user interface is shown below:

Figure 2: The “News and Notes” pile.

SIGIR ’93 article, Figure 2.

The SIGIR ’93 article describes how a user can quickly view individual documents in a pile. “By moving the cursor over the documents in the pile, a user can “flip through” it, quickly viewing small representations of the documents. These representations, called proxies, can take various forms. A graphical document composed by the user, for example, might contain a miniaturized or simplified view of the first page.” See, e.g., SIGIR ’93 article at p. 261. This idea of viewing specific document representations is shown below:

Figure 3: The implementation of browsing with conceptual proxies.

SIGIR ’93 article, Figure 3.

The SIGIR reference describes an interface for document organization that can “sort or color the pile using a variety of criteria including date and content.” See, e.g., SIGIR ’93 article at p. 261.

2. CHI ’92: “A ’Pile’ Metaphor for Supporting Casual Organization of Information.” by Mander, Salomon and Wong (APMW0000846–APMW0000862)

In 1992, Richard Mander, Gitta Salomon and Yin Yin Wong of the Human Interface Group, Advanced Technology department of Apple Computer, Inc. published a paper of a user study they conducted in order “to investigate how people deal with the flow of information in their workspaces.” See “A Pile Metaphor for Supporting Casual Organization of Information,” CHI ’92, p. 627 (herein referred to as “CHI ’92”). This publication was published in May of 1992, and therefore is prior art under 35 USC §102(a) and (b).

The study found that users prefer to deal with information by creating physical piles of papers, and that “many piles grew as newer items were added to the top, and workers

could tell where things were by their date, since the stack was ordered chronologically." See, e.g., CHI '92, p. 627–628, 631 and Figure 6. Thus, the authors proposed "incorporating 'piles' within a graphical user interface" for computer storage of information, wherein the different types of documents would appear in piles on the computer display. See, e.g., CHI '92, p. 627, see also, Figures 1–3, and 5–7. The authors describe how the computer system would create piles, how users may tailor or create their own piles, and how users may browse the piles. See, e.g., CHI '92, p. 629. The software allowed the user to select and visualize a pile of documents or subset of documents based on several criteria, including date. See, e.g., CHI '92, p. 631, and Figure 6. In one method of browsing the 'pile', the software generates a "'viewing cone'…that contains a miniature version of the first page of the item under the pointer." See, e.g., CHI '92, p. 630 and Figure 5. The software allowed for users to use a gesture or double–click for spreading out the piles to browse their contents. See, e.g., CHI '92, p. 630–632, and Figures 4 and 5.

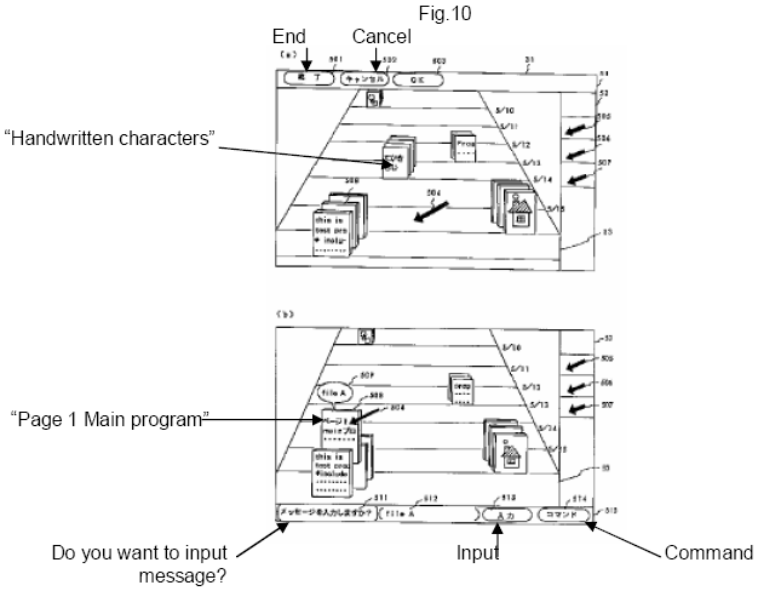
The CHI '92 article anticipates, under 35 USC §102(a) and (b), at least claims 13, 15–17 and 20 of the '227 patent; claims 1 and 2 of the '313 patent; claims 16, 17, 18, 19, 22, 24, 25, 26, 29 and 31 of the '427 patent and claim 1 of the '999 patent. The CHI '92 article in combination with Mander '724 and/or the other Piles references and/or Lucas '330/Workscape renders obvious, under 35 USC §103, at least claims 10 and 11 of the '313 patent and claims 1, 2, 5, 7, 8, 9, 10, 13, 32, 33, 34, 37 and 39 of the '427 patent. Claim charts for the CHI '92 article are provided in Exhibits 13A–13D of Apple's First and Second Amended Invalidity Contentions.

3. Japanese Publication No. 06–180661

Japanese Publication No. 06–180661, entitled "A File Search Method," was published on June 28, 1994. This patent application was applied for by Hitachi and is herein referred to as "the JP '661 patent." A translation of this reference has been provide at

APMW0000733–APMW0000751) The JP ’661 patent is prior art. The JP ’661 patent was not before the Examiner during the prosecution of the ’227, ’313, ’427 or ’999 patents.

The JP ’661 patent discusses a file management method and system for displaying files chronologically in a 3D perspective view. See, e.g., the JP ’661 patent at Figs. 10–14; [0013–0018]; [0036]. The JP ’661 patent further describes a graphical user interface for the file system that allows for the display of stacks of document representations. See, e.g., the JP ’661 patent, Figs. 10–14. In the described system, the action of moving a cursor over a document representation results in a more complete view of the specific document representation, as well as the display of additional information about the document across the bottom of the screen. See the JP ’661 patent, at Figs. 10, 12, [0028].



JP ’661 patent, Figure 10.

4. U.S. Patent No. 5,621,906 (O’Neil)

U.S. Patent No. 5,621,906, entitled “Perspective–Based Interface Using An Extended Masthead”, was filed on February 13, 1995. (APMW0000760–APMW0000769) This patent was issued to Rory O’Neill and Eden G. Muir, and is herein referred to as “the ’906

patent" or "O'Neill '906." I understand that the '906 patent is prior art. The '906 patent was not before the Examiner during the prosecution of the '227, '313, '427 or '999 patents.

The '906 patent describes a graphical user interface for arranging information in a 3D perspective view. See, e.g., the '906 patent at 2:29–34; 4:6–8; Figs. 4 & 6. The information displayed is in the form of a receding, foreshortened stack. See, e.g., the '906 patent at 2:40–44; 2:52–58; Figs. 4 & 6. The approach was suggested as applying to "file and directory structures of computer hard drives or database systems" and could allow "an entire database to be simultaneously shown on a display screen." See, e.g., the '906 patent at 4:37–42, 3:30–33.

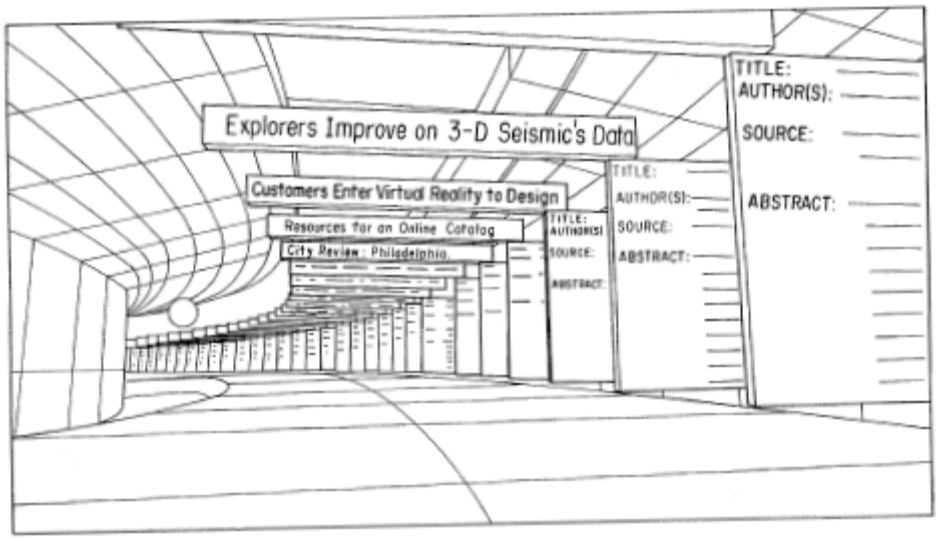


FIG. 6

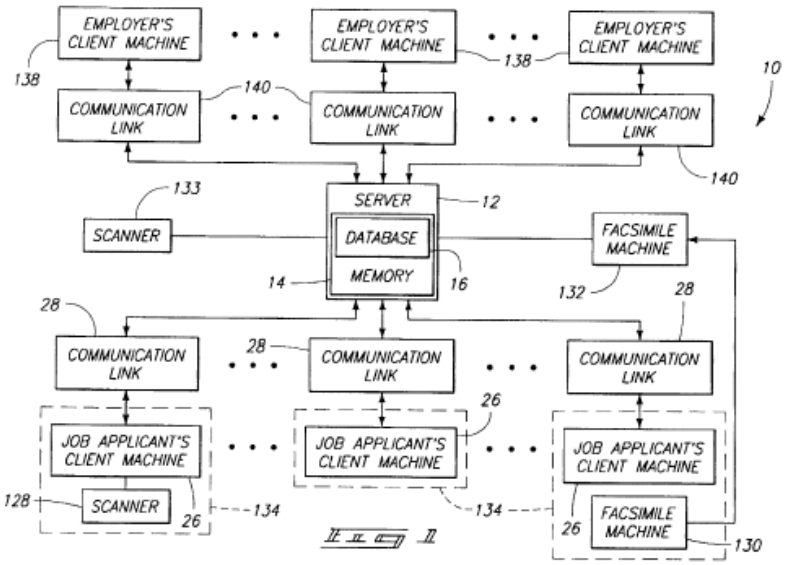
'906 patent, Figure 6.

5. U.S. Patent No. 5,758,324 (Hartman et al.)

U.S. Patent No. 5,758,324, entitled "Resume Storage and Retrieval System", was filed on February 8, 1996 and claims priority to provisional application no. 60/008,700, which was filed on December 15, 1995. (APMW0000770–APMW0000796) This patent was issued to Richard L. Hartman, Mary M. Hartman, and Roy P. Massena, and is herein referred to as "the

’324 patent,” or Hartman ’324.” I understand that the ’324 patent is prior art. The ’324 patent was not before the Examiner during the prosecution of the ’227, ’313, ’427 or’999 patents.

The ’324 patent describes an information management system that is composed of a server as well as other computers selectively communicating with each other. See, e.g., the ’324 patent at 4:38–67; 5:1–24; 7:20–51; Fig. 1.



’324 patent, Figure 1.

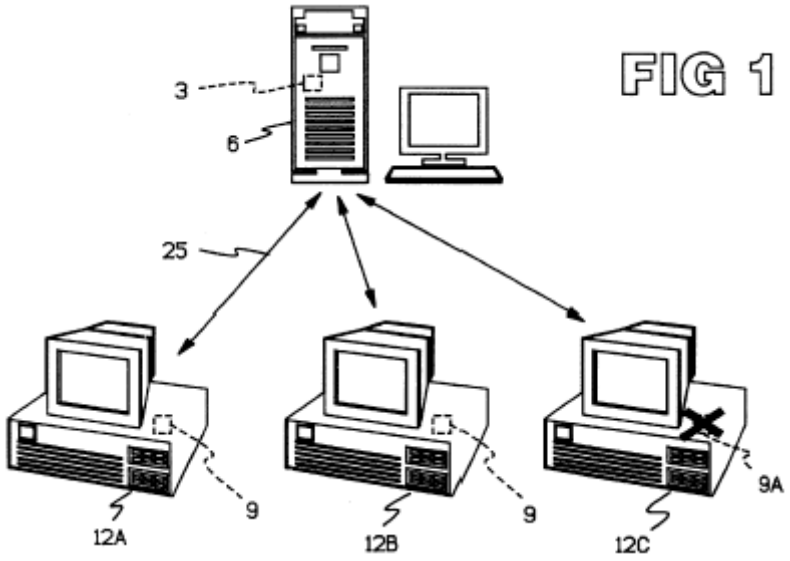
The described system enables the creation of images of resume information files as well as the display of these images. See, e.g., the ’324 patent at 6:12–50; Fig. 7.

’324 patent, Figure 7.

6. U.S. Patent No. 6,396,513 (Helfman et al.)

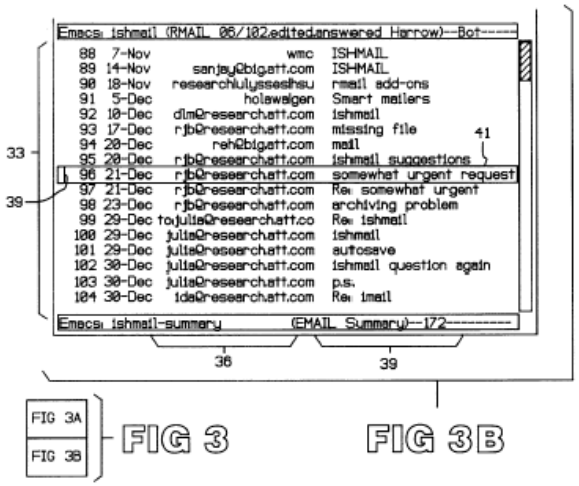
U.S. Patent No. 6,396,513, entitled “Electronic Message Sorting and Notification System”, was filed on May 14, 1996. (APMW0000797–APMW0000811) This patent was issued to Jonathan Isaac Helfman and Charles Lee Isabell, and is herein referred to as “the ’513 patent,” or “Helfman ’513.” I understand that the ’513 patent is prior art. The ’513 patent was not before the Examiner during the prosecution of the ’227, ’313, ’427 or the ’999 patents.

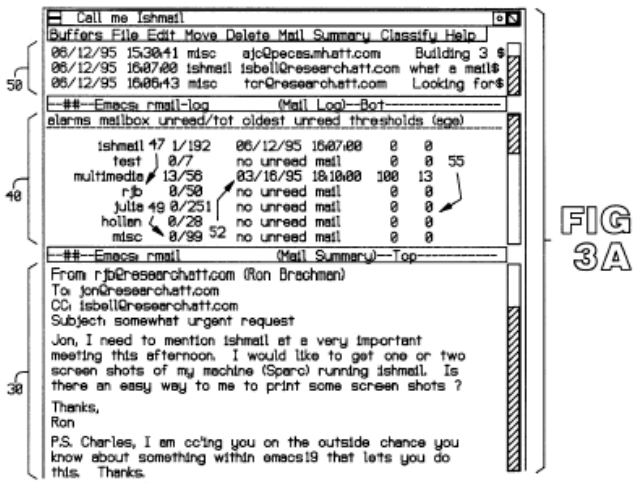
The ’513 patent describes an email management system that is composed of a server as well as other computers selectively communicating with each other. See, e.g., the ’513 patent at 2:50–62; Fig. 1.



’513 patent, Figure 1.

The system includes a visual interface that displays a chronological log of incoming email messages. See, e.g., the ’513 patent at 5:57–65; Figs. 3a, 3b. The action of moving a cursor over an email header displayed on the visual interface results in that email header being highlighted. See the ’513 patent, at 5:17–19; Fig. 3b.



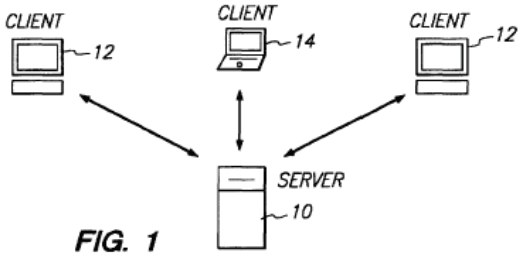


’513 Patent Figures 3, 3a, 3b.

7. U.S. Patent No. 5,724,567 (Rose et al.)

U.S. Patent No. 5,724,567, entitled "System for Directing Relevance–Ranked Data Objects to Computer Users", was filed on April 25, 1994. (APMW0000822–APMW0000834) This patent was issued to Daniel E. Rose, Jeremy J. Bornstein, Kevin Tiene, and Dulce B. Ponceleón, and assigned to Apple Computer, Inc. This patent is herein referred to as "the '567 patent." I understand that the '567 patent is prior art. The '567 patent was not before the Examiner during the prosecution of the '227, '313, '427 or '999 patents.

The '567 patent describes an information management system that is composed of a server as well as other computers selectively communicating with each other. See, e.g., the '567 patent at 3:43–65; Fig. 1.



'567 patent, Figure 1.

The described system includes a visual interface that displays a representation of each stored message. Each representation can be chronologically ordered. See, e.g., the '567 patent at 4:9–14; 4:45–65; 10:40–42; Fig. 3.

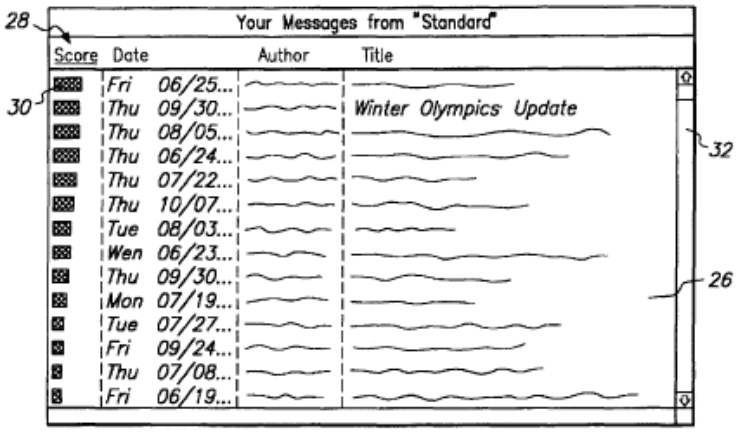


FIG. 3

’567 patent, Figure 3.

The described system manages diverse types of information, created by diverse software. “For example, it can contain text documents, video clips, and software data structures, all of which can be presented to a user in response to a single request for access to information.” See, e.g., the ’567 patent at 4:20–25.

8. U.S. Patent No. 6,202,058 (Rose et al.)

U.S. Patent No. 6,202,058, entitled “System for Ranking the Relevance of Information Objects Accessed by Computer Users”, was filed on April 25, 1994. (APMW0000835–APMW0000845) This patent was issued to Daniel E. Rose, Jeremy J. Bornstein, Kevin Tiene, and Dulce B. Ponceleón, and assigned to Apple Computer, Inc. This patent is herein referred to as “the ’058 patent.” I understand that the ’058 patent is prior art. The ’058 patent was not before the Examiner during the prosecution of the ’227, ’313, ’427 or ’999 patents.

The ’058 patent describes an information management system that is composed of a server as well as other computers selectively communicating with each other. See, e.g., the ’058 patent at 3:45–67; 4:1–5; Fig. 1.

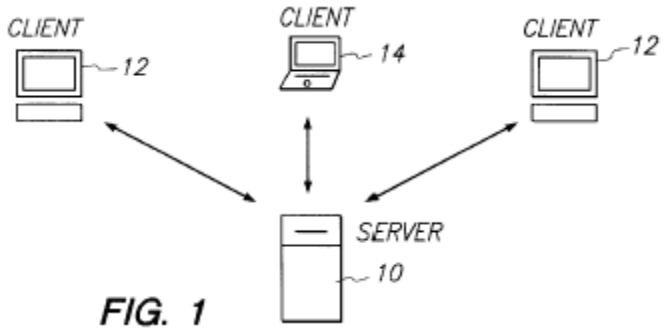


FIG. 1

’058 patent, Figure 1.

The described system includes a visual interface which displays a representation of each stored message. See, e.g., the ’058 patent at 4:20–24; 4:45–67; Fig. 3.

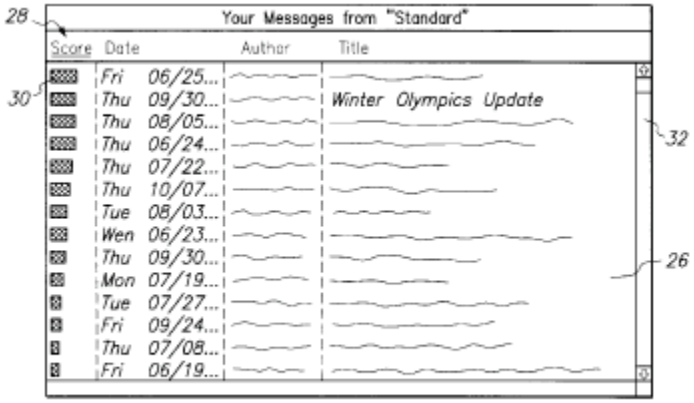


FIG. 3

’058 patent, Figure 3.

Each representation can be chronologically ordered. See, e.g., the ’058 patent at 8:49–67; 9:1–2; 9:9–11. The described system manages diverse types of information, created by diverse software. See, e.g., the ’058 patent at 3:29–44.

9. U.S. Patent No. 5,649,188 (Nomura et al.)

U.S. Patent No. 5,649,188, entitled “Electronic Filing Apparatus which allows Information to be Retrieved Based on a Box, a Date, or a Card Associated with the Information,” was filed on August 19, 1993. (APMW0000863–APMW0000978) This patent was assigned to Ricoh Company, Ltd. This patent is herein referred to as “the ’188 patent.” I understand that the

’188 patent is prior art. The ’188 patent was not before the Examiner during the prosecution of the ’227, ’313, ’427 or’999 patent.

The ’188 patent describes a system for electronically storing and retrieving information. The information stored in the system corresponds to diverse types of files, created by diverse software. See, e.g., the ’188 patent at 1:9–11.

The system described in the ’188 patent associates time based indicators, such as the “register date” with the documents. See, e.g., the ’188 patent at 26:11–16; Fig. 34. The described system provides a means for sorting the information based on date and/or time. See, e.g., the ’188 patent at 2:23–28; 14:55–59; 15:62–65.

The ’188 patent describes a graphical user interface for the file system that allows for the display of document representations. See, e.g., the ’188 patent at 5:52–64; 16:17–20. Multiple documents can be displayed on the graphical user interface as a “number of overlapped documents.” See, e.g., the ’188 patent at 3:6–11.

10. The HyperCard Basics (Apple Computer, 1990)

The HyperCard Basics Manual (APMW0000979–APMW0001019) was published by Apple in 1990. This manual is prior art. This manual is referred to herein as “HyperCard.” HyperCard was not before the Examiner during the prosecution of the ’227, ’313, ’427, or’999 patents.

HyperCard describes a software application for document organization, searching, and management. The HyperCard application includes a graphical user interface that displays miniaturized representations of documents in a structure called a “stack.” Each stack is comprised of cards. “Cards are the basic units of a stack; they’re like cards in a card file or pages in a book.” See, e.g., HyperCard at APMW0000989.

Cards could be viewed by through selection by a mouse. See, e.g., HyperCard at APMW0000991. Cards in a stack can be ordered in time. See, e.g., HyperCard at APMW0001006.

11. U.S. Patent No. 6,006,227 (Freeman et al.)

See my previous discussion of the ’227 patent.

12. “Semantic File Systems,” by Gifford, Jouvelot, Sheldon and O’Toole (ACM ’91) (APMW0018268–APMW0018277)

The article “Semantic File Systems” was published in 1991 in the Proceedings of the 13th ACM Symposium on Operating Systems Principles, and is thus prior art. This article is herein referred to as “the SFS article.” The SFS article was not before the Examiner during the prosecution of the ’227, ’313, ’427 or 999 patents.

The SFS article describes an information storage system that provides automatic indexing of files and directories. The described system is said to present “a more effective storage abstraction than do traditional tree structured file systems.” See, e.g., the SFS article at APMW0018268. The described system uses attributes/metadata in lieu of typical hierarchical folder structures and naming of files in order to organize all the documents in a system into a “semantic file system.” See, e.g., the SFS article at APMW0018270–1. One attribute that can be utilized is “date.” See, e.g., the SFS article at APMW0018271, APMW0018273.

The information stored in the system corresponds to diverse types of files, created by diverse software. “[A] semantic file system ’understands’ the documents, programs, object code, mail, images, name service databases, bibliographies, and other files contained by the system.” See, e.g., the SFS article at APMW0018268.

The described semantic file system is implemented using an underlying UNIX client–server system, as well as distributed file systems for "file sharing among groups of people and over wide geographic areas." See, e.g., the SFS article at APMW0018269, APMW0018272.

The SFS article describes an archiving file system that operates on top of the native file system and allows for "transparent" storage and retrieval of files located on a remote network data server or on a distributed network. See, e.g., the SFS article at APMW0018271.

13. On Location 2.0.1, by On Technology, Inc. (1989–90)

On Location 2.0.1 consists of a set of screenshots of the "On Location 2.0.1" application and a corresponding user manual for version 1.0 of the application: "On Location Version 1.0: Manual," © 1989–90 ON Technology, Inc., One Cambridge Center, Cambridge MA 02142 (hereinafter referred to as "On Location Manual"). This application, which was produced by ON Technology, Inc., dates to at least as far back as 1989–1990 and therefore is prior art to the Mirror Worlds patents. This reference is herein referred to as "On Location." It is my understanding that On Location is asserted under 35 USC § 102 and § 103. On Location was not before the Examiner during the prosecution of the '227, '313, '427 or the '999 patent.

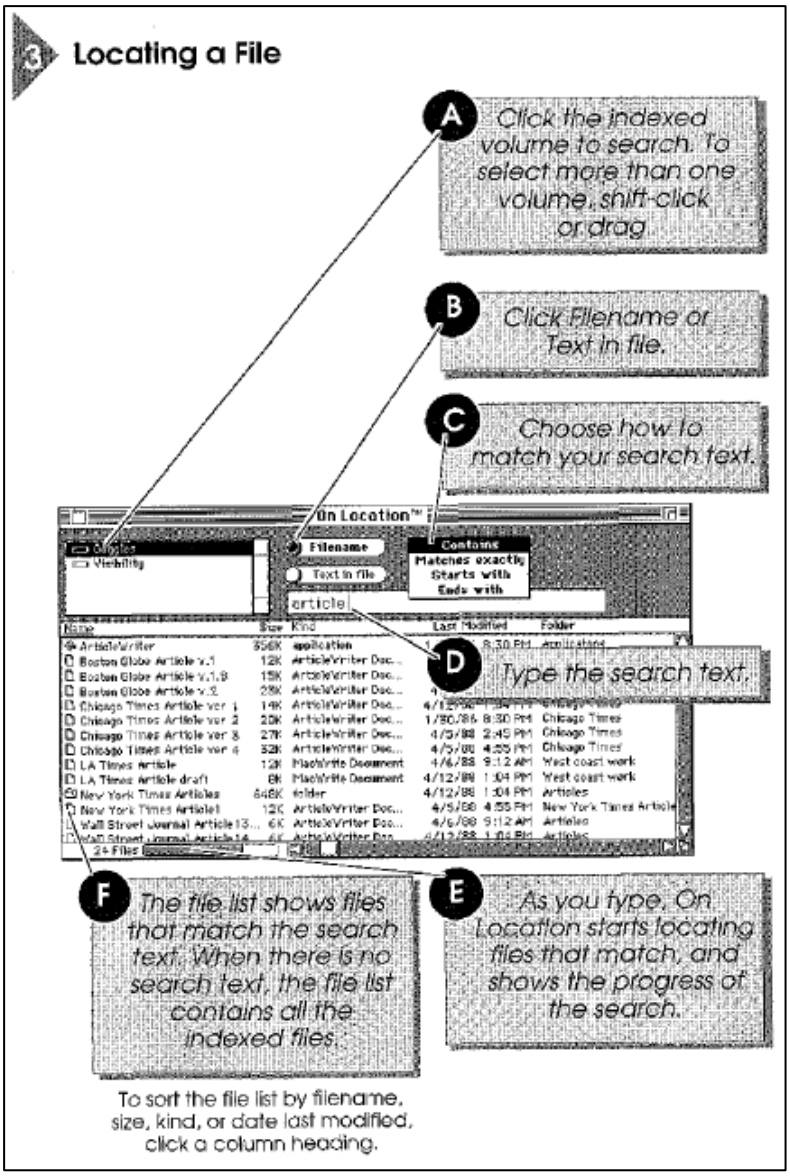
"On Location™ is a desk accessory that locates files quickly, by filename or the words in the files." On Location Manual, p. 1 (APMW0080551). " Once you've found the files you want, you can view and copy information from them without opening their applications." On Location Manual, p. 1 (APMW0080551). In other words, On Location is a sophisticated indexing and searching system that could be used to index and search the entire contents of a computer, including every word of every document in the system, and even allows the indexing of networked storage. See, e.g., On Location Manual, p. 1 (APMW0080551):

> On Location works by building an index of all the files on a volume (a disk or named part of a disk). An index contains the names of the files and, optionally, for files containing text, all the

> words in the files. A complete index, containing both filenames and text, will typically occupy less than two percent of the disk space used by the files on the volume
>
> After an index is created, On Location automatically keeps it up–to–date. A portion of On Location runs in the background and watches for changes to your disk. As files are created, saved, renamed, moved, or deleted, the index is automatically updated. You can use On Location to make indexes for all your volumes, including hard disks, 3.5–inch disks, CD–ROMs, and volumes that you access using a network

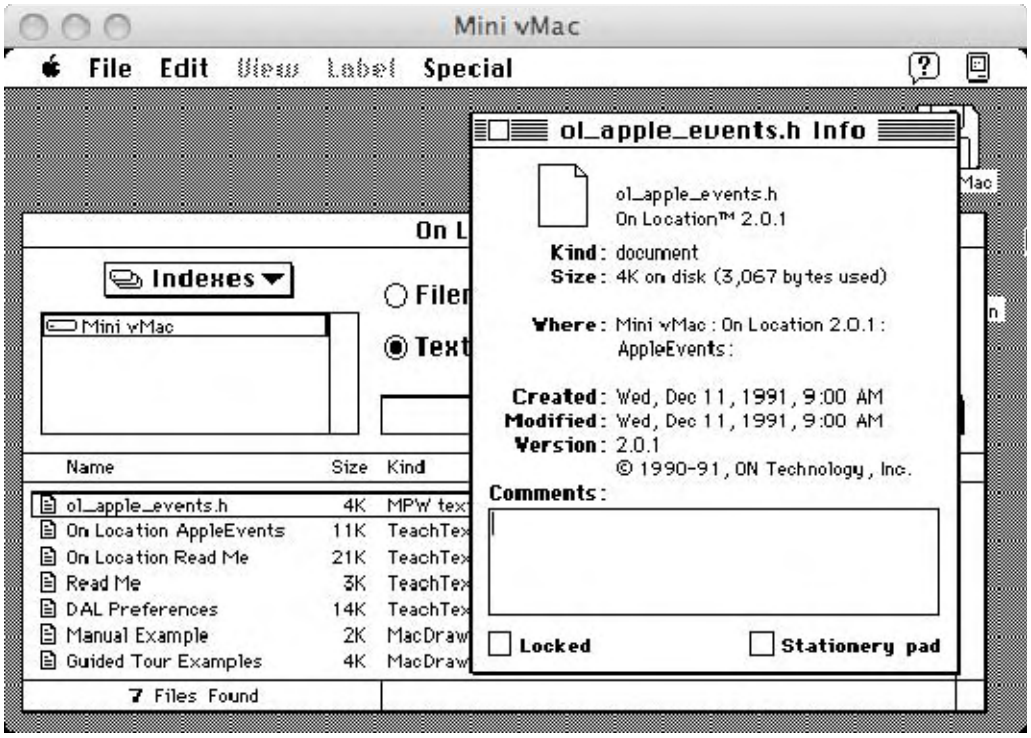
See also, e.g., On Location Manual, pp. 3, 6–7, 9–10 (APMW0080552, APMW0080554, APMW0080555, APMW0080556). In addition to indexing the contents of the files, On Location also indexes file metadata, such as name, path, size, type and date. See, e.g., On Location Manual, p. 4, 6–7, 9 (APMW0080553, APMW0080554, APMW0080555). Thus, a document may be found, categorized, and displayed based on date and/or time. See, e.g., On Location Manual, p. 4, 9 (APMW0080553, APMW0080555).

On Location indexes and searches documents that correspond to diverse types of files, created by diverse software. See, e.g., On Location Manual, p. 14 (APMW0080558). After indexing all of the files on a user's system, On Location allows searching the index to find all documents or documents satisfying user–defined search criteria:



On Location Manual, p. 4 (APMW0080553). Specifically, On Location can find documents by filename or text, for example, and displays the results in a "file list" that can be arranged by date. See, e.g., On Location Manual, pp. 6–7, 9 (APMW0080554, APMW0080555).

The display in On Location includes views of abbreviated information about the documents, including document icons correlating with different file types and document content.



On Location, Screenshot 12.

See also, e.g., On Location Manual, pp. 5, 10–11, 26 (APMW0080553, APMW0080556, APMW0080564), Screenshot 16 (different icons). In fact, On Location has the ability to search or sort through a large and growing stream of data units. See, e.g., On Location Manual, pp. 1, 4, 15 ("On Location keeps your indexes up–to–date by indexing in the background when your Macintosh is not busy. This is called *auto–updating*.") (APMW0080551, APMW0080553, APMW0080558) (emphasis in original).

One of ordinary skill in the art would be motivated to combine the teachings of On Location, especially its teachings for providing a time–ordered stream and its indexing and searching capabilities with many other references. In particular, one of ordinary skill in the art would especially consider combining the teachings of On Location with those in Lucas '330 and/or Mander '724 for similar reasons that one of ordinary skill in the art would combine Lotus

Magellan (also an advanced indexing and searching system) with Lucas ‘330 and/or Mander ’724, as discussed above.

K. Additional Obviousness References Showing the State of the Art

1. Vannevar Bush Article

The article entitled “As We May Think” by Vannevar Bush (APMW0056360–APMW0056386) was first published in The Atlantic Monthly in July 1945. It is prior art. This reference is herein referred to as “the Vannevar Bush article.” The Vannevar Bush article was not before the Examiner during the prosecution of the ’227, ’313, ’427 or’999 patents. For further details about this reference, see the technical background.

2. Kullberg Thesis—Dynamic Timelines

Robin Lee Kullberg’s Master of Science thesis, entitled “Dynamic Timelines Visualizing Historical Information in Three Dimensions,” (APMW0056360–APMW0056386) was submitted to the Massachusetts Institute of Technology on September 1995, and received in the MIT Archives on October 26, 1995. It is prior art. This reference is herein referred to as “the Kullberg thesis” or “reference #22.” The Kullberg thesis was not before the Examiner during the prosecution of the ’227, ’313, ’427 or’999 patents.

The Kullberg thesis describes a system for organizing and displaying information in a chronological three dimensional format: “By re–inventing the static, two–dimensional timeline as a dynamic, three dimensional time*space*, the designer can facilitate the user’s ability to access, browse, and understand historical information.” See, e.g., the Kullberg thesis at p. 7. Kullberg describes representing time–based information using a spatial coordinate: “Experimentation has shown that subjects use processes resembling visual perception to represent and manipulate temporal information. This idea is a core concept of my visualization, in which time is mapped to one dimension of a three–dimensional space.” See, e.g., the Kullberg

thesis at pp. 19–24. Information is displayed using a perspective projection, in which the projections of objects are rendered as smaller as the objects recede into the screen, and the projections of nearer objects can overlap the projections of more distant ones. See, e.g., the Kullberg thesis at p. 24; Figs. 9–10.

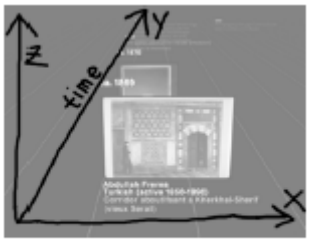


Figure 9. First prototype with definition of axes.

Kullberg thesis, Figure 9.

Several different methods of organizing the information along the three dimensions of the graphical user interface are described. See, e.g., the Kullberg thesis at pp. 24–28; Figs. 9–16. For example, information is arranged chronologically along the *y*–axis in the first and second prototypes shown in Figs 9–11; along the *x*–axis in the third and fourth prototypes shown in Figs. 12, 16.

Some prototype systems described display image representations in an overlapping manner. In this situation, the user can select desired image representations for viewing: "However, placing images at an angle still hides large parts of some photographs. A solution to this problem is to allow the user to interact with photographs in which she is interested. Clicking on the edge of a particular photograph to express interest causes the photograph to slide out and display itself…" See, e.g., the Kullberg thesis at p. 29; Fig. 19.

Figure 19. A photograph displays itself for the user, complete with detailed information about its photographer, date, process, and size.

Kullberg thesis, Figure 19.

3. The Eyes Have It: A Task By Data Type Taxonomy for Information Visualizations

By September 1996, Ben Shneiderman, a well known figure in graphical user interfaces from the Human–Computer Interaction Laboratory in the Department of Computer Science of the University of Maryland published a widely read paper entitled "The Eyes Have It: A Task By Data Type Taxonomy for Information Visualizations," (APMW0076360–APMW0076368) providing an assessment of the state of the art in graphical user interface design. Ben Shneiderman, "The Eyes Have It: A Task By Data Type Taxonomy for Information Visualization," Proceedings of the 1996 IEEE Symposium on Visual Languages, September 1996 ISBN 0–8186–7508–X ("Shneiderman '96" or the "Eyes Have It"). In this paper, Shneiderman presents a "task by data type taxonomy with seven data types (1–, 2–, 3–dimensional data, temporal and multi–dimensional data, and tree and network data) along with "seven tasks (overview, zoom, filter, details–on–demand, relate, history, and extract)." Shneiderman '96, Abstract. From four of the tasks, Shneiderman coined the "Visual Information Seeking Mantra: Overview first, zoom and filter, then details–on demand" as "the basic

principle" of "visual design". Shneiderman '96, p. 2. This mantra establishes that these practices were well understood in the art at the time of the filing of the '227 patent. As explained, the overview task is intended to "gain an overview of the collection" (Shneiderman '96, p. 2), the zoom task is defined as "zoom[ing] in on items", and the filter task is defined as "filter[ing] out uninteresting items" (Shneiderman '96, p. 2). Finally, the details–on–demand task is defined as "select[ing] an item or group and get[ting] details when needed" (Shneiderman '96, p. 2). Shneiderman provides more details on the purposes and goals of these tasks later in the paper. See Shneiderman '96, p. 4. Thus, Shneiderman '96 clearly establishes that a standard motivation for all information visualizations in the art was to provide an overview of a collection, permit a user to zoom in on items of interest and filter out uninteresting items (e.g., by providing search capabilities over the collection), and then provide details to the user on demand. With this mantra, one of ordinary skill in the art in 1996 would have understood that techniques could be and should be combined in ways to achieve these four tasks.

Shneiderman '96 also establishes that by 1996 "temporal visualizations" such as "time lines [were] widely used and vital enough… to create a data type separate from 1–dimensional data." Shneiderman '96, p. 3. Thus, one or ordinary skill in the art was well aware of the advantages and reasons for temporally displaying data to a user.

4. Robert Spence Office of the Future

"Data base navigation: an office environment for the professional" is a well known paper by Robert Spence and Mark Apperley in Behavior and Information Technology, Vol. 1, No. 1, 1982, pp. 43–54 (APMW0076265–APMW0076278) that describes their research in concepts relating to the "Office of the Future." This paper ("Office of the Future") describes what was then a new display technique to "overcome the classical 'windowing' problem." Office of the Future, Abstract p. 43. Office of the Future describes a bifocal display that divided a

display into three viewports with a primary center region and two “demagnified” receding side regions. Office of the Future FIG. 5 and p. 49 (APMW0076269, APMW0076273).

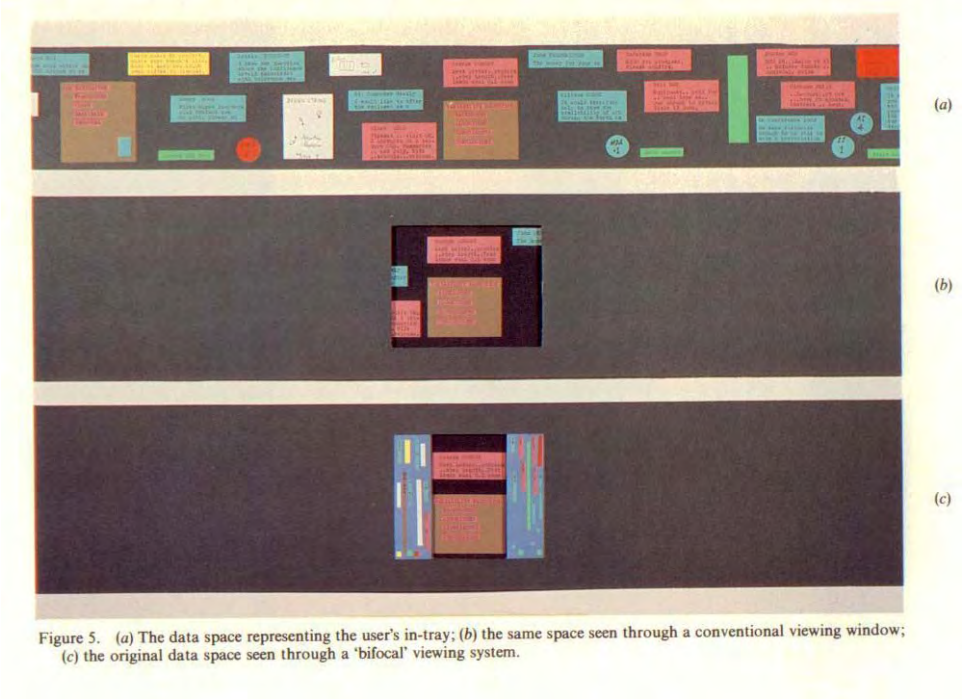


Figure 5. (*a*) The data space representing the user's in-tray; (*b*) the same space seen through a conventional viewing window; (*c*) the original data space seen through a 'bifocal' viewing system.

Office of the Future discloses an earlier version of the bifocal display when documents are displayed in an overlapping, receding, colored and chronologically ordered stream or stack. Office of the Future, FIG. 8 (APMW0076270), see also FIGS. 6 and 9 (APMW0076270).

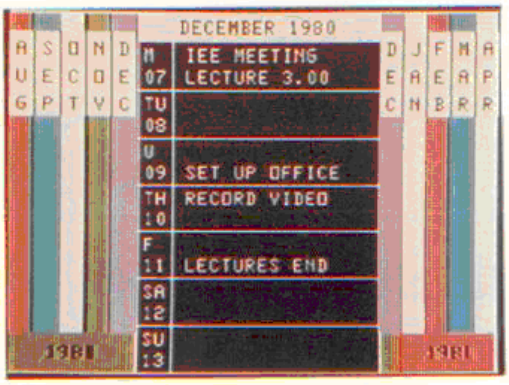


Figure 6. The user's diary as it appears on the Bifocal Display, with the current week in the central region.

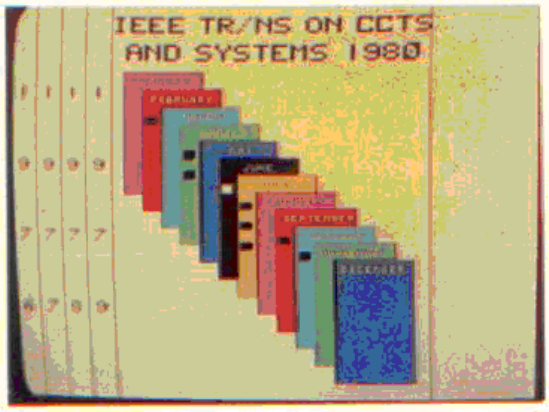


Figure 8. The initial Bifocal representation of the *I.E.E.E. Transactions on Circuits and Systems* journal.

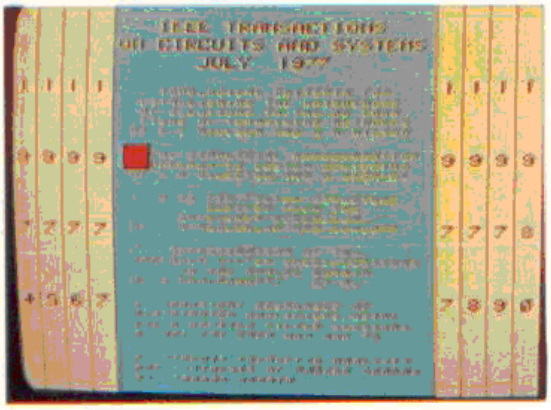


Figure 9. Zooming in on one issue of the *Transactions* causes the displaced months to be represented in the outer regions (1977 on either side of the centre).

Office of the Future also describes the use of "color, shapes, tags, initial letters, etc to indicate important attributes such as number, size, urgency, nature and origin of the individual items" displayed on the bifocal display. Office of the Future, p. 49 (APMW0076273). Office of the Future explains that these features can be used to facilitate the locating of items through visual scan. See Office of the Future, Section 4 Location by visual scan," pp. 45–46

(APMW0076267–APMW0076268). Office of the Future even shows "icons representing journals in the user's library." See Office of the Future, FIG. 3 (APMW0076270).

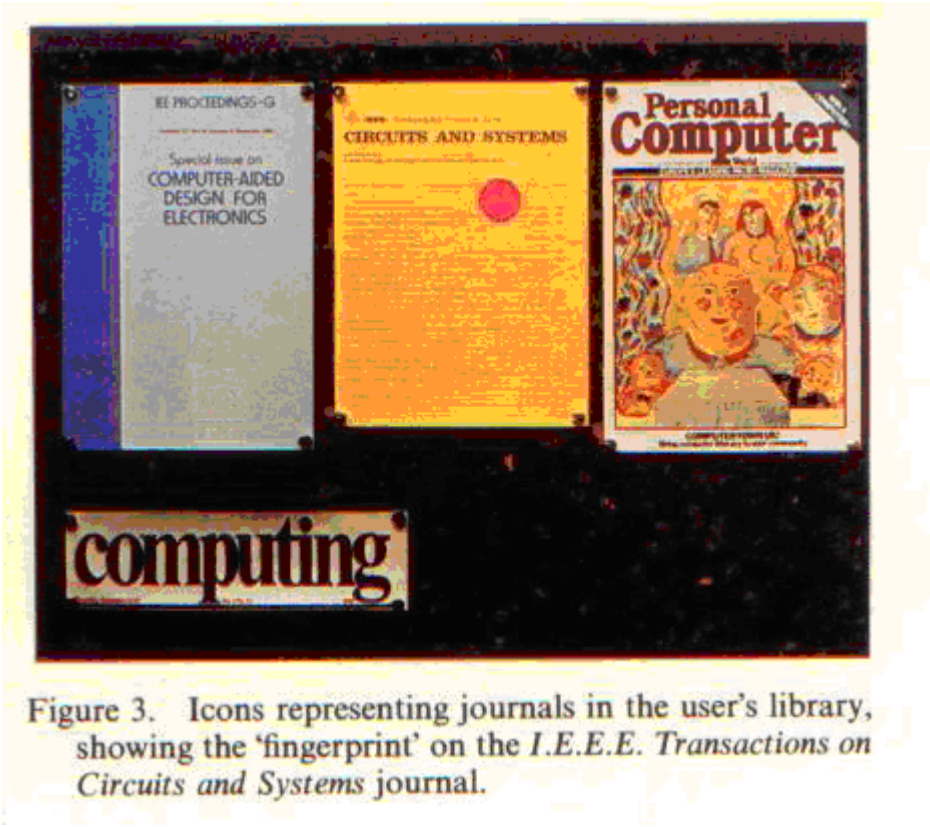


Figure 3. Icons representing journals in the user's library, showing the 'fingerprint' on the *I.E.E.E. Transactions on Circuits and Systems* journal.

Robert Spence's research into these and other aspects of the Office of the Future was recorded in a series of videos from the 1980s available at http://www.ee.ic.ac.uk/r.spence/BobsVideos.htm.

One of ordinary skill in the art would have been motivated to combine the teachings of the Office of the Future with those of Mander '724, Lucas '330 and SDM because Robert Spence's work was widely known to those in the art since the mid 80s. Further, Office of the Future specifically references both Richard Bolt's and Nicholas Negroponte's SDMS work. Further, Office of the Future articulates solutions to many of the aspects of Shneiderman's "Visual Information Seeking Mantra." See Shneiderman '96 Eyes Have It.

5. Document Management Systems

Prior to the filing of the Mirror Worlds patents, there were many companies that made document management systems/applications. Examples of such companies include: FileNet, Saros Corporation, Lotus, Xerox, PC Docs, IBM, dtSearch, ZyLAB Technologies, Fulcrum Technologies, Documentum, and Verity. Some of the document management systems made by these companies prior to the filing of the Mirror Worlds patents include: DOCS Open by PC Docs, Document Manager by Saros, Enterprise Document Management System by Documentum, Visual Recall by Xerox, and Topic by Verity. See, e.g., Musthaler 1 (APMW0077107–APMW0077111), Musthaler 2 (APMW0076889–APMW0076893).

References disclosing the above mentioned document management systems and applications include (identified by alias):

1. "Musthaler 1": Linda Musthaler, "A tall order for document managers," Network World, pp. 35–40, July 18, 1994 (APMW0077107–APMW0077111);
2. "Musthaler 2": Linda Musthaler, "DMS's getting mix–and–match wardrobe," Network World, pp. 38–41, January 8, 1996 (APMW0076889–APMW0076893);
3. "Seiden": Peggy Seiden et al., "Information Retrieval Systems for Microcomputers," Library Hi Tech, Vol. 3, Iss. 1, pp. 41–54, 1985 (APMW0076612–APMW0076625);
4. "ZyIndex : Scott Mace, "Zylab Includes Auto–Indexing In Zyindex 3.0," InfoWorld, Vol. 10, Issue 18, p. 16, May 2, 1988 (APMW0077141–APMW0077143);
5. "Kappes": Sandra Kappes et al., "Document Management for the Knowledge Worker System," US Army Corps of Engineers USACERL ADP Report 95/38, November 15, 1995 (APMW0077168–APMW0077215);
6. "Verity K2 Toolkit": Verity K2 Toolkit Search System Administration Guide V2.2, July 20, 2000 (APMW0076987–APMW0077106);
7. "McCotter '097": U.S. Patent No. 6,401,097 by Thomas M. McCotter, Michael T. Shannon, entitled "System and Method for Integrated Document Management and Related

Transmission and Access," Provisional Application No. 60/072,290 filed Jan. 23, 1998, patent issued Jun. 4, 2002 (APMW0076877–APMW0076888);

8. "Cleveland": Gary Cleveland, "Overview of Document Management Technology," International Federation of Library Associations and Institutions Universal Dataflow and Telecommunications Core Programme, June 1995 (APMW0077127–APMW0077134); and
9. "Nelson '364": U.S. Patent No. 5,778,364 by Philip C. Nelson entitled "Evaluation of Content of a Data Set Using Multiple And/Or Complex Queries," filed January 2, 1996, issued July 7, 1998 (APMW0076853–APMW0076876).

Many of these document management systems had indexing and search capabilities as shown by the following references published prior to the filing of the Mirror Worlds patents : Musthaler 1, pp. 35–37 (APMW0077108–APMW0077110) ; Musthaler 2 (APMW0076889–APMW0076893); Seiden, pp. 41–54 (APMW0076612–APMW0076625) ; ZyIndex, p. 16 (APMW0077143); Verity K2 Toolkit (APMW0076987–APMW0077106). Document management systems described in the prior art were capable of automatic indexing See, e.g., Seiden, p. 42 (APMW0076613) ; ZyIndex, p. 16 (APMW0077143). These systems could also manage diverse data created by diverse applications See e.g., Musthaler 1, pp. 36, 40 (APMW0077109, APMW0077111) ; Kappes, pp.10–11 (APMW0077180–APMW0077181); Verity K2 Toolkit, p. 1–3(APMW0076999).

Document management systems described in the prior art were also capable of using a time stamp as an identifier for data units. See, e.g., Kappes, pp. 6, 13, 14, 19, 22 (APMW0077176, APMW0077183, APMW0077184, APMW0077189, APMW0077192), Musthaler 1, p. 40 (APMW0077111), Nelson ' 364 (APMW0076853–APMW0076876) at 5:53–56, 5:60–65, 6:17–20, 10:23–25, 11:15–23 . In addition, the prior art describes that many of these systems offered archiving capability. See, e.g., Musthaler 1, p. 37 (APMW0077110); Kappes, pp. 10, 14, 19 (APMW0077180, APMW0077184, APMW0077189).

The prior art also describes enterprise document management systems that were in existence before the Mirror Worlds patents were filed. These systems, as described in the prior art, were typically arranged in a client–server arrangement with at least one server and a number of personal computers communicating with one another. See, e.g., Musthaler 1, p. 36 (APMW0077109); Verity K2 Toolkit, pp. 1–3 – 2–4 (APMW0076999–APMW0077014); Cleveland, p. 4 (APMW0077132); Kappes, pp. 9, 14, 28, 29 (APMW0077179, APMW0077184, APMW0077198, APMW0077199). In these systems, information could be stored in objects. See, e.g., Cleveland, p. 3 (APMW0077131); Musthaler 1, pp. 36, 37 (APMW0077109, APMW0077110); McCotter 097 (APMW0076877–APMW0076888) at 2:43–3:22.

6. "Representation in Virtual Space: Visual Convention in the Graphical User Interface" by L. Staples (1993) (APMW0018360–APMW0018366)

By 1993 it was well known to use three–dimensional virtual spaces as elements of a graphical user interface, employing perspective projection of objects with perspective foreshortening. *See* Staples at Figs. 4, 6, and 7. In fact, it was known that such a three–dimensional space could be used to provide an alternative interface for finding or browsing files. Staples at 350 ("Attempts at perspective have already been applied to the GUI. A novel alternative to the Macintosh Finder is currently available in Ark's Workspace software (Fig. 7).") It was also known that a receding foreshortened stack of document representations could be used to represent a set of documents. Staples at Figs. 9–11.

7. United States Patent No. 5,060,135 (Levine *et al.*)

Levine '135 (APMW0001020–APMW0001048) describes a graphical user interface that uses the concept of stacks for document organization. It describes using "detailed miniaturized images of all documents possessed by the user," and how to create these miniatures, which it calls "stamps." Abstract, 3:27–4:29; 21:60–25:14. It describes how to use the drag and

drop concept to move individual documents and stacks of documents around the desktop. 4:41–62. It describes using an "in–box" to collect documents received from other computers on a network, or from email. 5:12–17. It also describes a variety of applications that can be used to interact with the "stacks" and "stamps" that represent documents in this particular graphical user interface. In particular, the Levine '135 patent describes an "info" application. This application is invoked by dragging the icon of the application over the stamp of a particular document, and it then displays more information about the document represented by the stamp, specifically the "history and composition" of the document. Thus, the Levine '135 patent shows that by 1991 the concept of using a "stack" of document representations to represent a set of documents was known, as was the concept of associating two different kinds of document representations (*i.e.*, a "browse card" and a "glance view") with a document.

8. United States Patent No. 6,262,732 (Coleman et al.)

Coleman '732 (APMW0001049–APMW0001063) describes an improved method of graphically representing a "stack" of pages using miniaturized versions of those pages. Figs. 2, 3a, 3b, 3c. It describes techniques for creating miniature replicas of pages of a document and using buffers to improve the speed of displaying them. 14:10–15:15. It describes organizing the miniatures into stacks, and browsing through and manipulating those stacks, including by dragging and dropping stacks or portions of stacks into other stacks. Figs. 2, 3a, 3b, 3c; 6:34–7:55. The Coleman '732 patent also describes associating a 'descriptor block' with each of the stacks. 12:30–56. Thus, the Coleman '732 patent shows that the concept of using a "stack" to represent a set of documents was well known, as was the concept of associating two different kinds of document representations (*i.e.*, a "browse card" and a "glance view") with a document.

9. "The Role of Time in Information Processing: A Survey," by Bolour et al., ACM SIGART Bulletin (Apr. 1982)

The SIGART '82 article (APMW0001064–APMW0001087) is an early survey of approximately 70 references addressing the role that time plays in computerized information systems. Among other things relevant to the Mirror Worlds patents, it describes how K.M. Kahn designed a module to store and retrieve "inexact temporal facts." See SIGART '82 article, p. 35. It also describes how Ariav and Morgan designed and implemented a system that handled time in a linear, non–hierarchical "date line" fashion. See SIGART '82 article, p. 47. Although the individual articles may comprise prior art for particular concepts, the survey as a whole shows that by 1982, the concept of time organization of data in a computer system was well known in the art.

10. United States Patent No. 5,764,972 (Crouse)

Crouse '972 (APMW0001088–APMW0001123) describes a "completely transparent" archiving file system. Abstract. It describes an archiving file system running on top of the native file system that allows storage and retrieval of remote files based on selectable archival attributes. Crouse '972 at 4:22–42. Crouse '972 shows that the concept of automatic archiving and the concept of archiving files according to "attributes" was well known in the art by 1993.

11. United States Patent No. 5,479,602 (Baecker & Small)

Baeker '602 (APMW0001024–APMW0001138) describes creating and displaying document icons or thumbnails that are content–based rather than a standard icon. Baeker'602 at 3:12–20. It describes techniques for processing a document representation and generating a replica. Baeker'602 at 3:27–41. Thus Baeker'602 shows that the concept of creating alternative or abbreviated document representations was well known by 1995.

12. "Recovery Concepts for Data Sharing Systems," by Ehrard Rahm (1991)

The Rahm reference (APMW0001139–APMW0001146) describes data sharing in a distributed system architecture in which recovery of data is possible. Rahm at 368. It also describes how to generate a "global log file," which stores in chronological order any modifications to documents. Rahm at 368. Thus, the Rahm reference shows that the concept of indexing the contents of a file system, coupled with an enterprise management system or distributed network, was well known by 1991.

13. Email clients and systems (E.g. Elm, Pine, Eudora, Outlook, Lotus Notes, cc:Mail)

Email was widely known and commonly used before 1996, and the functionality of email clients (such as Elm, Eudora, Outlook, and Lotus Notes) was well known and familiar to those of skill in the art by that time. Similarly, the functionality of email servers (e.g., Lotus Notes Server / Domino, Microsoft Exchange) was well known to those of skill in the art before 1996.

Databases were widely known and commonly used before 1996, and the functionality of databases, including relational databases, was well known and familiar to those of skill in the art by that time. *See generally*, C.J. Date, *An Introduction to Database Systems*, 3rd ed. (Addison–Wesley, 1981).

14. Software–Distribution and Change Management Software (E.g. Novadigm's EDM)

By 1996, electronic software distribution and management software was well known and commonly used to solve problems of software distribution and change–management in enterprises. For example, Novadigm Inc., (Nasdaq: NVDM) sold a product called EDM to enterprises. As reported in Novadigm's 6/28/1996 Form 10–K, "Novadigm, Inc. ('Novadigm' or

the 'Company') is a provider of automated software management solutions that reduce the cost and complexity of managing enterprise client/server and Internet computing environments. The Company's products, collectively known as Enterprise Desktop Manager(TM) ("EDM"), automate the 'continuous configuration' of distributed software across thousands of desktops and servers for medium and large organizations in the financial services, government, transportation, telecommunications, healthcare, utilities and other industries. The Company's solutions are highly scaleable and interoperable, and therefore uniquely suitable for managing rapidly changing business software across large distributed corporate and public networks. Novadigm's patented technologies for software management allow for high levels of automation in managing distributed software configurations, ensuring that the right software is available to the right users at the right time without manual intervention."

15. The World Wide Web

By 1995, the World Wide Web was well known and commonly used. As early as 1992, GUI web browsers were known and used. By 1993, a GUI browser was available for the Mac. See W3C: *A Little History of the Web* (http://www.w3.org/History.html). In 1994, the World Wide Web Consortium was founded, and the Second International WWW Conference was held (entitled "Mosaic and the Web") in Chicago. See *A Little History of the Web* (http://www.w3.org/History.html).

16. "Names should mean What, not Where" by O'Toole & Gifford (1992)

By 1992, it was known that an alternative to the traditional hierarchical or "tree structured" file system was a "semantic file system," wherein files are located by searching an index of their contents or attributes. The O'Toole article (APMW0018327–APMW0018331), like the SFS article, describes an implemented semantic file system. Through this file system, users seeking files obtain them by entering search criteria and browsing through "virtual

directories" containing the results of those searches, rather than browsing through traditional static directories. These Gifford articles also show that it was known that a user need not name files or assign them a specific location in a traditional hierarchy. Instead, file storage and retrieval can be handled automatically by a computer, by automatically indexing the attributes and contents of the files.

17. United States Patent No. 5,649,182 (Reitz)

Reitz '182 (APMW0018332–APMW0018359) describes a method for organizing data based on time, as well as for filtering the data based on its attributes in order to generate subsets of time–ordered data. See Reitz '182 at Abstract; 1:22–2:50. Thus, as recognized by the examiner during prosecution of the '227 patent, Reitz '182 shows that it was known to generate "subsets of the main stream of records organized by timestamps and determined by attributes."

18. "Using Collaborative Filtering To Weave An Information Tapestry" by D. Goldberg et al. (1992)

The Tapestry reference by D. Goldberg (APMW0018367–APMW0018376) shows that by 1992, it was well known that the increasing use of electronic documents, including electronic mail, was "resulting in users being inundated by a huge stream of incoming documents." Tapestry at p. 1. Tapestry teaches that filtering (i.e., searching) is an efficient way to manage these large streams of electronic documents. Tapestry also describes a system that is used to organize both all current information and to act as a repository of all older information.

19. United States Patent No. 5,729,730 (Wlaschin '730 patent)

Wlaschin '730 (APMW00018377–APMW0018407) describes an information management and database system for storing any type of data in a table and providing an interface to other application programs in order to allow efficient and effective searching across diverse types of files. Wlaschin '730, Abstract, 2:52–60, 525–7:16. In describing the advantages

over the prior art, Wlaschin ’730 describes a database with increased flexibility, search time and smaller memory requirements and that supports text attributes. Wlaschin ’730, 2:31–35. It also describes the integration, into a single database, of preexisting source files developed under various types of application programs such as other databases, spreadsheets and word processing programs. Wlaschin ’730, 2:43–47. Wlaschin ’730 also describes storing data in a table based on an object identification number (OID), which is generated using a timestamp, session identification and tiebreaker to resolve conflicts between identical timestamps. Wlaschin ’730, FIG. 4, 8:16–57. Wlaschin ’730 goes on to describe techniques for allowing users to search for data, including text–indexing, date–indexing and associative queries. Wlaschin ’730, 13:50–15:10. Thus, Wlaschin ’730 shows that by 1995, the concept of organizing data from diverse applications in a table based on timestamp information was well known, as was the need and techniques for providing users with increased search flexibility and decreased search time.

20. Washington Post Article, “The Cyber–Road Not Taken” by David Gelernter (1994)

The “Cyber–Road Not Taken” article (APMW00018408–APMW0018415) shows that well before 1996 it was known that an alternative to the traditional hierarchical or “tree structured” file system, wherein files are located by searching an index of their contents or attributes, was desirable. Particularly, the article explains that the author does not want to organize his information into files, or to name those files. It describes the concept of a “lifestream,” which “captures your whole life, in terms of chunks of information.” And it describes the need to be able to both visualize this stream of documents or info–chunks, as well as to be able to filter or search it in order to only display certain kinds of documents.

21. “LifeLines CHI ’96” article

As discussed above in the technology background, LifeLines provided a temporal visualization environment for personal histories well before the filing of the Mirror Worlds patents. As is illustrated by LifeLines, one of ordinary skill in the art was well aware of the advantages of displaying information in a temporal fashion. In fact, LifeLines shows that one of ordinary skill in the art was aware of using line color and thickness to illustrate relationships or significance. The rescaling tools and filters provided by LifeLines allowed users to search and filter information and then reveal more details. See LifeLines CHI ’96 article http://www.cs.umd.edu/hcil/lifelines.

22. Trellis Architecture

“The Trellis Architecture for Intelligent Monitors” (“Trellis Architecture”) by Michael Factor and David Gelernter (APMW0076664–APMW0076667) appeared in the 1990 Proceedings of Intelligent Control, 5th IEEE International Symposium on Intelligent Control, vol.1, September 5–7, 1990, pp. 300–303. As explained in its abstract, Trellis Architecture describes a software architecture that imposes a simple and regular organization on a complex, diverse set of parallel processes. Trellis Architecture, Abstract (APMW0076664). The trellis architecture is based on a hierarchical graph of decision processes, reflecting the conceptual hierarchy of the problem domain and purportedly amenable to parallel real–time scheduling strategies, to `abstraction strategies' that synopsize the structure of complex trellises, and to visualization. Trellis Architecture, Abstract (APMW0076664).

Figure 2 of Trellis Architecture depicts a prototype interface tool for visualizing trellis applications. Trellis Architecture, p. 301 (APMW0076665, APMW0076666).

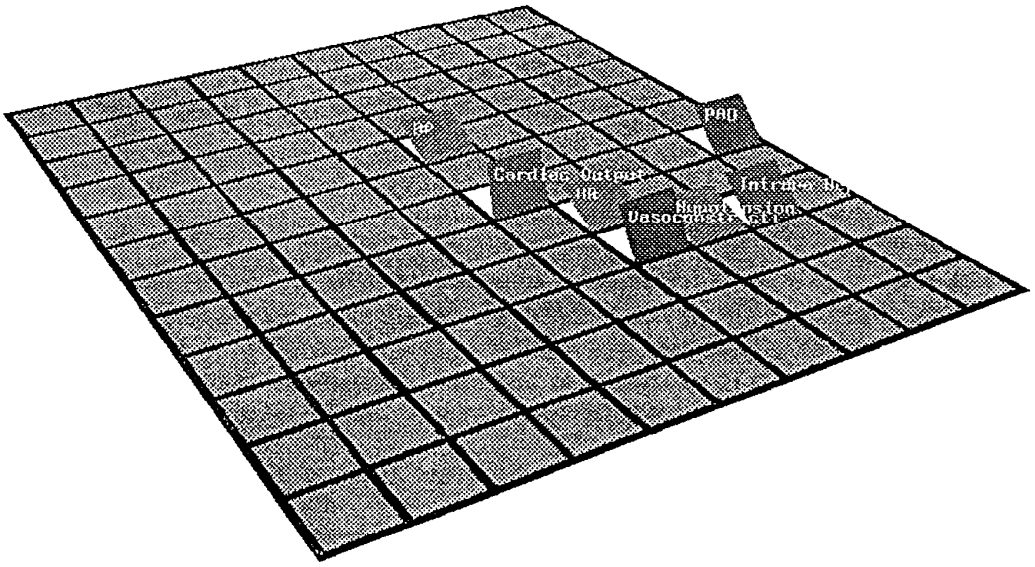


Figure 2: The prototype trellis visualizer, focussed on the ICU monitor

"The display shows a receding plane modeled on the logical organization of the trellis, and divided into 'paving stones.'" Trellis Architecture, p. 301 (APMW0076665). "Each paving-stoned corresponds to a node n the trellis; paving-stones closer to the viewer correspond to higher-level nodes." Trellis Architecture, p. 301 (APMW0076665). "When the value or condition monitored by a trellis node is normal, the corresponding paving-stone lies flat." Trellis Architecture, p. 301 (APMW0076665). "As the monitored condition departs from normal, the associated paving–stone angles forward and changes color." Trellis Architecture, p. 301 (APMW0076665). "Each sub–segment displays a synopsis of the node state with which it is associated." Trellis Architecture, p. 301 (APMW0076665).

IX. CLAIM ELEMENTS ARE WELL KNOWN AND OBVIOUS

The various elements recited in the asserted claims of the Mirror Worlds patents would have been obvious to one of ordinary skill in the art in 1996 as well as in 2001 based on the state of the publicly known art. Even Dr. Gelernter admitted that there wasn't a single individual element in the Lifestream system disclosed in the Mirror Worlds patents that he had invented. Transcript of D. Gelernter June 18, 2009 Deposition at 187:4–6 ("…I think you'll discover I don't know that there's any individual element of this system that I invented." In addition, Dr. Gelernter specifically testified that he had not invented the following concepts and ideas covered by the elements of the asserted claims of the Mirror Worlds patents:

1. The concept of sorting documents by date and time (Transcript of D. Gelernter June 18, 2009 Deposition at 186:18–22);
2. The concept of indexing documents (Transcript of D. Gelernter June 18, 2009 Deposition at 186:24–187:1);
3. The concept of searching for documents (Transcript of D. Gelernter June 18, 2009 Deposition at 187:2–4);
4. The idea of a persistent search (Transcript of D. Gelernter June 18, 2009 Deposition at 187:12–15);
5. The idea of a smart folder (Transcript of D. Gelernter June 18, 2009 Deposition at 187:19–21);
6. The concept of an operating system (Transcript of D. Gelernter June 18, 2009 Deposition at 187:22–24);
7. The concept of a file system? (Transcript of D. Gelernter June 18, 2009 Deposition at 187:25–188:3);
8. The idea of a semantic file system (mistakenly referred to as a "Symantec file system" in the transcript) or SFS ? (Transcript of D. Gelernter June 18, 2009 Deposition at 188:5–189:2);
9. The idea of generating files on a computer (Transcript of D. Gelernter June 18, 2009 Deposition at 189:3–5);
10. The idea of being able to receive files on a computer (Transcript of D. Gelernter June 18, 2009 Deposition at 189:6–14);

11. The idea of including both generated files and received files in a single integrated file system (Transcript of D. Gelernter June 18, 2009 Deposition at 189:23–190:1);
12. The idea of assigning time stamps to files (Transcript of D. Gelernter June 18, 2009 Deposition at 190:4–6);
13. The idea of sorting files by time stamps (Transcript of D. Gelernter June 18, 2009 Deposition at 190:7–9);
14. Calendaring software (Transcript of D. Gelernter June 18, 2009 Deposition at 190:17–19); and
15. The concept of archiving (Transcript of D. Gelernter June 18, 2009 Deposition at 191:14–16).

While Dr. Gelernter testified that it was the combinations or "ensemble" of these known elements as recited in the asserted claims that was novel and non–obvious (see Transcript of D. Gelernter June 18, 2009 Deposition at 187:6–67, and 192:5–23), in the following section, I explain why the elements of the asserted claims and the combinations of these elements set forth in the asserted claims of the Mirror Worlds patents would have been obvious to one of ordinary skill in the art the based on the state of the art and the prior art references discussed in this report. In addition to the materials discussed below, I incorporate by reference the materials discussed in the Technology Background.

A. Organizing Data Units/Documents Into A Main Stream

Many of the asserted claims of the Mirror Worlds Patents—'227 patent: claims 13–17, 20, and 22; '313 patent: claims 1–4; '427 patent: claims 1–2, 5, 7, 8–10, 13, 15, 16–19, 22, 24, 25–26, 29, and 31; and '999 patent: claim 1—require "a computer system which organizes each data unit received or generated by the computer system" (a "document stream operating system" or "document organizing facility") into "a main stream" or "time–ordered stream" of "data units". As construed by the Court, a "main stream" is "a stream that is inclusive of every data unit, or document, received by or generated by the computer system", where a "stream" is "a time–ordered sequence of documents that functions as a diary of a person or an

entity's electronic life and that is designed to have three main portions: past, present, and future". The concept of organizing each "item of information of significance to the user that the user considers as a unit" (i.e., a data unit or document[5]) received or generated by the computer system into a main stream of data units was well known, commonly used, and routinely implemented by those of ordinary skill in the art before 1996.

Organizing data units is a fundamental function of computer systems. Examples include the file systems of operating systems available prior to 1996 (e.g., Microsoft DOS/Windows, Apple DOS/MacOS, and UNIX). Furthermore, temporally organizing data units is well known in computer systems. Examples include email systems, file system viewers, calendars, job schedulers (e.g., UNIX cron), temporal media (e.g., sound and video files), temporal media editors (e.g., Symbolics S–Dynamics, MacroMind Director, and various video editors of the time), and version control (e.g., rcs). It was also well known that computer file systems organized every data unit received or generated by a computer. In addition, it was well known to organize a sequence of data units to have past, present, and future portions; examples include temporal media files, timeline–based media editing and presentation software (e.g., S–Dynamics), timeline chart editors (e.g., Visio 4.0 released August 1995 (see http://visio.mvps.org/History.htm) and proprietary mainframe Gantt/Pert chart editors). Thus, based on the state of the art, organizing every data unit received or generated by a computer into a main stream, either was not new or was a completely predictable variant of what already existed.

[5] Unless specified otherwise, I will use "data unit" and "document" interchangeably in this report.

One example of a well known application that organized every data unit received or generated by a computer into a main stream is Lotus Magellan, which "serves as an information pilot" that "creates an index of every word in every file on your disk, so finding information is a simple and fast process." See, e.g., Using Lotus Magellan at 1–2. Another example is Mander '724, which describes indexing "every document" in a computer system to allow searching and automated sorting and organization of the documents in the computer system. See, e.g., Mander '724, 24:8–26:19. As a further example, the HFS file system used on Macintosh computers organized every file received by the computer on a volume–by–volume basis. See, e.g., Inside Macintosh Manual ("HFS"), p. 2–53 (APMW0001273). There were also many other file systems available at the time, such as FAT and NTFS, that also did this as well.

Another example is Thompson–Rohrlich '852, which "provides a secondary and parallel organization of files stored on a computer system" that makes it possible to search those files, for example to identify all files "having 'progress report' in their names" or that were "modified today." Thompson–Rohrlich '852, 2:1–10; 2:54–68; 4:44–68. Retrospect provides a further example which archives files and generates an index of the files on the archival media. See, e.g., Retrospect User's Guide at 21. Even yet another example is On Location, which indexes the data on a user's computer to allow the user to search for it later. A further example is the SFS O'Toole ACM '91 article which describes personal computer indexing systems and information retrieval systems in combination with distributed file systems and describes the use of attributes/metadata in lieu of typical hierarchical folder structures and naming of files in order to organize all the documents in a system into a "semantic file system." Even the prior papers and articles by Dr. Freeman and Dr. Gelernter disclose such elements: TR–1070 describing a "lifestream" or "a stream of information chunks, typically intended to include every information

chunk of interest to its owner" (TR–1070 p. 2) and the Cyber–Road Not Taken article (APMW0018408–APMW0018415).

It should also be noted that even the Mirror Worlds "Scopeware products utilized the traditional file system from [the] Microsoft operating system that utilized files and folders in a hierarchy." Transcript of R. Prager May 6, 2010 Deposition at 34:19–23. Further, Mr. Prager even admitted that "[n]othing within Scopeware ever ensured that every electronic document or application on a computer system, everything that's created or received would be translated into a single data structure." Transcript of R. Prager May 6, 2010 Deposition at 126:12–17.

1. Organizing Locally Generated Data

A number of the asserted claims require that the data units/documents be generated locally on a computer system (e.g., "generating data units in the computer system," "receiving documents from diverse applications"). See '227 patent claims 13–17, 20, and 22; '313 patent claims 1–4, 9–11, '427 patent claims 1–2, 5, 7, 8–10, 13, 15, 16–19, 22, 24, 25–26, 29, 31; 32–34, 37, and 39; and '999 patent claim 1. The concept of generating data units and documents locally in a computer has been known to one of ordinary skill in the art for a very long time and was widely used and routine well before 1996.

Computers can be used to generate data. For example, a Macintosh computer using the HFS file system can be used to create new files (such as, e.g., text, image or sound files), and these files are organized within the file system. Mander '724, Retrospect, Lotus Magellan, and OnLocation TR–1070, and the SFS O'Toole ACM '91 article, all either explicitly or implicitly disclose the generation of new files on a computer. All of these references organize (or at least are capable of organizing) newly generated documents–amongst other things–by date and time (e.g., creation date or last modified date). The result of generating new files locally within a computer well known was predictable to those of skill in the art before 1996. One of

ordinary skill in the art in 1996 understood that organizing new data by date and time helped afford more efficient operations, such as searching or sorting, on that data.

2. Organizing Data Units/Documents Received From Other Computers

In addition to having claims requiring the organizing of locally generated data units, many of Mirror Worlds' asserted claims require the organization of document received from other computer systems such as for example, via a network ("receiving data units from other computer systems"). See '227 patent, claims 13–17, 20, and 22; and '999 patent, claim 1. One of ordinary skill in the art was very familiar with how to organize data (including documents) received from other computers into a main stream before 1996.

By 1996, networking of computer was widely known. Email systems that let users send electronic messages between computers was also in use. Further, the World Wide Web was also becoming more and more popular. During that time period, it was well known to one of ordinary skill in the art that the HFS file system was capable of organizing all data on a Macintosh computer regardless of whether they were generated by the Macintosh or received externally. Such a capability was present in other well–known file systems such as FAT and NTFS.

In addition, organizing data units on other computer systems to allow searching from one computer for data units on those other systems was also known. For example, Thompson–Rohrlich '852 describes allowing users to drag "servers" into "a folder where users store aliases of places to look [*i.e.* search]." Thompson–Rohrlich '852, 4:44–53. Lotus Magellan also discloses that it "can search for and list files across directories, on separate drives, and even across local area networks." See, e.g., Using Lotus Magellan, p. 2 (APMW0000067). Mander '724,the SFS O'Toole ACM '91 article, Retrospect and even TR–1070, also disclose similar capabilities. In addition, the Crouse '972 patent discloses an archiving file system that operates

on top of a computer's native file system and allows for "completely transparent" storage and retrieval of files stored on a remote network data server or in a distributed network. Crouse '972, 4:22–42.

3. Documents From Diverse Applications/Document Object Models

In addition to the generic organizing of generated or received documents, many of the asserted claims of Mirror Worlds patents require "receiving documents from diverse applications in formats that are specific to the respective applications and differ as between at least some of the applications," or something similar. See '227 patent, claims 13–17, 20, and 22; '313 patent, claims 1–4, and 9–11, '427 patent, claims 1–2, 5, 7; 8–10, 13, 15, 16–19, 22, 24, 25–26, 29, 31; 32–34, 37, and 39; and '999 patent claim 1. Claim 1 of the '999 patent also requires the creation of "document object models" that have a consistent structure across diverse files (created by diverse software) and that contain "selected information" from these files. Further, according to Mr. Prager, using the document–object model as a way to wrap information so it would operate within an information management system on top of the Lifestreams metaphor was something novel with respect to the '999 patent. Transcript of R. Prager May 6, 2010 Deposition at 115:15–24. I disagree.

Generating or receiving data units in diverse formats (with some of those formats being unique the applications used to created them) and then organizing these data units was widely known to one of ordinary skill in the art and were in wide use before 1996. Similarly, creating document object models having a consistent structure for diverse documents was also well known and in wide use before 1996.

For example, the HFS file system organized all data units received by a Macintosh computer regardless of the application that created them or the nature of the data that they contained. The same is true of other well–known file systems, like FAT and NTFS. The

HFS file system also populated its catalog file with metadata about each file (*i.e.*, a document object model) regardless of the nature of the data or the identity of the file that created it. This allowed the pbCatSearch function to search for any file, regardless of what created it or what type it was. Inside Macintosh, pp. 2–39 to 2–44, 2–206 to 2–208 (APMW0001259–APMW0001264, APMW0001426–APMW0001428). Another example is Lotus Magellan, which "creates an index of every word in every file on your disk, so finding information is a simple and fast process," regardless of what type of file is being indexed, or what program created that file. See, e.g., Using Lotus Magellan, pp. 1–2 (APMW0000066–APMW0000067).

Even Mander '724 patent discloses indexing "every document" in a computer system to allow searching and automated sorting and organization of the documents in the computer system regardless of their file type. Mander '724, 24:8–26:19. As previously discussed and in the claim charts, Mander '724 discloses different file types for several different applications. As another example Thompson–Rohrlich '852 "provides a secondary and parallel organization of files stored on a computer system" that allows searching of those files, for example, to identify all files "having 'progress report' in their names" or that were "modified today," regardless of the file type or what application created the file. See, e.g., Thompson–Rohrlich '852, 2:1–10; 2:54–68; 4:44–68. Lucas '330 also discloses diverse file formats for different applications: "supports multiple renderers, and which renderer is used for a particular document is determined by an attribute of the document." Lucas '330, 5:46–48. Other references, such as Retrospect, Crouse '972, On Location, TR–1070, the SFS O'Toole ACM '91 article, the Cyber–Road Not Taken article, also provide disclosure of these features claimed in the Mirror Worlds patents. Simply put, receiving data units having diverse formats, and organizing them by

creating document object models that have a consistent structure across the diverse documents was well know to one of ordinary skill in the art before 1996.

Thus, organizing data units/documents into a main stream including the organization of locally and remotely generated and received data units having diverse file types associated with different applications was commonly known and regularly used by those of ordinary skill in the art before 1996. One of ordinary skill in the art would find combining the above–discussed references routine and would expect that such combination would have very predictable results and outcomes. Advances in data organization are frequently motivated by the desire to organize data units in ways that make the tasks to be performed more efficient and more reliable. For example, it is well understood that better organization of data may help lead to more efficient searching or sorting, of those data. Thus, one of ordinary skill in the art would be looking for ways to combine known techniques for organizing data units that would enable desired tasks to be performed more efficiently and reliably.

Thus, it would have been obvious to one of ordinary skill in the art to combine the knowledge of the art known at the time to meet the "organizing each data unit received or generated by the computer system into a main stream of data units/documents" related claim elements recited in the asserted claims of the Mirror Worlds patents including combinations of any of the following: Mander '724, Retrospect, the HFS file system, Lotus Magellan, Thompson–Rohrlich '852, On Location, the SFS O'Toole ACM '91 article, TR 1080, Cyber–Road Not Taken article, references. One of ordinary skill in the art would have been motivated to combine these references because of the design incentives for performing efficient indexing, searching and sorting of the files on a computer. Market forces would also have motivated one of ordinary skill in the art to create such combinations. For example, as explained in Using Lotus

Magellan: “the average manager spends almost four 40–hour work weeks each year looking for information that is misplaced or mislabeled.” Using Lotus Magellan, p. 1 (APMW0000066). In the combination, the original elements of each these reference would be functioning in their well known and intended manners to organize each data unit received or generated by the computer system into a main stream of data units/documents.

B. Searching/Filtering to Generate Substreams

Many of the asserted claims of the Mirror Worlds patents require generating “at least one substream” of data units/documents or similar limitation.’227 patent claims 13–17, 20, 22; ’313 patent, claims 2–4, and 11. The Court has construed the term “substream” as “a stream that is a subset of data units, or documents, yielded by a filter on a stream, the filter identifying certain documents within the stream.” Claim Construction Order, p. 2. As previously mentioned, the Court also construed a “stream” as “a time–ordered sequence of documents that functions as a diary of a person or an entity’s electronic life and that is designed to have three main portions: past, present, and future.” Claim Construction Order. p. 2. One of ordinary skill in the art was well aware prior to 1996 of searching and filtering techniques that could be used to filter a main stream to yield a substream in the manner set forth in the asserted claims of the Mirror Worlds patents.

Computers have had filtering/searching and sorting capabilities for decades. The ability to search or sort through a large and growing stream of data units/documents is a natural and common use of a computer. Databases were widely known and used long before 1996, and had the ability to search or sort large streams of data units. See generally, C.J. Date, An Introduction to Database Systems, 3rd ed. (Addison–Wesley, 1981). Further, filtering out uninteresting items was well known to those in the graphical user interface field. See Ben

Shneiderman, “The Eyes Have It: A Task by Data Type Taxonomy for Information Visualizations,” Proceedings of the 1996 IEEE Symposium on Visual Languages, September 1996, pp. 2, 4.

There are many other exemplary techniques for searching a stream of data units/documents known to one of ordinary skill in the art before 1996. For example, the HFS file system used in Macintosh computers included a catalog file containing metadata about each file, that could be searched using the function “pbCatSearch” in order to find files based on their metadata. *See* Inside Macintosh: Files, pp. 2–53 (APMW0001273). Lotus Magellan is another example. Lotus Magellan “serves as an information pilot” that “creates an index of every word in every file on your disk, so finding information is a simple and fast process.” See, e.g., Using Lotus Magellan, pp. 1–2. Mander ’724 is yet another example because it discloses a process for indexing “every document” in a computer system to allow for the searching automated sorting and organizing of those documents on a computer. Mander ’724, 24:8–26:19. Lucas ’330 also describes a system that generates substreams from a mainstream as a result of filtering or search criteria. Lucas ’330, 9:65–10:7, 13:65–14:36.

Other references also disclose the filtering or searching of data. For example, Thompson–Rohrlich ’852 also discloses techniques for identifying files on a computer that meet “defined search criteria” and presenting aliases for those files in a folder that represents the results of the search to a user. Retrospect discloses creating a “catalog” of all files from which the user can find files according to selection criteria. See, e.g., Retrospect User’s Guide, pp. 58–68. In addition, the SFS O’Toole ACM ’91 article, On Location, and TR–1070 all disclose features for searching or sorting through a large and growing stream of data units/documents to yield a substream of containing the results of the search.

It should also be noted that even the inventors of the Mirror Worlds patents used third party and open source software (e.g., Verity and Lucerne software) to provide the file opening, indexing and searching functionalities in the Mirror Worlds Scopeware products. Transcript of R. Prager May 6, 2010 Deposition at 26:14–23 ("Q. And the Mirror Worlds Lifestreams product utilized the Verity software for indexing and searching data; correct? A. I think we used, to my recollection I think we used Verity. I am not sure we used it for indexing per se. I think we used for their ability to open documents of various types. I think we used Lucene which was an open source technology to do indexing, at least that is my recollection."); see also transcript of P. Sparago May 4, 2010 Deposition at 49:10–50:10 (Q. And did the Lifestreams application utilize the imaging, third–party imaging software, third–party Vanity (sic) indexer, third–party JSP engine via Apache Tomcat prior to your arrival in late August '98? A. The Verity indexer, yes. The Tomcat engine may have been called something different. I believe we used the Java reference implementation. Yes, we did. Before I got there we used the Java —the JSP reference implementation from Sun Microsystems. We moved to Tomcat while I was there. Verity was definitely there before I got there. The imaging engine was part of what I worked on when I got there. Q. What did the Vanity — A. It's Verity. Q. I am sorry, Verity. A. Verity indexer. Given a stream of text, it broke the text up into words, indexed them for efficient retrieval and allowed you to use their query language to produce — to reproduce, essentially, the documents that use those words. Q. So a search software? A. I am sorry. Yes, a search software.")

1. Generating Persistent/Live Substreams

Some of Mirror Worlds' asserted claims contain limitations requiring that the substreams be persistent or live streams. See '227 patent, claims 13–17, 20, and 22, and '313 patent, claims 3–4. The Court has construed "persistent streams" as "streams that are

dynamically updated" (Claim Construction Order, p. 3) and "a substream that persists" as "a dynamically that is dynamically updated" (Claim Construction Order, p. 4). Dynamic substreams were well known in the art prior to 1996 and one of ordinary skill in the art would not have had found any problems in implementing such substreams.

One of ordinary skill in the art would have been aware of several prior art references that disclosed dynamically maintaining substreams in the manner recited in the asserted claims of the Mirror Worlds patents. For example, Mander '724 describes indexing "every document" in a computer system to allow searching and automated sorting and organization of the documents in the computer system, and then creating "scripts" for "piles" of documents which automatically collect documents that meet specific criteria into a particular pile. Mander '724, FIG. 14, 21:66–22:61, 24:8–26:19. These criteria–based piles are persistent and can be set to automatically sort "any new or modified document" in the system. Mander '724, 28:3–12. Lotus Magellan discloses another prior art system which allowed a user to search a computer and save the search for future uses. See, e.g., Using Lotus Magellan, pp. 1–2. In Thompson–Rohrlich '852, files on a computer that meet "defined search criteria" are identified and aliases to those files are presented to the user in a folder representing the search results. These search results folders persist and are automatically updated when the system has available resources.

As seen, filtering or searching a main stream of documents to generate a substream was well known to one of ordinary skill in the art before 1996. One of ordinary skill in the art would have found it unsurprising that search results could be dynamically maintained so that newly generated or received documents could be added to the substream. Combining any of these prior art techniques would have present few difficulties to the person of ordinary skill.

Further, maintaining dynamic substreams is an inevitable goal for file systems because dynamic techniques provide a more efficient means for conducting searches. If search results were not dynamically maintained, a user would have to re–run searches over and over again in order to make sure that the search results were up–to–date.

C. Timestamps Identifying Each Data Unit

Several of the asserted claims of the Mirror Worlds patents require a "timestamp" to "identify each data unit," or "automatically associating time–based indicators with the documents received" or similar limitations. See '227 patent, claims 13–17, 20, and 22, '313 patent, claims 1–4, 9–11, '427 patent, claims 1–2, 5, 7, 8–10, 13, 15, 16–19, 22, 24, 25–26, 29, 31, 32–34, 37, and 39. The Court has construed a "timestamp to identify" as "a date and time value that identifies each document" and "time–based indicators" as "chronological indicators." Claim Construction Order, pp. 2, 4. By 1996, one of ordinary skill in the art would have been very aware of timestamps and time–based indicators and would have known that timestamps and time–based indicators were widely known and used in the technology to provide date and time values to identify a broad range of items and data including data units and documents.

Most computer operating systems automatically assigned date and time values to documents and files well before 1996. The HFS file system used in Macintosh computers, for example, records and associates creation dates and times, modification dates and times, and backup dates and times for stored files and data so that these values can be used as types of criteria that it can use to identify, filter and search for data. See, e.g., Inside Macintosh: Files, 2–38 (APMW0001258). This is further seen in Mander '724 which describes implementations on a Macintosh computer. In Mander '724, documents may be searched and sorted by date and time. See, e.g., Mander '724, FIGS. 13a, 13b, 14, and 20:14–43. Retrospect also describes indexing

remotely stored documents so that storage, search and retrieval may be done according to date and time values. See, e.g., Retrospect User's Guide, pp. 151–157. Other file systems available at the time, such as FAT and NTFS, also associated various timestamps to document including creation date and time, last access date, last modified date and time to each document.

In addition, Lotus Magellan stores the date and time of each file in an index so that a document may be found during a search. Using Lotus Magellan, pp. xii and 13 (APMW0000060, APMW0000078). Thompson–Rohrlich'852 discloses another example, where date and time information for files is stored to enable the searching of documents by date. See, e.g., Thompson–Rohrlich'852, FIGS. 2, 4, and 1:55–2:11 (describing searches such as "files modified today" and "files not accessed in the past 12 months."). Similarly, Lucas '330 describes how to generate "substrands" of documents that group together documents received in a particular time period. See, e.g., Lucas '330, 13:65–14:36; 14:29–36 (" …the user requests that all mail messages received after a specified date be grouped in the foreground, and all others in the background.") On Location indexes each file's date and time so that the file may be searched and categorized based on date and/or time. The SFS O'Toole ACM '91 article describes various computer indexing systems including Lotus Magellan and On Location that, as just discussed, store date information. TR–1070 itself explicitly discloses that "chunks [in a lifestream] are stored in the stream chronologically by the date and time at which they were created."

Thus, one of ordinary skill in the art was well aware of the use of date and time indicators to identify data units and documents by 1996. The person of ordinary skill in the art would not have found anything novel about the associating of timestamps with documents or the use of timestamps to organize and sort documents in chronological order. Using date and time to organize and search documents was a well known and obvious design choice in 1996 that

afforded a means of efficient storage of documents and files in an efficient manner. Combining any of the prior art references to provide the timestamping features claimed in the Mirror Worlds patents would not have caused any undue experimentation by one of ordinary skill in the art because timestamps were so ubiquitous and widely used as identifiers. Sorting data by date and time is a long–used sorting method available to provide contextual meaning to information. Additionally, the results of such combination would also be predictable to a person of skill in the art before 1996.

1. Chronological Indicator having the Respective Timestamp

Some of the asserted claims require "associating each data unit with at least one chronological indicator having the respective timestamp," or the "automatically associating time–based indicators with the documents received" or similar language. See '227 patent, claims 13–17, 20, and 22,'313 patent, claims 1–4, 9–11, '427 patent, claims 1–2, 5, 7; 8–10, 13, 15, 16–19, 22, 24; 25–26, 29, 31, 32–34, 37, and 39. The term "chronological indicator" has been construed as a "data structure containing at least a timestamp." Claim Construction Order, p. 3. Data structures containing timestamps were well known to one of ordinary skill in the art by 1996 and the association of such chronological indicators was frequently used in prior art computer systems. As a result, one of ordinary skill in the art would have considered it very straightforward to utilize such techniques in combination with various prior art computer systems and applications to render obvious the asserted claims of the Mirror Worlds patents that contain chronological indicatorrelated limitations.

There are several examples in the prior art that disclose chronological indicators and their use in the manner recited in the asserted patents. Mander '724 discloses the indexing of documents so that searching, sorting, and categorizing of the documents may be carried out and displayed (e.g., assigning identifying colors to documents based on their dates or sorting

documents in a pile by date). Mander '724, Figs. 13a, 13b, 14, 20:14–43. The Rose SIGIR '93 piles article discloses that documents can be organized and searched through use of an internal representation of metadata attributes that depend on, among other things, the documents' timestamps. See, e.g., Rose SIGIR '93 piles article, pp. 261–262 (APMW0000813–APMW0000814). Retrospect discloses document archiving processes in which a catalog listing of metadata attributes is created. These attributes include, among other attributes, a document's timestamp information. See, e.g., Retrospect User's Guide, p. 21 (APMW0000396).

Lucas '330 describes how documents may be organized and displayed according to time–based categories (e.g., a category for old documents that have been read and another category for new documents that have not been read). See, e.g., Lucas '330, 13:65–14:36; 14:29–336 (" ...the user requests that all mail messages received after a specified date be grouped in the foreground, and all others in the background"). Another example is Lotus Magellan, which stores, as part of its index of each file, the file's date and time so that a document may be found and categorized based on date and/or time. Using Lotus Magellan, pp. xii and 13 (APMW0000061, APMW0000078). Thompson–Rohrlich '852 discloses that folders can be created by searching documents using metadata criteria such as the "Last Modified" date. See, e.g., Thompson–Rohrlich '852, 3:8–15. Another example is On Location, which indexes each file, including the file's date and time, so that a document may be found and categorized based on date and/or time. Similarly, the SFS O'Toole ACM '91 article describes computer indexing systems, including Magellan and On Location, that store date information, as well as information retrieval systems that store and categorize documents using date information. A further example is TR–1070, which describes a "lifestream" or "a stream of information chunks, typically

intended to include every information chunk of interest to its owner" and explains that "chunks are stored in the stream chronologically by the date and time at which they were created."

As can be seen by all of these examples in the prior art, affording the automatic association of documents with chronological indicators having respective timestamps in the manner presented in the asserted claims would have been well known to one of ordinary skill in the art and providing such features to computer systems existing prior to 1996 would have been obvious. Such data structures were and still are well known in the art. Including date and time values in such data structures would have been straightforward and commonplace to one of ordinary skill in the art.

2. Include Each Data Unit in the Mainstream According to Timestamp in Chronological Indicator

Claims 13–17, 20 and 22 of the '227 patent recite: "including each data unit according to the timestamp in the respective chronological indicator in the main stream," or something similar. As discussed above, associating each data unit with at least one chronological indicator having the respective timestamp was well known, commonly used, and routine to those of ordinary skill in the art before 1996. Mainstreams that were inclusive of every data unit or document received by or generated by a computer system and presented a time–ordered sequence of documents having past, present and future portions was also known to those of ordinary skill in the art. Sorting and organizing documents by date and time was very common prior to the filing of the Mirror Worlds patents as shown by the teachings of Mander '724, the Rose SIGIR '93 piles article, Lucas '330, Retrospect, Magellan, On Location, the SFS O'Toole ACM '91 article, which all disclose systems and methods where streams of documents are organized and categorized according to timestamps (amongst other attributes). In addition, TR–1070 discloses a "lifestream" or "a stream of information chunks, typically intended to include

every information chunk of interest to its owner" and explains that "chunks are stored in the stream chronologically by the date and time at which they were created." Combining the teachings of any of these prior art references in a manner that followed the limitations in the asserted claims relating to timestamps and chronological indicators would have been a straightforward process to one of ordinary skill in the art.

D. Archiving

Several of the asserted claims of the Mirror World patents require "archiving data units," or "automatically archiving the received documents," (and in some cases "archiving the documents' time–based indicators." See '227 patent, claim 22, '313 patent, claims 1–4, 9–11, '427 patent, claims 1–2, 5, 7; 8–10, 13, and 15. The Court has construed "archiving" to mean "copying of moving documents to a secondary storage medium. Claim Construction Order, p. 2. Archiving data units (including the automatic archiving of data units) in the manner consistent with the Court's claim construction was well known, commonly used, and routine to those of ordinary skill in the art before 1996. This is consistent with the statement by Dr. Freeman that "[s]torage is really orthogonal" to the Lifestreams concept. Transcript of E. Freeman November 23, 2009 Deposition at 158:22. As further explained by Dr. Freeman: "[t]he stream itself is really just a data structure, and storage is an implementation detail." Transcript of E. Freeman November 23, 2009 Deposition at 158:25–159:1.

For example, Retrospect was a document archival program for Macintosh computers that provided automated archiving of documents and data units. See, e.g., Retrospect User's Guide at v (APMW000372). Data units (e.g., documents) would be stored remotely, saving local disk space and allowing for retrieval of documents in the event of local system

crashes. “Archiving allows you to remove seldom–used files from a hard disk without permanently getting rid of them.” Retrospect User’s Guide, p. 104 (APMW0000479). Retrospect also discloses a menu–driven user interface to create scripts which automatically archive documents. See, e.g., Retrospect User’s Guide, Chapter 14 (APMW0000456–APMW0000465). Retrospect can also be further automated by integrating its own scripting with AppleScript. Retrospect User’s Guide, Chapter 26 (APMW0000563–APMW0000565). By automating the archival process, the user could ensure consistency, and avoid having to have a person perform a routine task. Retrospect User’s Guide, p. 80 (APMW0000455).

There were also many other backup and archiving systems available of the time, such as the classic UNIX file “archiver tar,” Stuffit, and WinZip that let users copy or move documents to a secondary storage medium. Another example is Crouse ’972 which discloses an archiving file system “specifically designed to support the storage of, and access to remote files stored on high speed, large capacity network data servers.” Crouse ’972, Abstract. Even Lotus Magellan discloses the copying of files or entire disk structures to remote locations for backup storage. See, e.g., Using Lotus Magellan, pp. 88–89 (APMW0000153– APMW0000154). Further evidence of the widespread use of archiving is disclosed in the Rahm’91 reference which describes the expansive state of the art in data sharing, but focuses primarily on how to retrieve data archived from shared resources. See, e.g., Rahm ’91 reference, p. 368 (AMPW0001139). A further example is provided in TR–1070, which discloses the desirability of automatic computer–controlled archival. The result of using archiving software and systems as well as the result of automated archiving was predictable to those of skill in the art before 1996.

1. Archiving Data Units with Timestamps Older Than A Specified Time

At least one of the asserted claims, claim 22 of the ’227 patent requires archiving data units with timestamps older than a specified time point. The concept of archiving data units

with timestamps older than a specified time point was well known, widely used, and routine to those of skill in the art before 1996. For example, Retrospect allows the user to search and select which files to archive, including using the document creation or modification date as conditions. See, Retrospect User's Guide, Chapter 23 (APMW0000563– APMW0000565).

2. Archiving Data Units while Retaining Chronological Indicators

Some of the asserted claims relating to archiving require archiving data units / documents "while retaining the respective chronological indicator and/or a data unit having a respective alternative version of the content of the archived data unit," or "archiving the documents and indicators in consistent format for selective retrieval," or something similar. '227 patent, claim 22; '313 patent , claims 1–4, 9–11,'427 patent, claims 1–2, 5, 7, 8–10, 13, and 15. Archiving data units while retaining the indicator it was associated with was well known, widely used, and routine to those of skill in the art before 1996. Both Retrospect and Lotus Magellan archive the timestamp of a file along with a file itself. The same is true of the system describe in TR–1070. In addition, Retrospect creates a catalog or index of the archived data units which allows the user to view the contents of the archived data units without accessing the archive. Retrospect User's Guide, p. 21 (APMW0000396). The catalog includes each data unit's metadata attributes, including timestamp information. Retrospect User's Guide, p. 22 (APMW0000396). This enables various functionality, including the ability to perform differential updating of archives (*i.e.*, where only new files and files that have been modified since the last archival are added to an archive).

Thus, as can be seen by the above examples, the use of archiving software in combination with a file system was a well–known method to free up space on a storage medium (such as a computer hard drive) and for providing backup copies of documents to protect against accidental loss.

E. Using Subsystems From Another Operating System

Several of the asserted claims require using "subsystems from at least one other operating system," and in some of these claims the "other operating system" must be used "for operations including writing documents to storage media, interrupt handling, and input/output." See '313 patent, claims 1–4,'427 patent, claims 1–2, 5, 7, 8–10, 13, 15, 16–19, 22, 24, 25–26, 29, and 31. The Court has construed an "operating system" as "the software that handles basic computer operations (e.g., managing input/output, memory, applications, etc.) and presents and interface to the user. Using subsystems from another operating system, such as the underlying operating system on a computer, or from another networked computer, was well known, commonly used, and routine to those of skill in the art before 1996.

For example, Lotus Magellan, "serves as an information pilot" that "creates an index of every word in every file on your disk, so finding information is a simple and fast process," and runs on top of the existing DOS operating system. It uses the functionality of DOS for storing data, interrupt handling, and input/output, as well as to access and index files located on other computers in a local area network. Using Lotus Magellan, pp. 1–2, 15–17 (describes installing Magellan onto a computer running DOS), 85 ("Magellan tried to remove the already existing file . . . because this filed is actually a directory, and DOS doesn't easily allow the removal of directories, an error resulted . . . "). Another example is Mander '724 which describes indexing "every document" in a computer system to allow searching and automated sorting and organization of the documents in the computer system. Embodiments of the system disclosed in Mander'724 are designed to run on top of an existing Macintosh operating system, which controls the actual storing of data, interrupt handling, and input/output. Mander '724, 5:32–33 ("A system and method for organizing information stored in a file system of a computer

system"), 6:27–30 ("in a preferred embodiment of the present invention, the file system operates on a Macintosh computer"), 5:42–6:23 (describing input/output components of underlying computer system). Retrospect also runs on top of the Macintosh operating system (or other operating systems). Retrospect User's Guide, p. 3 ("Retrospect requires System 7.0 or later").

Other references also disclose functionality performed using the underlying functionality of a computer's operating system. For example, Thompson–Rohrlich '852 discloses methods for identifying files in a computer that meet "defined search criteria" and presents aliases to those files to the user in a folder representing the search results. This functionality is performed based on the underlying functionality of a computer operating system (e.g., the Macintosh operating system) which handles the underlying functions of storing data, interrupt handling, and input/output. See, e.g., Thompson–Rohrlich '852, 5:11–6:63 ("the following notes have been determined from an implementation of Viewers for the Apple Macintosh family of computers. The Viewers were build as a System 8 Finder extension"). Lucas'330 discloses another example, where the operating system provides access to data stored in networked data repositories. TR–1070 describes building "viewports" on top of other operating systems in order to provide access to the user's "lifestream," and explains that while "so far" only a Unix–based viewport has been implemented, a "Macintosh–based viewport is under development." A further example is the SFS article, which describes implementing its semantic file system using an underlying Unix system.

Thus, for at least the above–discussed reasons, the basic principle of building on existing operating system functionality is well known and widely used by those of skill in the art.

F. Enterprise Information Management System

Claim 1 of the ’999 patent “operating an enterprise information management system.” The Court has construed this term as “a system that manages information for an enterprise or organization.” Claim Construction Order, p. 2. Systems that manage information for an enterprise or organization were well known to those of ordinary skill in the art before 1996. Even Mr. Prager admitted that “there were plenty of [well known] enterprise information management systems available in the art at the time” the ’999 patent was filed. Transcript of R. Prager May 6, 2010 Deposition, 115:7–13.

Crouse ’972 is one example of a known prior art system that manages information for an enterprise or organization. Crouse ’972 describes a file system “designed to support the storage of, and access to, remote files” on data servers and operating on top of the standard operating system running on the client computers. Crouse ’972, Abstract. The SFS O’Toole ACM ’91 article discloses another example of an enterprise information management system built on a Unix client–server foundation to provide a distributed file system for “file sharing among groups of people and over wide geographic areas.” A client–server architecture allows the benefits and duties of a computing system to be distributed across multiple computers (for example, in an enterprise or organization) and provides greater data security because servers are generally safer than client computers. One of ordinary skill in the art would have been aware in 1996 that market forces are a motivation for implementing client–server networking architectures across an organization or an enterprise in order to provide a robust and interlinked computer system that provided economies of scale.

G. Graphical User Interface Elements

The concepts of visually representing a set of data units (documents) by a set of corresponding document representations, displaying document representations as a receding foreshortened stack or pile, generating a glance view to display additional information about a represented document, and presenting a glance view as an abbreviated version of its document were all well known and routine to those of skill in the art before 1996. Development in graphical user interfaces has been driven by many factors, such as making the system easier to use and learn, faster to use and learn, and more likely to create the correct result. By 1996, a taxonomy of information visualization tasks and information data types was published, summarizing the state of the art of the time. Among the data types discussed are temporal ones, which are described in terms of time lines.

1. Receding, Foreshortened Stack

Many asserted claims include displaying documents in a receding, foreshortened stack (e.g., "displaying at least some of said documents as a receding, foreshortened stack," or "wherein the document representations form a visual stream having a three–dimensional effect"). '227 patent, claims 15–16, '313 patent, claims 1–4, 9–11, '427 patent, claims 1–2, 5, 7, 10, 18, 25–26, 29, 31, 32–34, 37, and 39. Displaying a set of documents as a receding foreshortened stack or pile was well known and routine to those of ordinary skill in the art before 1996. The concept of representing a set of data units/documents with a set of corresponding document representations, and then further generating glance views to display additional information about the represented document, was also well known and routine to those of ordinary skill in the art before 1996.

To one of ordinary skill in the art, the "receding foreshortened stack" is merely a visual design choice—just one out of many well known ways of visualizing a linear list of items.

These ways of visualizing linear lists of items include stacks that are depicted in 2D, as well as 3D; are drawn in parallel projection, as well as perspective projection; are arranged along an arbitrary path, including one roughly aligned with the X, Y, or Z axis; and have items that overlap or not. These are just a few of many possible choices well known to one of ordinary skill in the art. There are a number of examples of prior art that visualize lists in these ways, including Lucas ’330, Lucas Workspace, Mander ’724 and the associated Piles references, the slide tray in the key map of the SDM system, and the articles and videos by Robert Spence (including the use bifocal for glance view), HyperCard, Staples ’93, O’Neill ’906. Any advantages gained by the combination of choices embodied in a “receding foreshortened stack” were well known to one of ordinary skill in the art, as were many satisfactory alternatives.

To begin with, the concept of using a “stack” or “pile” metaphor to represent a set of documents in a user interface was well known, in part because it is an organization technique that has existed for a long time and thus provides an organizational scheme that is intuitively appealing to users. T.W. Malone, “How do people organize their desks? Implications for the design of office information systems,” ACM Transactions on Office Information Systems, Volume 1, Number 1, January 1983, pp. 99–112.

Moreover, the use of a three dimensional representation of a stack or pile (*i.e.*, a receding foreshortened stack) to represent a set of documents was also well known. For example, Lucas ’330 discloses a system to “position screen objects in a three–dimensional workspace,” allowing “grouping of documents, so that they can be manipulated in groups.” Lucas ’330, 8:33–36 , see also Lucas Workspace and “Representation in Virtual Space: Visual Convention in the Graphical User Interface” by L. Staples (1993) (the “Staples ’93 article”).

The positioning of screen objects includes displays of a receding, foreshortened stack. Lucas ’330, FIGS. 3 and 5. JP ’661 is another example disclosing a method for displaying files chronologically in a 3D perspective view. JP ’661, FIGS. 10–14. Another example is O’Neill ’906 which discloses a user interface for arranging information in a perspective view. O’Neill ’906, FIGS. 4 and 6, 2:29–34. Mander ’724 provides even another example in a graphical user interface where document representations are stacked as piles with a three–dimensional effect. See, e.g., Mander ’724, FIG. 2. In addition, the Staples ’93 article provides a good overview of what would have been known to one of ordinary skill in the art by 1996. The Staples ’93 article explains the use of perspective and describes existing interfaces that use perspective including the Ark Workspace software (in addition to showing receding, foreshortened stacks of partly overlapping document representations). The Staples ’93 article, FIGS. 9–12. The prior art Lifestream reference also discloses a receding, foreshortened stack. See The Cyber–Road Not Taken article (describing a visual effect as “a caravan of shoeboxes, the most recent addition being the closest to you, receding into the far distance”), TR–1070, (describing “a 3D stream receding from the present into the past,” and explains that “3D is helpful because it allows us to use visual cues to communicate important information about chunks—namely, their relative ages.”)

Thus, the displaying of documents or other information in the form of a receding, foreshortened stack was well known and predictable to those of ordinary skill in the art by 1996. To one of ordinary skill in the art, using a receding, foreshortened stack to represent a stack of documents in order to create an intuitive user interface reflecting a user’s physical desktop environment (and thereby providing useful visual cues about the organization of the documents) would have been obvious. A person of ordinary skill in the art by 1996 would have been

motivated to combine any of the above discussed references to render the use of receding, foreshortened stacks obvious. Design incentives would have prompted such modification, because: (1) it was well known to be desirable to have a more intuitive and user–friendly interface, (2) it was well known that overlapping stacks take up less space, and (3) it was well known that the stack or pile metaphor provided such an intuitive interface. It was also well known that computers were increasing in processing power very rapidly (e.g., Moore's Law), and as a result it was entirely predictable that the processing power needed to compute and display a receding foreshortened stack of documents would be widely available. Furthermore, the teachings, suggestions, and motivations provided by T.W. Malone's article, "How Do People Organize Their Desks?" would have led one or ordinary skill in the art to modify the computer user interface to reflect how people organize their documents, and particularly, to adopt the use of the "stack" metaphor to represent a set of documents.

2. Document Representations and Glance Views

Quite a few of the asserted claims of the Mirror World patents require generating "document representations" of data units/documents, or something similar, such as "browse cards" or "alternative versions of the content of the data units." See '227 patent, claims 15–16, 20, '313 patent, claims 1–4, 9–11, '427 patent, claims 1–2, 5, 7, 8–10, 13, 15, 16–19, 22, 24, 25–26, 29, 31, 32–34, 37, and 39, and '999 patent, claim 1. Many of these asserted claims further require generating an "information specifying glance view" that is a different "alternative version" of the content of the data unit/document that displays additional information. See '227 patent, claims 25–29, '313 patent, claims 1–4, 9–11, '427 patent, claims 1–2, 5, 7, 8–10, 13, 15, 16–19, 22, 24, 25–26, 29, 31, 32–34, 37, 39, '999 patent, claim 1. A "glance view" may even "comprise an abbreviated version of the respective document," or something similar. The Court has construed a "document representation" as "a graphical depiction of a document, or data

unit" and "glance views" as "an abbreviated presentation of a document." The concept of representing a set of data units/documents with a set of corresponding document representations, and then further generating glance views to display additional information about the represented document, was well known and routine to those of ordinary skill in the art before 1996. See Robert Spence paper, Shneiderman "The Eyes Have It" paper ("details on demand" in the mantra) and FilmFinder as discussed in "Visual information seeking using the FilmFinder" by C. Ahlberg and B. Shneiderman, Conference on Human Factors in Computing Systems, Conference companion on Human factors in computing systems, 1994, pp. 433–434.

For example, the CHI '92 article shows document representations that can be stacked into "piles" in various ways. See, e.g., CHI '92 article at Figs. 1, 2, 5, 7. It also discloses various techniques for displaying glance views of particular documents from within a stack, including "gesturing vertically" in order to generate a "viewing cone" that "contains a miniature version of the first page of the item under the pointer" when the pointer is over the representation of a document in the stack. See, e.g., CHI '92 article at Figs. 5, 7. Another example is the '724 patent, which describes piles of document representations, and displaying a glance view after sliding a cursor over a document representation in the pile. Mander '724, Figs. 4a–f, 10a–b, 12a–b. Another example is the JP '661 patent, which shows stacks of document representations, and moving a cursor over a document representation in order to display additional information about the document across the bottom of the screen. See JP '661, at Figs. 10, 12. A further example is TR–1070, which describes and illustrates clicking on a document representation in order to "display key attributes above." TR–1070 at YALE000440 – YALE000441. Another example is the '330 patent, which discloses organizing document representations ("screen objects") into three–dimensional stacks. See, e.g., '330 patent at 3:1–3, Fig. 3. It discloses scrolling through

this stack in order to bring onto the screen a larger, alternative visual representation that specifies additional information about the data unit, and it shows tiling several such glance views across the screen. See, e.g., ’330 patent at Fig. 3; 7:12–25 (“When [a visual representation of a document] is as big as it can get, it is plastered against the workspace window and cannot be moved any closer.”) As these references show, it was well known in the art that it was useful to display glance views after sliding a cursor over a document representation, so that a user could readily access additional information about the document that was not ascertainable from the document representation. This use of glance views was routine to a person of ordinary skill in the art by 1996. The results of representing a set of data units with a set of corresponding document representations, and then generating glance views of particular documents to specify additional information about the represented data unit were predictable to those of ordinary skill in the art before 1996. It allowed simultaneous and integrated use of both a more compact display of “document representations”, so that more documents could be seen at once, and a more detailed representation of a particular document (“glance view”), to provide more detailed information about that particular document.

If it is determined that any of the base references listed above do not disclose representing a set of data units with a set of corresponding document representations, and then generating glance views of particular documents to specify additional information about the represented data unit, it would have been obvious to a person of skill in the art before 1996 to combine any such reference with the knowledge of a person of skill in the art as described above, and/or any of the CHI ’92 article, the ’724 patent, the ’330 patent, TR–1070, or the JP ’661 patent. For example, design incentives would have prompted such modification, because it was well known to those of ordinary skill in the art to be desirable to be able to have visual and

intuitive representations of collections of documents, and the concept of working with documents organized in piles was known to be intuitively appealing to users. See, e.g., Mander ’724, 2:42–60. Furthermore, it was known that in general, users working with documents needed to perform tasks that required visualizing larger sets of documents, as well as tasks that required obtaining more detailed information about particular documents. The use of document representations for larger sets in conjunction with glance views for more detailed information was a known and predictable solution to this requirement, and thus there was a design incentive to use it where users were working with sets of documents, as is the case with the base references. Market forces would also have prompted such modification, for example because it was known before 1996 as described above that users could be more efficient when using intuitive, well–designed interfaces. In the combination, each of the original elements of the base reference would be performing the same known and predictable functions described in the base reference, and the representation of a set of data units with a set of corresponding document representations, and the generation of glance views of particular documents to specify additional information about the represented data unit, would perform the same known and predictable functions known in the art as described above, and/or in the CHI ’92 article, the ’724 patent, the ’330 patent, TR–1070, or the JP ’661 patent. The results of such combination would also be predictable to a person of ordinary skill in the art before 1996. One would be able to work with groups of documents using document representations, while also being able to obtain a glance view specifying additional information about a document by sliding a cursor over a document representations, thus allowing work focused on both larger and smaller scale representations of documents from the same interface.

3. Sliding Without Clicking To Display The Glance View

Claims 1–4of the ’313 patent, claims 1–2, 5, 7, 8–10, 13, 15, 16–19, 22, 24, 25–26, 29, 31, 32–34, 37, and 39 of the ’427 patent and claim 1 of the ’999 patent require that a glance view of the document be displayed in response to “sliding without clicking of the cursor” over the document representation whose glance view is to be displayed in some fashion or other. Mouse–over actions such as sliding a cursor without clicking over a document representation in order to display a glance view was well known, commonly used, and routine to those of ordinary skill in the art by 1996.

For example, the CHI ’92 Piles article illustrates a number of different techniques for displaying glance views after sliding a cursor without clicking over a stack of document representations. CHI ’92 Piles article, FIGS. 4, 5, 7. Similarly, Mander ’724 describes displaying glance views after sliding a cursor without clicking over a pile of document representations. Mander ’724, FIGS. 4a–f, 10a–b, 12a–b. JP ’661 also discloses a similar techniques. JP ’661 Figs. 10, 11, 12, O’Neill, ’906 Fig. 6. As these references show, it was well known in the art that it was useful to display glance views after sliding a cursor without clicking over a document representation, so that a user could readily access additional information about the document that was not ascertainable from the document representation. This use of glance views was routine to a person of skill in the art by 1996.

By 1996, it was well known to those in the art of graphical user interface design that reducing or minimizing the number of actions (such as clicks) that must be taken in order to obtain information was a way that could make actions more efficient. The display of a glance view using cursor movement without a click is an example of such efficiency. Furthermore, one of ordinary skill in the art of graphical user interface design would have known that a particular action, such as a mouse click in a particular location (such as over a document representation)

can only invoke one response at a time. Thus, if clicking the document representation is reserved for another function such as selecting a document representation (as is the case in many graphical user interfaces), then clicking would not normally be used to invoke a glance view. In such a situation, design incentives would require something else, such as location of the cursor ("sliding without clicking" or other mouse over technique), to invoke the glance view. These actions using a pointer or a cursor were well known in the art by 1996 and are predictable in the way that they work and the outcomes that they produce. Thus, use of a sliding without clicking action over a document representation (especially those grouped together in a stack, pile or other grouping) in order to display a glance view as the result of such an action would have been commonplace and predictable to a person of ordinary skill in the art by 1996. Further, one would be able to obtain a glance view specifying additional information about a document by sliding a cursor over a document representation without clicking, thus reserving the act of clicking on a document representation for a different function such as selecting the document represented by the document representation.

4. Document Representations With Markings Common To A Class Of Documents

At least one of the asserted claims–claim 34 of the '427 patent requires "visually identifying attributes" of documents using "markings" that are "visible in the displayed stack" and that are "common to a class of documents," or something similar. Using markings common to a class of documents to visually identify the class of document to the user was well known, commonly used, and routine to those of skill in the art before 1996. For example, virtually all graphical user interfaces for operating systems, including those used in the Macintosh computer including Finder in Macintosh System 7, NextSTEP, and Microsoft Windows, used icons to represent files, with different icons displaying different images being used for different types of

documents. For example, MS Word documents would often display a "W" or a series of lines to represent a written document. This use of icons was well–known and routine to one of skill in the art by 1996. Examples of such icons is apparent in several of the references discussed in this report including, for example, Mander '724 (see all FIGS depicting document icons and 7:1–6). Baecker '602 discloses other examples and describes how to generate and display a standard, content–based icon for each document. Baecker '602, 3:13–26, 4:62–5:1. Another example is Levine '135 which discloses using "detailed miniaturized images of all documents possessed by the user" and how to create those miniatures. See, e.g., Levine '135, Abstract.

Thus, it would have been obvious to a person of ordinary skill in the art before 1996 to combine any such reference to visually identify the class of any given document to a user via markings displayed on icons that are common to given class of documents.

5. Glance View with Command Buttons

Some of the asserted claims of the '427 patent (claims 32–34, 37, and 39) require the display of "a set of command buttons" concurrently with and in the same display as the "glance view." The concept of displaying command buttons concurrently with a glance view was well known and routine to those of skill in the art before 1996.

For example, Mander '724, Lucas '330, TR–1070, all disclose the display of command buttons concurrently with glance views. Lucas '330, FIGS. 3, Mander '724, FIGS. 13a, 13b, 22e, TR–1070, YALE000440–441. As these references show, it was well known in the art that command buttons could be used to manipulate a representation of a document, for example to play a video or sound file, or to page through a multi–page document. This use of command buttons was routine to a person of skill in the art by 1996.

H. Motivation to Combine References

It is my opinion that one of ordinary skill in the art would have been motivated to combine the teachings of the various prior art references charted and discussed in my report to render each asserted claim obvious (to the extent that they are not found to be anticipated), especially based on the state of the art known to one of ordinary skill by the time of the initial filing of the Mirror Worlds patents in 1996.

As shown by Shneiderman's Taxonomy paper from 1996, many of the features claimed by the Mirror Worlds patents were already recognized to being basic for information visualization. For example, may of the claims follow Shneiderman's Visual Information Seeking Mantra. Shneiderman provides contemporaneous evidence of the motivations of one of ordinary skill in the art for combining these elements in visualizations, including temporally-based ones. Many systems, both proposed and implemented, had already combined temporal visualizations of documents with other features, such as 3D perspective with overlap and foreshortening, persistent filters, glance views, to name a few.

In 1996, one of ordinary skill in the art was aware that increases in computing power and interconnectedness between computers would lead to a need to efficiently organize larger and larger amounts of data. For example, by 1996, the dot-com Internet boom had already started. As more and more people started to connect to the Internet, more and more information was being made available to them, thereby driving the need to find ways to search and present this information. As a result, by 1996 many people understood that tools were needed for organizing and searching larger and larger amounts of data in a manner that conformed with Shneiderman's Visual Information Seeking Mantra. Evidence for this is seen in many of the early success stories of the dot-com boom, which were for search engines such as Yahoo,

AltaVista, Infoseek, Lycos, and Excite. Furthermore, the introduction of the Wayback Machine by the Internet Archive in 1996 (see http://www.archive.org/about/about.php) shows that one of ordinary skill in the art would have been well aware of search and visualization tools for information suited for temporal organization and searching, such as web pages. Thus, with this context in mind, one of ordinary skill in the art would have been actively searching for and trying to mix and match combinations of known solutions for organizing, filtering, providing details, and archiving data, especially solutions that were capable of being performed across multiple computers and over networks.

Further evidence of the expectation by one of ordinary skill in the art that computing power would increase in the future is found in Richard Mander's March 11, 2010 testimony discussing what Apple's ATG envisioned for the year-2000 computer including increased processing power, extremely cheap storage/hard disk space, increased graphics capability, larger monitors, larger and faster networks, ubiquitous touch screens, ubiquitous video, computers with cameras having recognition capability, affordable digital cameras, and the storage of data in a way where a user could not lose it. See Transcript of Richard Mander, March 11, 2010 Deposition at 24:10–29:13.

I. Lack of Secondary Considerations of Non-Obviousness

In my opinion, I see little evidence of secondary considerations of non–obviousness regarding the circumstances surrounding the inventive process for the asserted claims of the Mirror Worlds patents.

The Mirror Worlds patents did not alleviate or resolve any long felt need because the features covered by the asserted claims were well known and frequently used by 1996. As shown by the prior art references and the state of the art discussed in this report, organizing and

sorting was well known by this time. For example, Malone's "How do People Organize Their Desks" paper (pp. 103, 109) discusses the concept of organizing documents in stacks or piles temporally well before the filing of the Mirror Worlds patents. Temporal visualizations and three-dimensional projections of temporal information were well known by that time, as well (see, e.g., Shneiderman '96 Eyes Have It paper, Mackinlay 91 Perspective Wall paper, Spence 82 paper). Archiving data was also well known and commercial archiving applications (e.g., Retrospect) were readily available at the time. In addition, the combinations of these features were also well known to those in the art, as shown throughout my report.

The results afforded by the Mirror Worlds patents are not unexpected or surprising. Shneiderman's The Eyes Have It paper shows that by 1996 practitioners in the art were well aware of various data types and tasks for visualizing information. The articulation of these data types and tasks shows that many of the challenges in visualizing information were well defined and predictable by 1996. Furthermore, the Eyes Have It paper articulates a "Visual Information Seeking Mantra" to which the Mirror Worlds patents conform.

The Mirror Worlds patents do not establish any evidence of success in the face of failures by others. To the contrary, the Piles references and research at Apple (including Mander '724), Lucas '330/Workcape and even the LifeLines work by Plaisant and Shneiderman (amongst others) show that many others had solutions that were at least as successful as those claimed by the Mirror Worlds patents.

I am not aware of any commercial success that can be tied to the asserted claims of the Mirror Worlds patents. First, it is my understanding that Mirror Worlds was somewhat unsuccessful in its attempts to commercialize the technology of its patents. I understand that Mirror Worlds has claimed that its Scopeware products embody the alleged inventions claimed

in the Mirror Worlds patents. It is my understanding that Mirror Worlds did not have much success in selling these products. As part of my investigation, I also discussed these commercial success issues with Keith Ugone, a financial expert. It is my understanding that until it ceased operations in 2004, Mirror Worlds' annual revenues never exceeded $1 million despite investments of approximately $18 million. (Weil Dep. Tr. at 32:20–33:16, 62:19–63:6.) In addition, in its last year of operation (between September 2003 and Fall 2004), Mirror Worlds' total sales revenue (including sales of Scopeware and other products) was less than $50,000. (Gallagher Decl., D.I. 64–2 at ¶ 4.). The lack of commercial success of Scopeware is further underscored by the following testimony:

> Q. You would agree it was never a commercial success such that it could support the Mirror Worlds company's ongoing operation; correct?
>
> A. That is correct.

(Weil Deposition, pp. 63–64.)

Furthermore, one of the Scopeware products, Scopeware Vision Professional 2.2 ("Scopeware 2.2") seemed to have limited organizing and searching capabilities. These limitations to the organizing and searching elements contained in the asserted patents are very user unfriendly and could have hindered its commercial success. For example, when I tried Scopeware 2.2's searching capabilities, they appeared not to follow indexed shortcuts to their referenced files. However, a typical user would most likely prefer to have this capability available in a search tool. Another limitation I found in Scopeware 2.2 was its tendency to return an empty set when I followed what seemed to be a reasonable approach for searching files created during the current day. For example, when I searched using the date interface for documents having the word "mirror" in them (which I knew existed on my computer in directories monitored by Scopeware 2.2), Scopeware 2.2 displayed a pair of before-and-after

calendars, both indicating today's date. When I selected the "between" option so that Scopeware would search for documents having the word "mirror" and that were created on the same day, Scopeware unfortunately returned no documents. The search string displayed at the bottom of the Scopeware window revealed that Scopeware used an unexpected and unfortunate interpretation of "between": "(mirror) and ((creation–time >= "2010/05/16 00:00:00") and (creation–time < "2010/05/16 00:00:00"))".

In addition, the vast number of prior art systems and techniques implemented and in widespread public use before the filing date of the Mirror Worlds patents confirm my conclusion that Scopeware did not enjoy any commercial success, especially related to the features covered by the asserted claims of the Mirror Worlds patents. Numerous examples of such systems and techniques are discussed in the portions of my report discussing the prior art and the state of the art.

I am also not convinced that the commercial success of those Apple products accused of infringing the Mirror Worlds patents has a nexus to any of the asserted claims. There are many reasons why Apple's products are commercially successful apart from the few features accused under the Mirror Worlds patents. Apple has long been well known for making high quality products that are coveted by consumers and copied by its competitors. I also understand that Apple spends a significant amount of money and effort in marketing its products. Apple also has very committed and loyal users.

Further, it is my understanding that attributing any substantial portion of Apple's success to product features accused of infringing the Mirror Worlds patents would be speculative at best. According to Mirror Worlds, both Mirror Worlds Technologies and Apple have sold products that practice the alleged inventions claimed in the patents in suit. As discussed above,

Mirror Worlds Technologies' Scopeware products, an alleged embodiment of the claimed invention, were demonstrably unsuccessful. Hence, attributing the commercial success achieved by Apple to the Mirror Worlds' patents would be ignoring the many other factors contributing to Apple's commercial success including, for example, Apple's own patented technology, and the Apple brand. In particular, the accused features, Spotlight, Cover Flow, and Time Machine, are only three features of more than 1,000 features present in OS X, iPhones, or iPods. (Croll Dep. Tr. at 241:23–24; APMW1276827–28.) In addition, Apple's witnesses have given testimony indicating that the success of Apple's accused products is due to, for example, the reliability of Apple's hardware and software; the superior power, security, and graphics associated with Apple's computers; the battery life, weight, and wifi capabilities of Apple's laptops; Apple's industrial design; the iPod's ease of use and ability to play music and store an entire music library; and the iPhone's combination of a phone, widescreen iPod, and portable internet device. (See Croll Dep. Tr. at 113:3–115:8; Jozwiak Dep. Tr. at 55:13–56, 91:19–92:5.)

Additionally, I am aware that various surveys conducted by or on behalf of Apple support the above conclusions I reached regarding the drivers of Apple's success. For example, one survey report concluded that the key drivers in purchases of Macintosh computers include trust in the Apple brand, reliability, ease of use, quality, safety from viruses, and faster processors. (Increasing Mac Consideration and Purchase, APMW1009395–470 at APMW1009416; Tracking Mac Buyers, APMW0070820–901 at APMW0070845). Another survey report concluded that the top reasons for consumers purchasing iPhones include: (1) the desire for a combined phone, music, e–mail, and web device; (2) being a fan of Apple products; and (3) wanting the best mobile phone on the market. (iPhone Buyer Wave 2 Final Report, APMW1011723–91 at APMW1011748). As another example, comparing two iPod survey

reports indicates that overall satisfaction with iPods (approximately 95%) did not change with the introduction of Cover Flow. (Compare 5th Generation iPod Survey, APMW1066062–106 at APMW1066074 and iPod W5 Customer Research Summary, APMW1012711–870 at APMW1012778.)

Apple also expends significant resources and investment on research and development. This can be seen by the number of papers published by researchers at Apple over the years. On the other hand, I do not believe that the Mirror Worlds patents show any evidence of significant effort or serendipity, especially in view of the effort conducted by others in the art, including researchers at Apple. The Mirror Worlds patents disclose little evidence, such as user studies or surveys, showing a preference for the techniques claimed in the Mirror Worlds patents.

In addition, the Mirror Worlds patents provide few implementation details for many of the claimed features, and typically rely only on high level explanations, if any. For example, the Mirror Worlds patents provide only high level details of the mechanism for creating and assigning future timestamps. Another example is the limited disclosure of the claimed complex analysis techniques. Rather, the Mirror Worlds patents rely on the reader to search the art for suitable techniques.

I would also like to point out some failings of the Mirror Worlds patents. One essential premise of the Mirror Worlds patents is the notion of a main stream that is a time-ordered sequence of documents (inclusive of every document received or generated by a computer) functioning as a diary of a person's electronic life with past, present, and future portions. See Claim Construction Order, p. 2. Another premise underlying the Mirror Worlds patents is the desire to eliminate the need for naming of documents and files. See e.g., '227

patent, 4:44 45 (“Internally, the document is identified by a time indication so no name is required from the user for the document.”)

These two premises belie a fundamental flaw in the lifestream metaphor: not all data is suitable for a purely temporal metaphor/organization. Some data is impractical for organizing in a temporal fashion. For example, suppose I create a PowerPoint presentation whose slides are created in a different order than the intended sequence for the presentation. Organizing these slides by their creation dates could create a nightmare for retrieving these slides in their intended presentation order. This flaw is further highlighted by the use of substreams in the Mirror World patents. According to the Mirror World patents, substreams can be generated from the main stream or other substreams by filtering data by attributes other than time such as name or subject matter. See e.g., ’227 patent 4:62 67. Such nontemporal filtering implicitly recognizes that temporally-based organization is not always suitable for all types of data.

For at least these reasons, I do not find sufficient evidence of secondary considerations of non-obviousness that would lead me to find the inventions of the asserted claims of the Mirror Worlds patents non-obvious over the prior art by 1996.

X. INVALIDITY UNDER 35 USC §101 AND §112

As mentioned above, several of the asserted claims were found indefinite and therefore invalid. I understand that the claims of the patents–in–suit may be found invalid under 35 USC § 112 if the claims are indefinite, lack a proper written description, and/or do not enable on of ordinary skill in the art at the time the invention was made to make or use the claimed invention.

A. Lack of Antecedent Basis for Claims 9, 10, 13, 15, 17, 18, 19, 22, 24, 29, 31, 37 and 39 of the '427 patent

Claims 9, 10, 13, 15, 17, 18, 19, 22, 24, 29, 31, 37 and 39 of the '427 patent are indefinite because that lack sufficient antecedent basis.

Claims 9, 10, 13 and 15 of the '427 all depend from claim 8. The preamble of claim requires a "controlling operating system" and "another operating system."

Claim 9, however, requires "[a]n operating systems as in claim 8," however, it is not clear to one of ordinary skill in the art whether the "an operating system" set forth in claim 9 relates to a third operating system or one of the two operating system recited in the claim 8.

Claim 10 requires "[a]n operating system as in claim 8, however, it is not clear which "operating system" in claim 8 provide antecedent basis for the operating system in claim 10.

Claims 13 and 15 both recite "[a] stream–based operating system as in claim 8" however, no stream–based operating system is mentioned in claim 8.

Claims 17, 18, 19, 22, and 24 all depend from claim 16. The preamble of claim 16 requires a "controlling operating system" and "another operating system."

Claim 17, however, requires "[a]n operating systems as in claim 16," however, it is not clear to one of ordinary skill in the art whether the "an operating system" set forth in claim 17 relates to a third operating system or one of the two operating system recited in the claim 16.

Claims 18 and 19 both require "[a]n operating system as in claim 16, however, it is not clear which of the two the "controlling operating system" or the "another operating system" recited in claim 16 provide antecedent basis for the operating system in claim 19.

Claims 22 and 24 both recite "[a] stream–based operating system as in claim 16," however, no stream–based operating system is mentioned in claim 16.

Claims 29 and 31 depend from claim 25. The preamble of claim 25 requires a "document stream operating system" and "another operating system."

Claims 29 and 31, however, both require "[a] stream–based operating system as in claim 25," however, it is not clear to one of ordinary skill in the art whether the "stream–based operating system" set forth in claim 17 relates to a third operating system or the document stream operating system recited in the claim 25.

Claims 37 and 39 depend from method 32. However, claims 37 and 39 are directed to [a] stream–based operating system as in claim 32" not to a method. I understand that a claim that is directed to both a method and a system (i.e., an apparatus) is invalid for failure to comply with the statutory requirements of 35 USC §101.

XI. MATERIALITY

1. Legal Standards: Materiality and Cumulative Art

It has been explained to me that a party alleging inequitable conduct must show by clear and convincing evidence both:

(1) an affirmative misrepresentation of material fact, a failure to disclose material information, or submission of false material information; and

(2) an intent to deceive the USPTO examiner by such material falsity.

Information is material to patentability when it is not cumulative to information already of record in the prosecution of or being made of record in the application, and:

(1) it establishes, by itself or in combination with other information, a prima facie case of un–patentability of a claim; or

(2) it refutes, or is inconsistent with, a position the applicant takes in:

(a) opposing an argument of un–patentability relied on by the Office; or

(b) asserting an argument of patentability.

I have been told that a prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the "preponderance of evidence" burden–of–proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability. I understand that the standard for materiality is not significantly different than a "reasonable examiner" test. Under the "reasonable examiner" test, a misrepresentation or omission is not material unless a reasonable examiner would have considered the information important in deciding whether to grant the patent, even if the omitted information does not negate patentability.

I also understand that information is not material, however, if it is merely cumulative to, or less relevant than, information already considered by the examiner. In other words, even where an applicant fails to disclose an otherwise material prior art reference, that failure will not support a finding of inequitable conduct if the reference is 'simply cumulative to other references (i.e., if the reference teaches no more than what a reasonable examiner would consider to be taught by the prior art already before the USPTO).

B. Materiality of the CHI '92 "Piles" Article to the '227 Patent

I have been asked to provide an opinion with respect to the '227 patent as to the materiality of the article entitled "The 'Pile' metaphor for supporting casual organization of information," by Richard Mander, Gitta Salomon, and Yin Yin Wong ("CHI'92 'Piles' article"),

which appeared in the CHI ’92 Conference Proceedings, ACM Conference on Human Factors in Computing Systems, Monterey, California, 3–7, May 1992, pp. 627–634. APMW0011655–APMW0011662.

I have been informed that Dr. Eric Freeman and Dr. David Gelernter were aware of the CHI’92 “Piles” article before the ’227 patent issued on December 21, 1999. I understand that Dr. Freeman, made an interlibrary loan request on January 5, 1996 (a little over five months before the June 28, 1999 filing of the application which ultimately issued as ’227 patent) for an article entitled “The psychology of personal information management” by M. Lansdale. CD–0008548. I have been told that in this request, Dr. Freeman listed the Piles article as the citation source of the Lansdale article. See CD–0008548, Source column. I also understand that Dr. Freeman has testified that he was “definitely” aware in January 1996 of the Piles–related research conducted by Apple and was familiar with it in connection with his work relating to Lifestreams. Transcript of November 23, 2009 Deposition of Eric Thomas Freeman, 190:23–191:13.

As shown in the attached claim chart Exhibit 13A–13D of Apple’s Second Amended Invalidity Contentions, the CHI’92 “Piles” article discloses each and every limitation of at least one asserted claim of the ’227 patent. Thus, the CHI’92 “Piles” article anticipates these claims because it was published in May 1992 which is more than one year before the filing of the ’227 patent. Accordingly, the CHI’92 “Piles” article is material to patentability because it would establish by itself a prima facie case of un–patentability for these claims of the ’227 patent.

It is also my opinion that the CHI’92 “Piles” article is not cumulative of any of the information that was before the patent examiner during the prosecution of the ’227 patent.

For example, none of the references listed on the front page of the ’227 patent discloses the CHI’92 “Piles” article, or any other references describing Apple’s Piles –related work. While the ’227 patent does disclose the Lansdale and Malone references cited in the CHI’92 “Piles” article, neither of these two references describes or discloses any of the pile or stack related implementations disclosed in the CHI’92 “Piles” article. Thus, none of the references before the patent examiner during the prosecution of ’227 patent would have made the disclosures in the CHI’92 “Piles” article relevant to the ’227 patent redundant or cumulative.

C. Materiality of TR–1070 to the ’227 Patent

I have also been asked to provide an opinion with respect to the ’227 patent as to the materiality of Yale Technical Report 1070 entitled “The ’Lifestreams’ Approach to Reorganizing the Information World,” by Nicholas Carriero, Scott Fertig, Eric Freeman, and David Gelernter and dated April 1995 (“TR–1070”), APMW0014792–APMW0014802.

I understand that TR–1070 was identified to the USPTO in an Information Disclosure Statement (IDS) submitted March 19, 1998. ’227 patent file history, APMW0014832– APMW0014834. I also understand that the March 19, 1998 IDS states that TR–1070 “was stored at Yale University in the files of Christopher Hatchell, an Administrative Associate, whose tasks included distribution of this Technical Report,” and that “[a]ccording to Mr. Hatchell’s records and to the best of his knowledge, [TR–1070] was not distributed outside of the Department of Computer Science at Yale University.” ’227 patent file history, APMW0014832– APMW0014833. The March 19, 1998 IDS goes on to state “Further, the list containing bibliographic information about the Technical Report from which the technical report number was determined, is kept in a locked file in the Office of Computer Science at Yale

University." '227 patent file history, APMW0014833. TR–1070 is also not included on the form PTO–1149 initialed by the patent examiner. '227 patent file history, APMW0014834.

I have been informed, however, that contrary to the statements made in the March 19, 1998 IDS, TR–1070 was publicly available on or around April 1995. For example, I understand that TR–1070 had been distributed at least to the Technology Review, one or more individuals at Apple and to a University of Toronto graduate student before the filing date of the '227 patent. According to the testimony of Christopher Hatchell, Technical Report 1070 was actually available for distribution to any individual requesting it within one week of the April 1995 date printed on its first page. Transcript of the February 5, 2009 Deposition of Christopher Hatchell, 134:18–135:17. Mr. Hatchell also testified that a person visiting the Computer Science Department at Yale in the late 1980s to mid 1990s would be told what technical reports had been published by the department if they were requesting that information, and that technical reports were available without restriction to individuals requesting them during that time. Transcript of the February 5, 2009 Deposition of Christopher Hatchell, 120:14–25. Further, Mr. Hatchell disagreed with accuracy of the statements made in the March 19, 1998 IDS regarding TR–1070:

> "Q. Are you aware of any list containing bibliographic information about the technical report that is kept in a locked file in the Office of Computer Science at Yale University?
>
> A. No, I'm not.
>
> Q. So, as far as you know, the last sentence here: Further, the list containing bibliographic information about the technical report from which the technical report number was determined is kept in a locked file in the Office of Computer Science at Yale University. As far as your knowledge goes, that statement is not accurate.
>
> A. Yes, it is not accurate.
>
> Q. And you never told anyone that they should tell the patent office that the list containing bibliographic information about the

technical report was kept in a locked file in the Office of Computer Science?

A. To the best of my knowledge, I did not."

Transcript of the February 5, 2009 Deposition of C. Hatchell at 195:8–196:7.

As shown in the attached claim chart for TR–1070, TR–1070 discloses each and every limitation of at least one asserted claim of the '227 patent. Thus, TR–1070 anticipates these claims because it was published around April 1995 which is more than one year before the June 28, 1996 filing date of the '227 patent. Accordingly, TR–1070 is material to patentability because it would establish by itself a prima facie case of un–patentability for these claims of the '227 patent.

It is also my opinion that TR–1070 is not cumulative of any of the information that was before the patent examiner during the prosecution of the '227 patent. While there are five Lifestreams–related references listed on the front page of the '227 patent, none of these references render the disclosures in TR–1070 cumulative. For example, three of these Lifestream references[6] have publication dates that are: (1) after the April 1995 date of TR–1070 and (2) less than one–year prior to the June 28, 1996 filing date of the '227 patent (in fact, one of these references has a publication date of February 1997–which is after the '227 patent's filing date). The two other Lifestreams–related references: "Lifestreams Project Home Page" by E. Freeman, January 1, 1994 (APMW0014767– APMW0014769) and "The Cyber–Road Not Taken" article from the Washington Post by D. Gelernter, April 3, 1994 (APMW0014835– APMW0014843) do

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[6] These three references are:

(1) "Lifestreams for the Newton" by E. Freeman, Steve Mann's Developers Corner, Oct. 31, 1995;

(2) "Lifestreams" by Steinberg, Wired 5.02, Feb. 28, 1997;

(3) "Lifestreams: Organizing your Electronic Life" by E. Freeman et al., AAAI Fall Symposium, Al Applications in Knowledge Navigation and Retrieval, Nov. 30, 1995, Cambridge MA.

not have the level of detail or specificity as that provided in TR–1070. TR–1070 provides a detailed disclosure of the work conducted at Yale that led to the claimed inventions of the ’227 patent. Thus, none of these other Lifestream–related references before the patent examiner during the prosecution of ’227 patent would have made the disclosures in the TR–1070 relevant to the ’227 patent redundant or cumulative.

D. Materiality of MEMOIRS to the ’227 patent

I have also been asked to provide an opinion with respect to the ’227 patent as to the materiality of “MEMOIRS: A Personal Multimedia Information System” by M. W. Lansdale et al. that was published in 1989 as part of the Proceedings of the Fifth Conference of the British Computer Society, Human–Computer Interaction Specialist Group on People and Computers V. (“MEMOIRS”) (APMW0076640–APMW0076649).

I understand that the MEMOIRS system was identified by Eric Freeman, a named inventor on the ‘227 patent, as “the system that is closest in philosophy to Lifestreams.” Freeman 1997 Dissertation, pg. 147, Yale 000790. In his 1997 dissertation, Freeman described the MEMOIRS system as one that “uses chronology as an underlying storage scheme and search to organize documents. Memoirs uses a ‘timebase’ to display documents in a collection….The user can apply a filter to the timebase, which leaves only relevant [document representations] highlighted.” Id. I have been informed that the MEMOIRS article was not disclosed to the Patent Office during the prosecution of the ‘227 patent, despite the fact that it was cited and

analyzed in Freeman's dissertation that was published in 1997 before the '227 patent issued in 1999.[7] ("Freeman–cited Version").

As shown in the attached claim charts for MEMOIRS (Exhibits CA–CD in the Claim Charts Attachment), the MEMOIRS system has each and every limitation of at least one asserted claim of the '227 patent. Thus, MEMOIRS anticipates these claims because it was published around September 1989, which is more than one year before the June 28, 1996 filing date of the '227 patent. Therefore, MEMOIRS is material to patentability because it would establish by itself a prima facie case of un–patentability for at least one claim of the '227 patent.

Further, it is also my opinion that MEMOIRS is not cumulative of the information that was before the patent examiner during the prosecution of the '227 patent. While another article by Lansdale entitled "The Psychology of Personal Information Management," ("Lansdale") was listed on the front page of the '227 patent, this reference does not render the disclosure in MEMOIRS cumulative. For example, Lansdale discusses (1) how the "issues" involved in information management systems are "psychological in nature"; (2) how contemporaneous

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[7] Freeman's dissertation cites this article as M. Lansdale. Memoirs: A personal multimedia information system. *Personal Information Systems: Business Applications,* P.J. Thomas (Ed.), 1988. This citation appears to be in error. There is a 1995 publication with the same title and by the same editor that explicitly states that it is a reprinting of MEMOIRS from the "Proceedings of the HCI '89 Conference on People and Computers V, pp. 315–326 (Cambridge University Press)." Personal Information Systems, p. 132 (APMW0080794–APMW0080808 at APMW0080808).

systems are "inefficient with respect to the user's psychological needs"; and (3) "a frame work for developing user–oriented information management systems." (APMW0014844) Missing from Lansdale is a description of an information management system that addresses the "issues" raised in the article. In contract to Lansdale, MEMOIRS discloses the "development of a computerized personal information and database system [called] MEMOIRS….The system is based on a hypertext–style database in which each information node has links to a time–structured network (a 'Timebase')." (pg. 315) MEMOIRS discloses a system with a "complex" user interface that supports "a wide range of strategies and methods for retrieval of information." Id. In a section titled "The MEMOIRS System," the article discloses the following relevant elements of an existing "prototype" personal filing system:

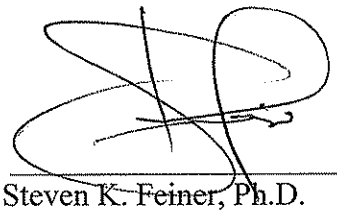
- Initial capture of heterogeneous file types (e.g., scanned documents or images, mail, and word processing documents) (pp. 320, 324);
- Automatic date stamping of documents that enter the system (pp. 320, 324);
- Recall of documents via "Time Context" and "Visual Recognition" (p. 321);
- A "Timebase" – "a chronological structured view the user is given onto he database [of documents]" (p. 323);
- A "live" database that is "continually being added to" (pg. 324); and
- Accommodation of "alarms and reminders." (p. 325).

In sum, the Lansdale article merely sets forth and analyzes a problem, while MEMOIRS presents an exemplary solution. Thus, the Lansdale reference that was before the patent examiner during the prosecution of the '227 patent would not have rendered the citation of MEMOIRS redundant or cumulative.

I declare that, to the best of my knowledge, the foregoing is true and correct as the facts stated and my opinions as expressed.

Executed this 20th day of May, 2010 at Palo Alto, California.

I declare that, to the best of my knowledge, the foregoing is true and correct as the facts stated and my opinions as expressed.

By: 

Steven K. Feiner, Ph.D.