

# Exhibit I

(Expert Report of Michael Stonebraker, Ph.D.)

to

TimeBase's Memorandum in Support of Its Motion  
for Summary Judgment of No Invalidity

**UNITED STATES DISTRICT COURT  
DISTRICT OF MINNESOTA**

**TIMEBASE PTY LTD,**

Plaintiff,

vs.

**Civil No. 07-CV-1687 (JNE/JJG)**

**THE THOMSON CORPORATION,  
WEST PUBLISHING CORPORATION,  
and WEST SERVICES, INC.,**

Defendant.

**EXPERT REPORT OF  
MICHAEL STONEBRAKER, PH.D.**

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**INVALIDITY ISSUES**

**FEBRUARY 28, 2011**

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## **I. INTRODUCTION**

I have been asked by defendants The Thomson Corporation, West Publishing Corporation, and West Services, Inc. (collectively, “West”) to provide a report and to testify regarding my opinions on topics in this case relating to the invention claimed in U.S. Patent No. 6,233,592 (“the ‘592 patent”) and U.S. Patent No. 7,293,228 (“the ‘228 patent”). In particular, I have been asked to provide my opinions regarding whether independent claims 24 and 36 and their dependent claims 25–35 and 37–48 of the ‘228 patent are invalid for failure to meet the written description requirement of 35 U.S.C. § 112.

## **II. QUALIFICATIONS**

I am an Adjunct Professor of Computer Science and Engineering at the Massachusetts Institute of Technology (“MIT”) in Cambridge, Massachusetts, with an appointment in the Computer Science and Artificial Intelligence Laboratory. Prior to joining MIT, I was a Professor of Computer Science at the University of California at Berkeley in various roles for nearly 30 years from 1971 to 1999. I have a Ph.D. in Computer Information and Control Engineering from the University of Michigan (1971) and a B.S. in Electrical Engineering from Princeton (1965). I also have served as an advisor to or a principal in various technology companies, including Ingres, Illustra, Cohera, Informix, Streambase Systems, Vertica, Goby, VoltDB, and Paradigm4.

My research and work over the years has included work on database systems, operating systems, query languages, data storage, graphical display systems, and software. In particular, my work has been directed toward, among other things, building

high performance database systems, parallel DBMS engines, and engines oriented toward extendability.

In connection with this work, I was one of the developers of the INGRES and POSTGRES database systems, as well as systems for catalog management and publication, data streaming, and data warehousing and storage, as well as query languages.

I have published over 75 papers in peer-reviewed publications and have given over 25 invited presentations in international and national scientific meetings, many of which relate directly to the field of database systems. Many of my publications also relate directly to database design. I am a co-author or co-editor of several books, including *Readings in Database Systems* and *Object-Relational DBMSs: The Next Wave*. In addition, I have served in a number of professional organizations involved in researching and developing databases.

Over the years, I have received various awards in connection with my work, including the IEEE John von Neumann Medal, the ACM/SIGMOD Edgar F. Codd Innovations Award, and the ACM Software System Award. I am a Fellow of the Association for Computing Machinery and am a member of the National Academy of Engineering. I was also recently elected to membership in the American Academy of Arts and Science.

A copy of my current professional resume is attached as Appendix 1 to this report, which includes a list of publications I have authored or co-authored within the last ten years as well as a list of recent cases for which I have been retained as an expert.

### **III. COMPENSATION**

I am being compensated at the rate of \$500 per hour for my time consulting or testifying in this case. This compensation is unrelated to the outcome of this case.

### **IV. MATERIALS REVIEWED**

In forming my opinions and preparing this report, I have reviewed and relied on the '592 and '228 patents, the prosecution histories for the '592 and '228 patents (including the Ex Parte Reexamination of the '592 patent), the Court's Order of January 21, 2011 ("Claim Construction Order") (Dkt. 219), and references listed in Appendix 2 of this report, together with miscellaneous other documents, materials, and references. I may use some or all of these documents as exhibits during my testimony.

### **V. BASIS OF OPINIONS**

My opinions are based on my personal knowledge and expertise and my review and investigation of the items and materials described above. All of my opinions, and the bases of those opinions, are true and correct to the best of my knowledge and belief, including those relating to scientific issues, which I believe are true and correct to a reasonable degree of scientific certainty. I do, however, reserve the right to supplement this report and my opinions in view of any new material or information provided to me. In addition, if called upon to testify at trial, I would expect to use various demonstrative exhibits, animations, videos, and/or models and charts to show the relevant technology and to present my opinions as set forth in this report.

## **VI. DESCRIPTION OF THE PATENTS**

The patents in this case relate generally to systems and methods for electronically publishing text-based data based on various elements, including an element that the patents call a “multidimensional space.” In this section, I have summarized background information about both the ‘592 and the ‘228 patents and their claim terms, and then focused on particular elements of the ‘228 patent that relate to my opinion on written description.

### **A. THE ‘592 AND ‘228 PATENTS**

I understand that the ‘592 patent originally issued on May 15, 2001. I understand that a third-party initiated an *ex parte* reexamination of the ‘592 patent and that the patent subsequently emerged from reexamination on May 5, 2009 with three additional independent claims, for a total of 61 claims. Six of these claims are independent claims and the remaining 55 claims are dependent claims. The inventors named on the ‘592 patent are Christoph Schnelle, Abha Lessing, and Peter Mariani. I understand that TimeBase contends that the ‘592 patent application claims priority to a Patent Cooperation Treaty application filed on January 30, 1998, which in turn claims priority to an Australian patent application filed on January 31, 1997.

I understand that the ‘228 patent issued on November 6, 2007 and stems from an application filed on October 12, 2000. I understand that the original ‘228 patent application named Abha Lessing, Christoph Schnelle, Paul William Leslie, and Geoffrey John Nolan as the inventors. The original ‘228 patent application incorporated by reference the specification of the ‘592 patent application, but did not claim priority to the



'592 patent application. I understand that on August 2, 2006, TimeBase submitted new claims for the '228 patent application, inserted the specification of the '592's application into the specification of the '228 patent application, and then claimed that the '228 patent shared the same priority date of January 31, 1997 as the '592 patent. I understand that, as a consequence, the '592 patent's specification is a subset of the '228 patent specification. I also understand that in November, 2009, TimeBase changed the inventors for the '228 patent, claiming that the inventors of all of the claims of the '228 patent should be the same three inventors listed on the '592 patent—Christoph Schnelle, Abha Lessing, and Peter Mariani. I further understand that TimeBase has stated that all of the claims pertaining to the invention of the '592 patent and the '228 patent were conceived on October 14, 1996 by these three inventors.

For convenience, I have attached a copy of the Australian patent application as Appendix 3; a copy of the PCT application as Appendix 4; a copy of the '592 patent as Appendix 5; a copy of the '592 reexamination certificate as Appendix 6; and a copy of the '228 patent as Appendix 7.

## **B. MEANING OF CLAIM TERMS**

I understand that the Court has construed several terms and phrases of the claims of the patents in its Claim Construction Order. In particular, I understand that the Court has issued the following claim construction rulings:

<b>Term or Phrase</b>	<b>Court's Construction</b>
Multidimensional Space	An area not having boundaries and that is capable of, or involves, more than three dimensions, where the dimensions are axes along which, or along some combination of which, point-to-point movement is allowed
Linking Means	<u>Function</u> : Logically connecting a block of text-based data to another specific block of text-based data <u>Structure</u> : Markup language that uses reference IDs, each of which uniquely identifies a specific block of text-based data
Link	A connection between portions of text-based data utilizing a markup language
Each	Every one considered separately
Attributes	Characteristics or descriptors of text-based data
Graphical Representation	A pictorial presentation or pictorial display, which may include some textual information
Displaying	Showing on an electronic video device capable of changing in real time in response to inputs, such as a CRT monitor, an LCD monitor, or a projector and screen
Dividing	Separating into two or more suitable parts
Portion	A part of the text-based data to be published
Predefined Portion	A suitable part of the text-based data to be published that is chosen for storage at a particular point in the multidimensional space

I understand that the parties also have agreed on the construction of the following claim terms and phrases:

<b>Term or Phrase</b>	<b>Parties' Agreed Construction</b>
Amended	Altered or changed in some way
Modified	Altered or changed in some way

Term or Phrase	Parties' Agreed Construction
Means for Searching / Searching Means	<p><u>Function</u>: As set forth in the claims</p> <p><u>Structure</u>: Software for locating text-based data using attributes, links, portions, words or phrases, or the equivalent</p>
Step of Searching / Searching Step	<p><u>Function</u>: As set forth in the claims</p> <p><u>Structure</u>: Using software to locate text-based data using attributes, links, portions, words or phrases, or the equivalent</p>

For purposes of forming my opinions, I have adopted and applied these claim constructions. For terms and phrases that have not been construed by the Court and for which there is not already an agreed construction, I have applied the ordinary meaning that, in my opinion, would have been given to the term or phrase in question by a person of ordinary skill in the art as of January 31, 1997.

I reserve the right to supplement or amend any of my opinions set forth in this report based on any additional claim construction rulings by the Court or based on any additional agreements by the parties regarding the meaning of particular claim terms or phrases.

### **C. THE SUBJECT MATTER OF THE PATENTS**

Both the '592 and '228 patents relate generally to systems and methods for publishing electronic information. The electronic publishing systems and methods described in the patents focus on text-based information that changes over time, particularly legislation. In general, the patents describe systems and methods that organize versions of text-based information (such as a medical record or a legislative Act) by dividing the text into portions and storing each portion as it changes, encoding the text

with markup languages, linking related portions of text to other portions, and using attributes in connection with a “multidimensional space” to organize, display, link, and navigate the portions of text contained in the multidimensional space. In the following sections, I focus my discussion on particular elements of the ‘228 patent that relate to my opinions on written description. As noted above, because the ‘228 patent fully incorporates the specification of the ‘592 patent, for convenience my citations are to the ‘228 patent only.

### **1. Multidimensional Space**

One key element of the patented invention is a “multidimensional space.” The Court has construed **multidimensional space** to mean:

**An area not having boundaries and that is capable of, or involves, more than three dimensions, where the dimensions are axes along which, or along some combination of which, point-to-point movement is allowed.**

(Claim Construction Order, 11.)

The patent specification of the ‘228 patent (which incorporates the entire specification of the ‘592 patent) describes the concept of this multidimensional space. The claimed multidimensional space conceptually consists of “axes” and “points” along each axis. Each axis is a type of attribute, such as jurisdiction, type, section number, and effective date for a legislative Act. Each portion of text-based data within the multidimensional space is associated with a number of attributes, corresponding to the number of axes within the multidimensional space. The values of these attributes correspond to “points” along each axis. For example, the attribute values for a particular portion of a statute might be “California” for jurisdiction; “statute” for type; “§ 201” for

section number; and “January 1, 2003” for the initial effective date. Each point within the multidimensional space represents a combination of attribute values. Each portion of text-based data is assigned to the point within the multidimensional space corresponding to its specific attribute values.

In other words, according to the specification of the ‘228 patent, portions of text-based data are selected for storage as points in the multidimensional space. Attributes are assigned to each portion of text and, based on the values of these attributes, the portions of text are assigned to locations that become “points” or “nodes” in the multidimensional space. Once the portions are assigned to locations, the sequence of the portions along any “axis” is known.

An important feature of the multidimensional space is that the dimensions are “axes along which, or along some combination of which, point-to-point movement is allowed.” (Claim Construction Order, 9.) In other words, the multidimensional space allows a user to navigate sequentially along each axis from one portion of text to the next or previous adjacent portion of text. As the specification of the ‘228 patent states, “[t]he effect of mapping nodes . . . is that a course . . . through the information represented in the three-dimensional space . . . can be easily plotted.” (‘228 patent, 12:28-30.) Based on these known coordinates, “it is possible to move easily between points in the multidimensional space . . . .” (‘228 patent, 12:26-27.) The multidimensional space, therefore, is one in which a user can, through the use of a user interface, view a portion of text and move directly to any previous or next portion of text along any axis in the multidimensional space.

The first four figures of the '228 patent specification purport to describe the concept of a multidimensional space and movement along the axes within the space; however, rather than achieving this difficult task, the figures simply display a bounded, three-dimensional space, populated with a very small number of points. Indeed, the '228 patent specification concedes that although the claimed multidimensional space has *more than* three dimensions, or axes ('228 patent, 12:12-14), the figures illustrate the concept by using a three-dimensional grid for convenience ('228 patent, Figs. 1-4, 15:10-11 ("To simplify the diagram, only three axes are illustrated . . . .")). In Figure 1 of the '228 patent (shown below), for example, the three-dimensional space concept is "represented by a layered grid." ('228 patent, 12:17.) The various axes or pathways are shown as vertical and horizontal lines, but could appear "at all angles and inclines." ('228 patent, 12:20.) The intersections of the lines of the grid are "points" (or "nodes") where portions of text are located. ('228 patent, 12:21-24.)

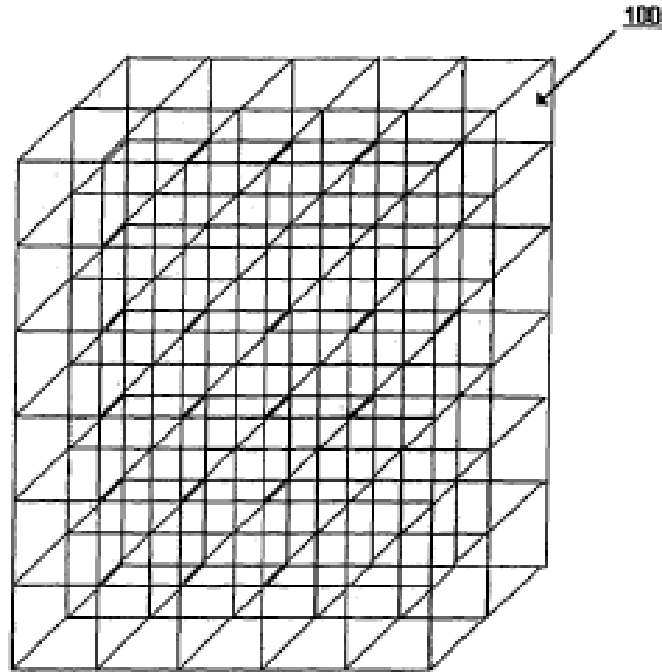
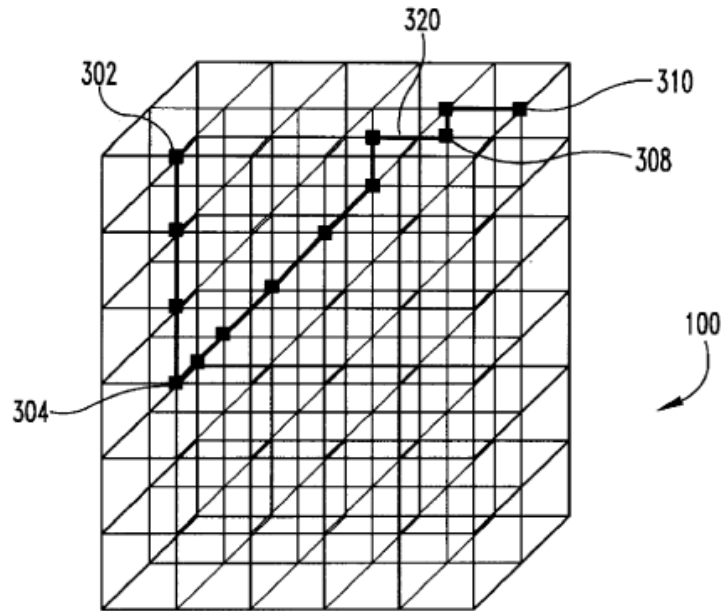


Fig. 1

Figure 3 of the '228 patent, which is shown below, illustrates a three-dimensional space that is populated with portions of text-based data depicted by points on the axes located at the nodes (intersections between axes). The darker lines on Figure 3 depict point-to-point movement between the portions of text. This movement is from point-to-point along axes (dimensions) in the three-dimensional space. In this example, “the user begins the course **320** at node **302** and progresses vertically downward to the fourth node **304**.” ('228 patent, 12:30-32.)



**Fig. 3**

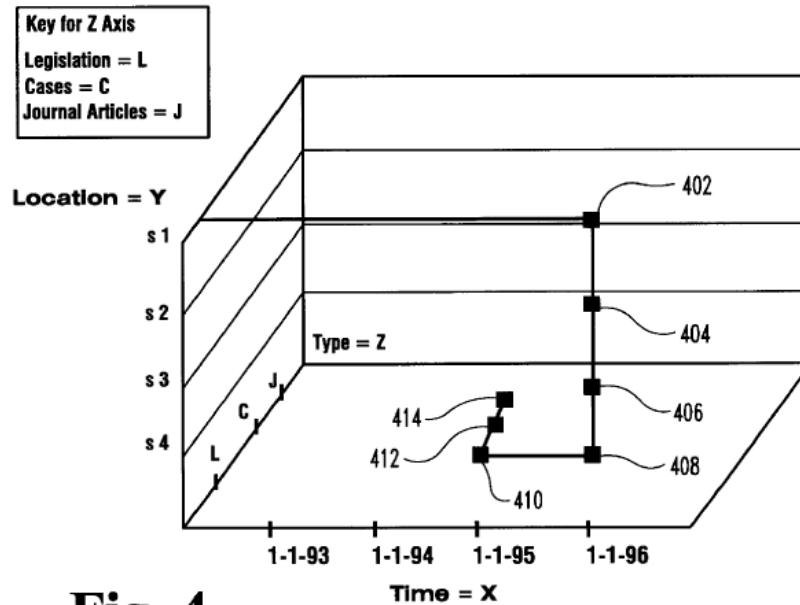
Figure 4 of the '228 patent (shown below) shows specifically how an end-user can navigate portions of legal text using the conceptual cube depicting the three-dimensional space. ('228 patent, 14:53-55.) In particular, the patent states that:

In FIG. 4, the X-, Y-, and Z-axes indicate time (Time), the legislative provision (location), and type (eg, legislation=L, cases=C, and journal articles=J). To simplify the diagram, only three axes are illustrated[;] however, other axes may be included dependent upon the number of dimensions of the space. In the first embodiment, the multidimensional space also includes another three axes: jurisdiction=U, subject=V, and depth=W. Thus, the space according to the first embodiment has six dimensions. In the six-dimensional case, it is possible to move along each axis and at the points of intersection change direction, as well as find and/or follow new or additional information.

('228 patent, 15:8-19.) The patent then goes on to describe how the end-user begins at node **402**, follows a path through nodes **404**, **406**, and **408**, then selects Section 4 of the legislation as of January 1, 1995 by moving to node **410**, from which the end user could



move to other information by moving to nodes **412** or **414**. ('228 patent, 15:20-45.) The patent states that “[t]he foregoing is only one possible route through the multidimensional space of information,” and that “[o]ther more complicated and interrelated pathways involving axes U, V and W are possible.” ('228 patent, 15:39-42.)



**Fig. 4**

According to the ‘228 patent, this movement between portions along pathways “is a significant functional aspect of the embodiments of the invention.” ('228 patent, 12:23-24.)

## 2. Graphical Representation of a Multidimensional Space

Two independent claims of the ‘228 patent specifically involve a “graphical representation” of the patent’s multidimensional space. Claims 24 and 36 of the ‘228 patent both claim methods that require a display of a graphical representation of the multidimensional space.

Claim 24 claims:

A method for electronically publishing text-based data, the method comprising:

dividing the text-based data into a plurality of portions of text-based data;

obtaining an amended portion of text-based data that is amended relative to one of the plurality of portions of text-based data;

storing each of the plurality of portions of text-based data;

storing the amended portion of text-based data;

providing a plurality of attributes, wherein the attributes define a manner in which the plurality of portions of text-based data and the amended portion of text-based data can be organized, displayed and linked;

encoding each of the plurality of portions of text-based data and the amended portion of text-based data with a markup language to include at least one link defined by one of the plurality of attributes;

allowing a user to search the text-based data using at least one of the plurality of attributes; and

displaying the text-based data to the user by:

displaying at least one of the plurality of portions of text-based data or the amended portion of text-based data in response to the search; and

displaying one or more selectable links;

**wherein when the user selects the one or more selectable links, the plurality of portions related to a current portion based on the current portion's attributes are displayed as a graphical representation of a multidimensional space that is configured to allow a user to select and thereby display text-based data represented by a point on the multidimensional space.**

('228 patent, 164:60-67, 165:1-22 (emphasis added).)

Similarly, claim 36 claims:

A method for electronically searching text-based data encoded with a mark-up language, the method comprising:

allowing a user to select a version date as a primary attribute and to input at least one search request;

producing results based on the text of the text-based data;

displaying the results in a format that is configured to allow the user to select one of the results;

displaying the result as a portion of text-based data corresponding to a selected result that corresponds to the at least one attribute and the at least one search request;

displaying a link;

allowing a user to select the link;

**whereupon the plurality of portions related to a current portion are displayed as a graphical representation of a multidimensional space; and**

allowing the user to select and thereby display text-based data represented by a point on the multidimensional space;

wherein each point on the multidimensional space is defined by the value of one or more of a plurality of attributes.

(‘228 patent, 165:60-63, 166:1-19 (emphasis added).)

From the above claim language, it is clear that a key element of the methods of claims 24 and 36 is a display of a graphical representation of a multidimensional space. Claims 25-35 and claims 37-48 depend on claims 24 and 36 and therefore also include this requirement for a graphical representation of a multidimensional space.

In addition to its construction of “multidimensional space,” the Court also construed two other terms relevant to the display of a “graphical representation of a multidimensional space” in claims 24 and 36 and their accompanying dependent claims. First, the Court construed graphical representation to mean:

**a pictorial presentation or pictorial display, which may include some textual information.**

(Claim Construction Order, 25.) Second, the Court construed displaying to mean:

**showing on an electronic video device capable of changing in real time in response to inputs, such as a CRT monitor, an LCD monitor, or a projector and screen.**

(Claim Construction Order, 25.)

Taken together, these elements of independent claims 24 and 36 require a method in which a multidimensional space (an area that is capable of or involves more than three dimensions) is pictorially displayed on a video device, such as a CRT monitor, an LCD monitor, or a projector and screen.

## **VII. APPLICABLE LEGAL STANDARDS**

I have been informed of the legal standards relating to a person of ordinary skill in the art and to the written description requirement. In this section, I set forth my general understanding of the applicable legal standards. For purposes of my report, I assume that these legal standards are correct.

### **A. PERSON OF ORDINARY SKILL IN THE ART**

I understand that the determination of the hypothetical person of ordinary skill in the art is a finding of fact. In addition, I understand that the person of ordinary skill in

the art is a fictitious person presumed to have the typical level of skill of practitioners in the field and is presumed to be aware of all pertinent prior art in the field. I also understand that the level of skill in the art is measured as of the effective filing date of the patent application.

I understand that many factors are considered in defining a hypothetical person of ordinary skill in the art including: (1) the types of problems encountered in the art; (2) the prior art solutions to those problems; (3) the rapidity with which innovations are made; (4) the sophistication of the technology; and (5) the educational level of active workers in the field. I understand that not each of these factors must be considered in every case and that additional factors are often relevant.

I understand that TimeBase and West generally agree that a person of ordinary skill in this art as of January 31, 1997 would have a computer science or similar technical degree, with experience working with database technology while obtaining their degree, or, if the person did not have this experience during their academic training, the commensurate experience in research or development in industry, academia, or an institutional equivalent in this area. Based on my knowledge and experience working in the field of database systems and electronic publishing, I agree with this assessment.

## **B. WRITTEN DESCRIPTION**

I understand that whether a patent specification satisfies the written description requirement is a question of fact that is determined on a claim-by-claim basis. This question of fact, I understand, is an objective inquiry that is analyzed from the

perspective of a person of ordinary skill in the art as of the effective filing date of the patent.

I understand that the purpose of the written description requirement is to ensure that the public is put on notice of the boundaries of the invention being claimed and that the claims do not overreach the scope of the inventor's contribution to the field of art as described in the patent specification.

I understand that, under the written description requirement, the test is whether the disclosures in the patent reasonably convey to those skilled in the art that the inventor had possession of the claimed subject matter as of the effective filing date. Therefore, an objective inquiry must be made into the four corners of the specification from the perspective of a person of ordinary skill in the art. The specification must describe an invention in a way that is understandable to a person of ordinary skill in the art and show that the inventor actually invented the invention claimed.

I understand that the level of detail required to satisfy the written description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology. For example, I understand that the patentee may need to provide more details for complex, new, or unpredictable technologies than for comparatively simple, old, or predictable technologies. I understand that it is not sufficient for purposes of the written description requirement that the disclosure, when combined with the knowledge of persons of skill in the art, would have lead one to speculate as to modifications that the inventor might have envisioned, but failed to disclose. I understand, for example, that the question is not whether a

claimed invention would have been obvious based on what is disclosed in the specification. I also understand that a mere wish or plan for obtaining the claimed invention does not amount to an adequate written description. Instead, the specification itself must describe the invention, and do so in sufficient detail that one skilled in the art can clearly conclude that the inventor invented the claimed invention as of the effective filing date being sought. Furthermore, I understand that it is not sufficient to disclose a small subset of a claimed range when the disclosure of the small subset would not convey to a person of ordinary skill in the art that the inventor had possession of the entire range. I understand that this is particularly true when the variations over the entire range are technically unpredictable.

## **VIII. OPINIONS**

### **A. INTRODUCTION**

In my opinion, the '228 patent lacks a written description of independent claims 24 and 36, as well as their dependent claims 25-35 and 37-48. In particular, the specification of the '228 patent does not disclose the “graphical representation of a multidimensional space” and a method of displaying this graphical representation on a video display as required by claims 24 and 36 and the accompanying dependent claims. In my opinion, there is nothing in the specification of the '228 patents that would suggest to a person of ordinary skill in the art that the inventors were in possession of these method steps in January 1997, the earliest possible effective filing date of '228 patent, or even in October 2000, the actual filing date of the original '228 patent application.

In forming my opinions on the written description of claims 24 and 36, I have reviewed the entire specifications of both the '592 and '228 patents and the specifications for the original Australian application and the PCT application. As noted above, I understand that TimeBase contends that all of the matter claimed by the '228 patent claims was fully disclosed in the '592 patent application. I further understand that the two patents now share the same inventors and that TimeBase contends that the claims of the '228 patent are entitled to the same priority date as the '592 patent. I understand that for TimeBase to obtain the priority date of January 31, 1997 for the '228 patent claims, those claims must have been adequately disclosed not only by the specification of the '592 patent (filed as United States Patent Application No. 90/108,999 on July 1, 1998), but also must have been disclosed by PCT Patent Application No. PCT/AU98/00050 filed January 30, 1998, and Australian Patent Application No. 04892 filed January 31, 1997, to which the '592 patent claims priority.

I understand that the '228 patent specification contains additional information not disclosed by the '592 patent specification or the Australian application to which the '592 patent claims priority. I understand that if the '228 claims are supported only by the information that appears solely in the '228 patent application, then TimeBase would not be entitled to the filing date of the '592 patent or its Australian counterpart.<sup>1</sup>

Nevertheless, to be thorough, I have reviewed the entire '228 specification, and in my

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<sup>1</sup> My understanding is that if TimeBase argues that claims 24 and 36 were disclosed by material unique to the '228 patent specification, then TimeBase necessarily revokes its earlier claims to the priority date of the '592 patent. If TimeBase revokes that claim, I may have additional opinions to offer regarding the validity of the '228 patent.



opinion neither the '228 patent specification, the '592 patent specification, nor the Australian application discloses the invention claimed in claims 24 and 36 of the '228 patent and their accompanying dependent claims. Therefore, for convenience, in my discussion below I focus on the entire '228 patent, which already includes the disclosures of the earlier applications.

**B. THE METHOD OF CLAIMS 24 AND 36 IS NOT DISCLOSED IN THE '228 PATENT SPECIFICATION**

In forming my opinions, I specifically sought to determine whether a person of ordinary skill in the art as of the time of any of the filing dates would find a disclosure in the '228 patent specification of the invention claimed by claims 24 and 36 and would understand that the inventors were in possession of the invention. Both of these method claims require a “graphical representation of a multidimensional space” and the method of displaying portions of text as a graphical representation of the multidimensional space. As described in section VI.C.2, under the Court’s claim construction, this means that the multidimensional space must be pictorially displayed on a video device, such as a CRT monitor, an LCD monitor, or a projector and screen. The multidimensional space as construed by the Court is “an area not having boundaries and that is capable of, or involves, more than three dimensions.” The Court construed dimensions to be “axes along which, or along some combination of which, point-to-point movement is allowed.” Using these definitions, a “graphical representation of a multidimensional space” is a pictorial display on a video device of an area not having boundaries, showing

more than three axes along which, or along some combination of which, point-to-point movement is allowed.

As explained in more detail below, I searched each and every part of the one-hundred-page-plus '228 patent for a disclosure of a pictorial display of a multidimensional space and a method for displaying the portions of text as a graphical representation of the multidimensional space on a video display. I found none. As described below, my analysis first looked at the general text of the specification and then examined all of the figures, the screen shots, the tables, and other appendices, together with their accompanying text. A chart showing my findings is attached to this report as Appendix 8.

**1. The General Text of the Specification for the '228 Patent Does Not Discuss or Disclose a Graphical Representation of a Multidimensional Space**

In undertaking my analysis, I first reviewed the specification of the '228 patent to determine whether there was any explicit discussion of a “graphical representation of a multidimensional space.” In reviewing the specification, I did not find any such explicit discussion. In fact, those specific words literally do not appear anywhere in the text of the '228 patent other than claims 24 and 36 themselves. In addition, these specific words in the claim were not added until August 2006 and are not part of any of the patent applications as originally filed.

Next, I reviewed the text of the specification of the '228 patent to determine whether there might be any disclosure that a person of ordinary skill in the art would understand to be a description of the graphical representation of a multidimensional space

required by claims 24 and 36 and the claimed method of display. I could find no such disclosure. No aspect of the specification discloses or describes an electronic publishing system that includes a graphical representation of a multidimensional space. While much of the specification is devoted to describing how a user might navigate in a conceptual space containing three dimensions using a primarily text-based user interface, nothing in the specification describes the graphical depiction of a multidimensional space on a video display. In particular, no aspect of the specification discloses or describes a method for electronically publishing or searching text-based data, where a space with more than three dimensions is displayed pictorially on a video device. In my opinion, a person of ordinary skill in the art as of the claimed effective date of January 31, 1997 or any of the other filing dates would have absolutely no idea that the inventors possessed such a method.

Furthermore, the video displays described by the specification primarily utilize off-the-shelf text retrieval software, such as Folio Views or Dynatext. To the best of my knowledge, these software packages are not capable of pictorially displaying a multidimensional space (having more than three, and at least six or seven dimensions). In short, in my opinion, nothing in the general text of the specification depicts or describes a graphical representation of a space with more than three dimensions or the claimed method of displaying portions of text as a graphical representation of the multidimensional space.

## 2. None of the Figures in the Specification Disclose or Describe a Graphical Representation of a Multidimensional Space

I next reviewed each of the figures in the '228 patent and the text in the specification pertaining to each figure. Nothing in these figures would have conveyed to a person of ordinary skill in the art that the inventors possessed the claimed “graphical representation of a multidimensional space” in January 1997 or any of the other filing dates.

The fact that the inventors portrayed a bounded, three-dimensional space in Figures 1–4 does not change my opinion. For convenience, Figure 1 is shown below:

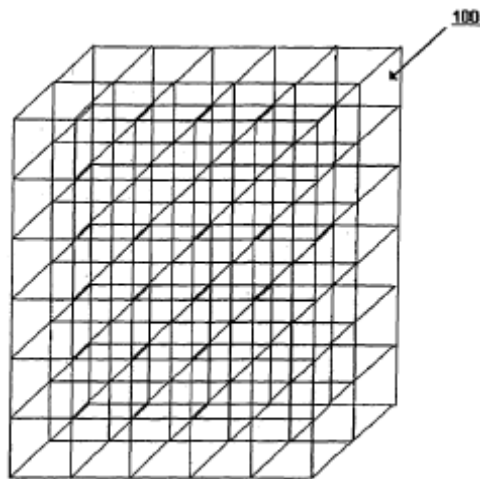
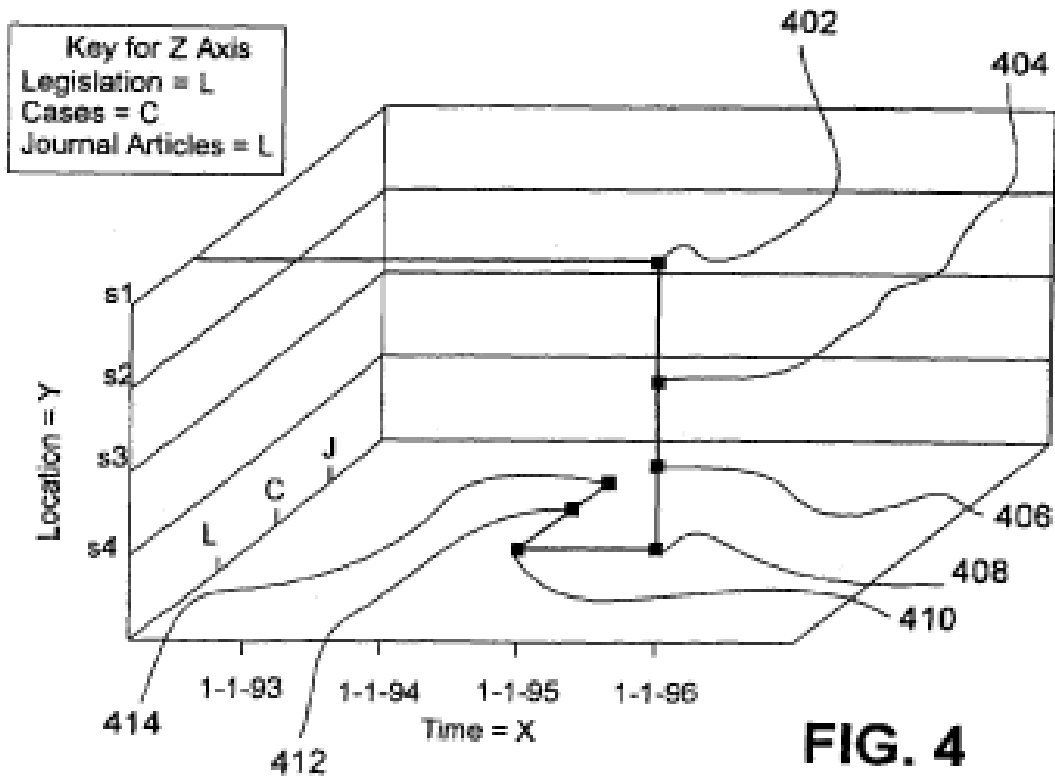


Fig. 1

The inventors explained that although Figure 1 conceptually represents the multidimensional space by a “layered grid” containing vertical and horizontal lines, “in *reality* (in the case of more than two dimensions)” the lines would be at “all angles and inclines.” (‘228 patent, 12:16-20 (emphasis added).) In other words, the inventors chose to rely on a three-dimensional space with a “layered grid,” even though this depiction in reality does not disclose or describe the claimed multidimensional space. Figures 1–3 do

not show a multidimensional space because a multidimensional space must be capable of or involve *more than* three dimensions. Moreover, this “layered grid” has finite edges, showing that it is bounded, whereas the multidimensional space of the patents is an “area not having boundaries.” Furthermore, Figures 1–3 do not purport to depict a display on any video screen or computer screen, as required by the claims of the patent. In short, a person of ordinary skill in the art would not understand that Figures 1–3 were intended to depict or describe a way of graphically displaying the claimed multidimensional space in a system for electronically publishing or searching text-based data. Instead, these figures appear to be conceptual diagrams meant only to help the reader of the patent understand how a bounded, three-dimensional space might be visualized.

Figure 4 of the ‘228 patent specification, shown below, also does not disclose a graphical representation of a multidimensional space:



**FIG. 4**

The specification says that Figure 4 “illustrates the application of legal information to mapped nodes according to the first embodiment.” (‘228 patent, 8:29-30.) According to the specification, Figure 4 “provides an example of how legal information is navigated by an end user.” (‘228 patent, 14:54-55.) Figure 4 shows seven pieces of legislation that are located (assigned, or mapped) to points on the three-dimensional grid depending on their attributes. Once again, the inventors chose to portray a three dimensional space with a “layered grid,” even though this depiction does not in reality depict the claimed multidimensional space.

Figure 4 and the accompanying text would not demonstrate to a person of ordinary skill in the art that the inventors possessed the invention of pictorially displaying numerous dimensions. To the contrary, the inventors explained: “To simplify the diagram, *only three axes are illustrated*, however, other axes may be included dependent

upon the number of dimensions of the space.” (‘228 patent, 15:10-11 (emphasis added).) Here again, the inventors did not disclose anything that would work for more than three dimensions.

Furthermore, Figure 4 does not purport to depict a display on any video screen or computer screen, as required by claims 24 and 36 of the ‘228 patent. A person of ordinary skill in the art would not understand that Figure 4 was intended to depict or describe a way of displaying a graphical representation of a multidimensional space in a system for electronically publishing or searching text-based data. Instead, this appears to be a conceptual diagram meant only to help the reader of the patent understand how a three-dimensional space might be visualized. In sum, like Figures 1–3, Figure 4 does not depict a graphical representation of a multidimensional space or the claimed method of displaying portions of text as a graphical representation of the multidimensional space.

The computer screen illustrations (“screen shots”) in Figures 7–17 also do not depict a graphical representation of a multidimensional space. These screen shots all show a Folio Views user interface containing some standard Windows features, such as drop down menu buttons. The information within these ordinary windows is primarily textual. For example, Figure 13 is shown below:

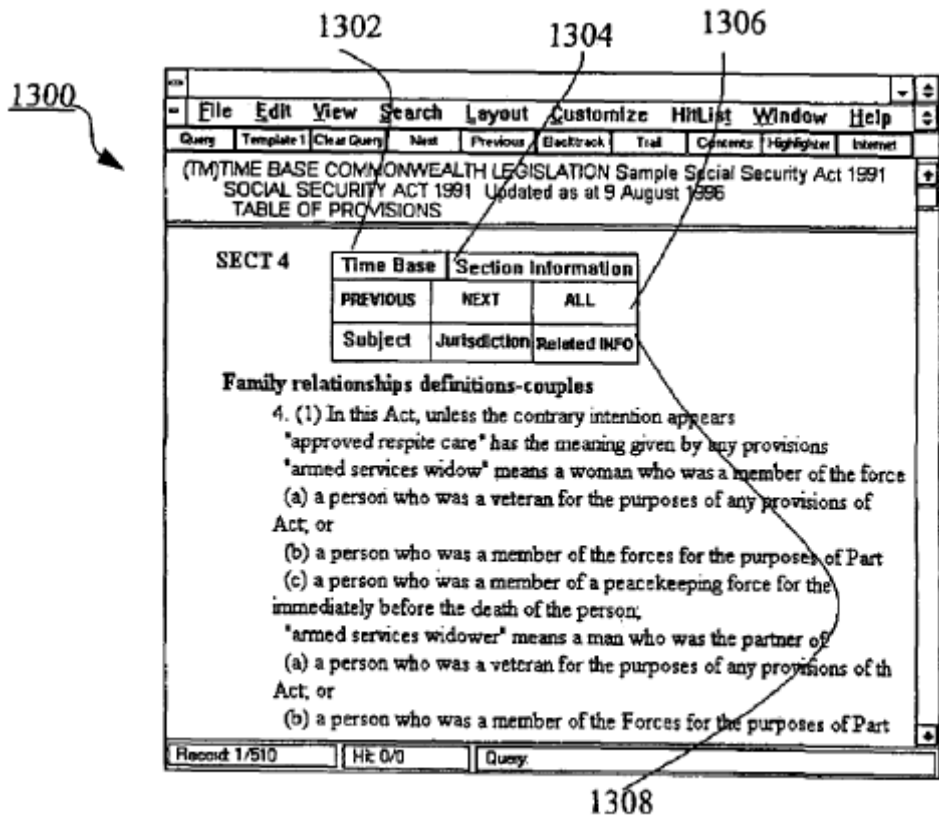


Fig. 13

Figure 13 shows the text of a portion of legislation, namely “Family relationships definitions-couples.” In addition to the text of the legislation and the standard Windows-type menus along the top, Figure 13 shows a “toolbar,” labeled 1302. This toolbar contains eight “buttons,” which are described in the ‘228 patent specification at lines 17:62–18:13. These buttons are provided “for accessing time based information” (‘228 patent, 17:63-64) and allow a user to select the previous, next, or all versions of this piece of legislation. By clicking on other buttons, a user may view other portions of text-based data, such as “sections dealing with a similar subject, or similar sections in other jurisdictions, or related information such as cases and articles on or about the section” (label 1308). (‘228 patent, 18:6-8.) The toolbar also allows a user to view an “overview”



of the portion of text-based data (label 1304). ('228 patent, 18:1.) But all of this information is presented textually, not graphically. For example, Figure 14 provides a textual display of the information that appears if the "Section Information" (label 1304) button is selected. ('228 patent, 18:14-20). Figure 15 similarly provides a textual display of the information that appears when the "Previous" button is selected. ('228 patent, 18:21-28). In short, this toolbar, and the information that appears when these buttons are selected, are not graphical representations of a multidimensional space.

Finally, Figures 18–20 and 22A–C do not depict a graphical representation of a multidimensional space. Figure 18 is representative of these figures, and is shown below:

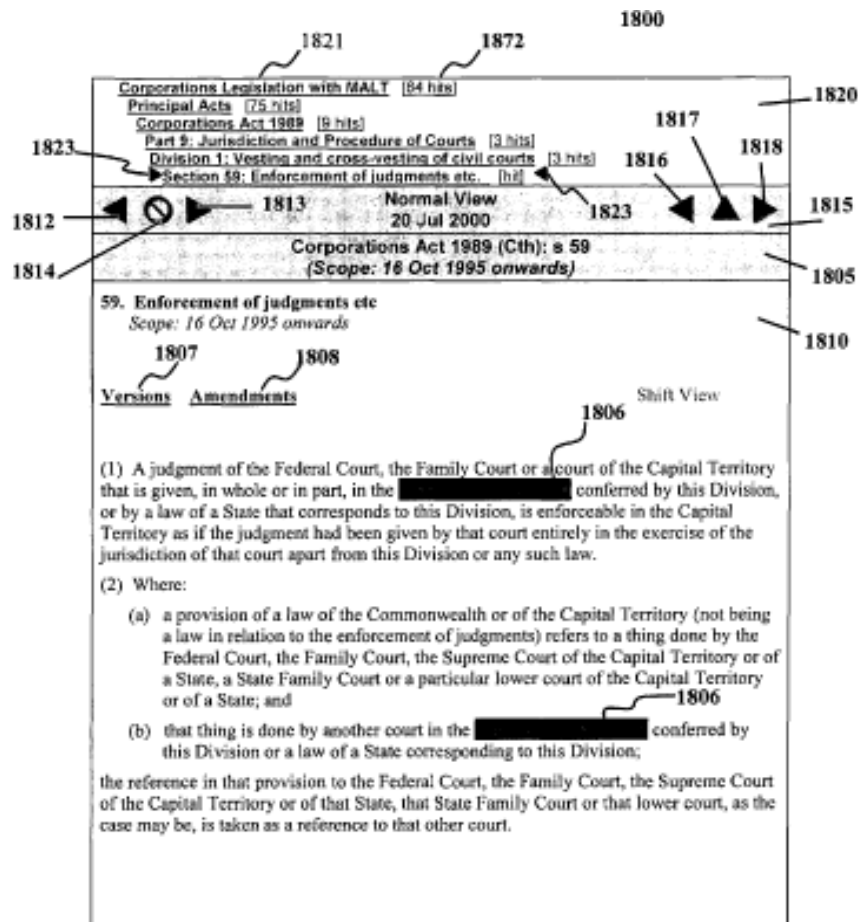


Fig. 18

The specification of the '228 patent says that Figure 18 "is a screen shot of a Normal axis view of a MALT publication (with a search mode enabled) in accordance with an embodiment of the present invention." ('228 patent, 8:42-44.) Figure 18 shows "a screenshot **1800** depicting a section of legislation in accordance with an embodiment of the invention." ('228 patent, 22:26-27.) The "content frame" is at 1810, and it "displays the content of the current node." ('228 patent, 22:28-29.) The "content anchor" is shown at 1805, and it "displays the locators for the current content provision in a user friendly form . . . ." ('228 patent, 22:34-35.) The "reference frame" is shown at 1820, and it "contains a set of links **1821** corresponding to the members of a viewing axis associated with the current base node." ('228 patent, 22:43-44.) Label 1823 indicates a "reference marker" which shows the link currently selected. ('228 patent, 22:45.) The buttons 1816 and 1818 are for navigating the sequential axis. ('228 patent, 22:55.) The buttons 1812 and 1813 "allow access to the next or previous occurrence of this text [that is the search result]." ('228 patent, 22:63-64.) Links 1807 and 1808 allow the user to select different viewing axes: Versions and Amendments. ('228 patent, 23:2-3.)

It is readily apparent that this screen is primarily textual, not pictorial.<sup>2</sup> Moreover, the primary content of Figure 18 is a single portion of text-based data. This screen does

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<sup>2</sup> I understand that the PTO rejected claims in the '228 patent covering this "display" of a multidimensional space, saying that they were obvious in view of (among others) United States Patent No. 6,144,962 ("Weinberg," attached hereto as Appendix 9). (Office Action Mailed July 8, 2004, TB040986-87, attached hereto as Appendix 10). I further understand that TimeBase defended these claims by attempting to distinguish *Weinberg*, telling the PTO that *Weinberg* "provides a graphical view of dynamically changing web site links," which is "in contrast to the claimed invention, which provides a *non-*

not pictorially display a multidimensional space or a method of displaying portions of text as point on a graphical representation of the multidimensional space.

The arrows (called “buttons” by the specification) are also not a graphical representation of a multidimensional space. These arrows provide a user with a mechanism for moving to another portion of text-based data. The presence of these small icons does not transform this screen shot into a pictorial representation of a multidimensional space, with points representing the related portions of text-based data.

For the same reasons, there is no indication whatsoever that Figures 19–20 or 22A–C are graphical representations of a multidimensional space. None of these figures disclose a pictorial depiction of an area not having boundaries and that has, or involves, more than three dimensions.

In sum, in my opinion, none of the Figures of the ‘228 patent or the accompanying text describes the claimed invention. None of them describe or disclose a graphical representation of a multidimensional space of even four dimensions, much less the unbounded space claimed by the patent. Indeed, one of the purported advantages of the invention of the ‘228 patent is its ability to accommodate many dimensions. For example, the specification states that—beyond the three dimensions shown in the figures—“other axes may be included dependent upon the number of dimensions of the

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*graphical view* of a fixed pre-prepared multidimensional dataset.” (Amendment After Office Action Mailed July 8, 2004, TB040951 (emphasis added), attached hereto as Appendix 11). These earlier statements from TimeBase comport with my opinion that the inventors did not possess the invention of a display of a graphical representation of a multidimensional space.

space.” (‘228 patent, 15:11-13.) In addition, the specification states that “any number of axes may be displayed and navigated without increasing the complexity of the screen view . . . .” (‘228 patent, 20:14-15.) Elsewhere, the ‘228 patent describes as one of the advantages of its method of electronic publication is that information “is able to be accessed under any combination of dimensions from the multi-dimensional space . . . .” (‘228 patent, 11:14-16.) Yet there is no depiction or discussion in the ‘228 patent of what a graphical representation of a multidimensional space containing even four—much less six, seven, or more—would look like. None of the figures or screen shots contained in the ‘228 patent, for example, provide a pictorial representation of the points of a multidimensional space and their location within the space that involves four, five, six, or more dimensions. The person of skill in the art would not even know what such a space might look like. The ‘228 patent specifically declines to depict, even conceptually, a space with more than three dimensions. Instead, the patent acknowledges the difficulty, if not the impossibility, of graphically representing a multidimensional space containing a large number of dimensions. In my opinion, the inventors went out of their way to make clear that they did *not* possess this invention. Consequently, a person of ordinary skill in the art would not have concluded that these inventors invented the step of displaying a graphical representation of a multidimensional space in an electronic system for publishing and searching text-based data.

Furthermore, even if the figures in the ‘228 patent *were* a graphical representation of a multidimensional space the specification of the ‘228 patent never describes displaying these figures on a computer screen, and never describes using this graphical

display in a system for electronically publishing or searching text-based data. There simply is no description in the text of the specification of any such display, and there is no statement that any of the figures in the specification are intended to be a graphical representation of a multidimensional space for display on a computer screen.

### **3. The '228 Patent's Appendices A–E Do Not Disclose a Graphical Representation of a Multidimensional Space**

I also reviewed all of the Appendices attached to the '228 patent in columns 33–162. None of these Appendices describe or discuss the graphical representation of a multidimensional space. These Appendices contain: a description of research on Australian legislation; Document Type Definitions (DTDs); a relational database design; and a “keying guide” for Australian documents. None of these Appendices describe how a multidimensional space might be pictorially displayed on a video screen. In short, nothing in these Appendices describes a graphical representation of a multidimensional space, or the method of using a graphical representation of a multidimensional space required by claims 24 and 36 of the '228 patent and their dependent claims.

#### **C. GRAPHICALLY DISPLAYING A MULTIDIMENSIONAL SPACE WOULD BE COMPLEX AND WOULD REQUIRE A DETAILED DISCLOSURE**

Finally, in my opinion, a person of ordinary skill in the art in January 1997 (or any of the later filing dates) would have regarded the display of a graphical representation of the claimed multidimensional space as a complex task. Simultaneously displaying six, seven, or even dozens of dimensions of text-based data in a graphical format on a computer screen is far from trivial and poses numerous problems that were recognized by

persons of ordinary skill in the art in January 1997. While displaying up to three dimensions on a computer screen was known in the art at that time, displaying four or more dimensions was not inherently known. Indeed, persons of ordinary skill in the art were not even generally working on this issue, and there certainly was no commonly-understood way to display four, five, six or more dimensions graphically on a computer screen. The few computer scientists who were working on this problem were trying widely differing approaches that were in various experimental stages.

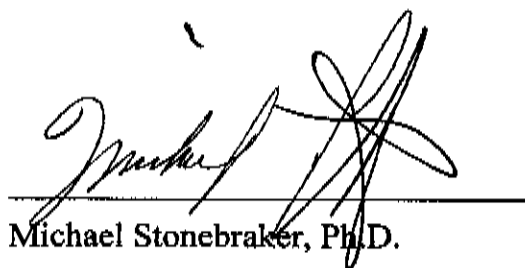
In addition to the difficulty of graphically displaying a multidimensional space generally, the display of the claimed multidimensional space of claims 24 and 36 of the '228 patent would have been even more complex. Those claims require a graphical display of a multidimensional space that includes "axes along which, or along some combination of which, point-to-point movement is allowed.

In short, there is not any clear and obvious way of depicting more than three spatial dimensions in a three-dimensional world, and trying to do so is a highly complex and unpredictable problem.

Given these challenges, a person of ordinary skill in the art would be looking for an especially clear and detailed description of the invention claimed in claims 24 and 36 of the '228 patent. In my opinion, not only does the '228 patent specification fail to provide any disclosure of the claimed video display, but it certainly does not provide a clear and detailed description of such a display. Such a clear and detailed description would have been required for a person of skill in the art to understand that the inventors actually possessed their claimed graphical representation of a multidimensional space and

the claimed method of displaying portions of text as a graphical representation of a multidimensional space on a video display. Because the inventors did not do so, this further supports my opinion that claims 24 and 36 of the '228 patent and their dependent claims do not meet the written description requirements of 35 U.S.C. § 112.

Dated: February 28, 2011



Michael Stonebraker, Ph.D.