UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE INC.
Petitioner

v.

DODOTS LICENSING SOLUTIONS LLC,
Patent Owner

_____

Inter Partes Review Case No. IPR2023-00939
U.S. Patent No. 8,510,407

DECLARATION OF DR. LOREN TERVEEN
IN SUPPORT OF PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 8,510,407

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A. Claim 1(Pre): A client computing device configured to access content over a network, the client computing device comprising: 55

B. Claim 1(a): electronic storage configured to store networked information monitor template associated with a networked information monitor, the networked information monitor template having therein a definition of a viewer graphical user interface having a frame within which time-varying content in a web browser-readable language may be presented on a display associated with the client computing device, wherein the frame of the viewer graphical user interface lacks controls for enabling a user to specify a network location at which content for the networked information monitor is available; and 58

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C. Claim 1(b): one or more processors configured to execute one or more computer program modules, the one or more computer program modules being configured to access the networked information monitor template, wherein accessing the networked information monitor defined by the networked information monitor template results in: 80

D. Claim 1(b)(i): transmission, over a network to a web server at a network location, of a content request for content to be displayed within the frame of the viewer graphical user interface defined by the networked information monitor template; 81

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G. Claim 1(b)(iv): presentation, on the display within the frame of the viewer graphical user interface defined by the networked information monitor, of the time-varying content received from the web server. 90

H. Claim 2: "The method of claim 1, further comprising, responsive to reception of one or more elements included in the received time-varying content, modifying a feature of said viewer graphical user interface defined by the networked information monitor template in accordance with a modification corresponding to the received one or more elements." 90

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C. Claim 12(b): "to receive, from the networked information monitor server over the network, the networked information monitor template; and".....118

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G. Claim 24(b): "receiving, from the networked information monitor server over the network, the networked information monitor template." 119

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CLAIM LISTING

Claim 1:

1(Pre) A client computing device configured to access content over a network, the client computing device comprising:

1(a) electronic storage configured to store networked information monitor template associated with a networked information monitor, the networked information monitor template having therein a definition of a viewer graphical user interface having a frame within which time-varying content in a web browser-readable language may be presented on a display associated with the client computing device, wherein the frame of the viewer graphical user interface lacks controls for enabling a user to specify a network location at which content for the networked information monitor is available; and

1(b) one or more processors configured to execute one or more computer program modules, the one or more computer program modules being configured to access the networked information monitor defined by the networked information monitor template, wherein accessing the networked information monitor defined by the networked information monitor template results in:

1(b)(i) transmission, over a network to a web server at a network location, of a content request for content to be displayed within the frame of the viewer graphical user interface defined by the networked information monitor template;

1(b)(ii) reception, over the network from the web server at the network location, of content transmitted from the web server in response to the content request, the content being time-varying;

1(b)(iii) presentation, on the display, of the viewer graphical user interface defined by the networked information monitor template outside of and separate from any graphical user interface of any other application; and

1(b)(iv) presentation, on the display within the frame of the viewer graphical user interface defined by the networked information monitor, of the time-varying content received from the web server.

Claim 2:

The method of claim 1, further comprising, responsive to reception of one or more elements included in the received time-varying content, modifying a feature of said viewer graphical user interface defined by the networked information monitor template in accordance with a modification corresponding to the received one or more elements.

Claim 3:

The client computing device of claim 2, wherein said modification corresponding to the received one or more elements comprises a modification to an image defined by the networked information monitor template as forming a part of said viewer graphical user interface.

Claim 4:

The client computing device of claim 2, wherein the correspondence between the modification and the received one or more elements is defined by the networked information monitor template.

Claim 5:

The client computing device of claim 2, wherein the one or more computer program modules and the networked information monitor template are configured such that modifying the feature of the viewer graphical user interface comprises adjusting a size of the frame of the viewer graphical user interface.

Claim 6:

The client computing device of claim 2, wherein the one or more computer program modules and the networked information monitor template are configured such that modifying the feature of the viewer graphical user interface comprises changing a color of a frame border or background of the viewer graphical user interface.

Claim 7:

The client computing device of claim 2, wherein the one or more computer program modules and the networked information monitor template are configured such that modifying the feature of the viewer graphical user interface comprises modifying text of the viewer graphical user interface in a manner defined by the networked information monitor template.

Claim 8:

The client computing device of claim 1, wherein the networked information monitor template includes a markup language file.

Claim 9:

The client computing device of claim 1, wherein one or more computer program modules are configured such that the time-varying content is received from the web server over the network according to the TCP/IP protocol.

Claim 10:

The client computing device of claim 1, wherein the network location corresponds to a uniform resource locator included in the networked information monitor template.

Claim 11:

The client computing device of claim 10, wherein the one or more computer program modules are further configured such that accessing the networked information monitor defined by the networked information monitor template results in transmission of the content request to the uniform resource locator included in the networked information monitor template, and the content request being transmitted according to the TCP/IP protocol over the network.

Claim 12:

12(Pre) The client computing device of claim 1, wherein the one or more computer program modules are further configured:

12(a) to transmit, over the network to a networked information monitor server, a request for the networked information monitor template

12(b) to receive, from the networked information monitor server over the network, the networked information monitor template; and

12(c) to store the networked information monitor template to the electronic storage

Claim 13:

13(Pre) A computer-implemented method of accessing content over a network on a client computing device, the client computing device having electronic storage and one or more processors configured to execute one or more computer program modules, the client method comprising:

13(a) storing, to the electronic storage, a networked information monitor template associated with a networked information monitor, the networked information monitor template having therein a definition of a viewer graphical user interface having a frame within which time-varying content in a web browser-readable language may be presented on a display associated with the client computing device, wherein the frame of the viewer graphical user interface lacks controls for enabling a user to specify a network location at which content for the networked information monitor is available;

13(b) accessing the networked information monitor defined by the networked information monitor template, wherein accessing the networked information monitor defined by the networked information monitor template results in:

13(b)(i) transmission, over a network to a web server at a network location, of a content request for content to be displayed in the viewer graphical user interface defined by the networked information monitor template;

13(b)(ii) reception, over the network from the web server at the network location, of content transmitted from the web server in response to the content request, the content being time-varying;

13(b)(iii) presentation, on the display, of the viewer graphical user interface defined by the application media package template outside of and separate from any graphical user interface of any other application; and

13(b)(iv) presentation, on the display within the frame of the viewer graphical user interface defined by the networked information monitor, of the time-varying content received from the web server.

Claim 14:

The method of claim 13, responsive to reception of one or more elements included in the received time-varying content, modifying a feature of said viewer graphical user interface defined by the networked information monitor template in accordance with a modification corresponding to the received one or more elements.

Claim 15:

The method of claim 14, wherein said modification corresponding to the received one or more elements comprises a modification to an image defined by the networked information monitor template as forming a part of said viewer graphical user interface.

Claim 16:

The method of claim 14, wherein the correspondence between the modification and the received one or more elements is defined by the networked information monitor template.

Claim 17:

The method of claim 14, wherein modifying the feature of the viewer graphical user interface comprises adjusting a size of the frame of the viewer graphical user interface.

Claim 18:

The method of claim 14, wherein modifying the feature of the viewer graphical user interface comprises changing a color of a frame border or background of the viewer graphical user interface.

Claim 19:

The method of claim 14, wherein modifying the feature of the viewer graphical user interface comprises modifying text of the viewer graphical user interface in a manner defined by the networked information monitor template.

Claim 20:

The method of claim 13, wherein the networked information monitor template includes a markup language file, and wherein storing the networked information monitor template comprises storing the markup language file.

Claim 21:

The method of claim 13, wherein the time-varying content is received from the web server over the network according to the TCP/IP protocol.

Claim 22:

The method of claim 13, wherein the network location corresponds to a uniform resource locator included in the networked information monitor template.

Claim 23:

The method of claim 22, wherein accessing the networked information monitor defined by the networked information monitor template results in transmission of the content request to the uniform resource locator included in the networked information monitor template, and the content request being transmitted according to the TCP/IP protocol over the network.

Claim 24:

24(Pre) The method of claim 13, further comprising:

24(a) prior to storing the networked information monitor template to the electronic storage, transmitting, over the network to a networked information monitor server, a request for the networked information monitor template; and

24(b) receiving, from the networked information monitor server over the network, the networked information monitor template.

I, Loren Terveen, declare as follows:

I. INTRODUCTION AND QUALIFICATIONS

1. I am over the age of 21 and am competent to make this declaration. I make this declaration based on facts and matters within my own knowledge and on information provided to me by others, and, if called as a witness, I could and would competently testify to the matters set forth herein. A true and correct copy of my Curriculum Vitae, which provides further details about my background and experience, is appended to this Declaration.

A. Educational Background and Professional Experience

2. I received a B.A. in Computer Science, Mathematics, and History from the University of South Dakota in 1984. I received an M.S. in Computer Sciences from the University of Texas in 1988. I further received a Ph.D. in Computer Sciences from the University of Texas in 1991.

3. I am a Distinguished McKnight University Professor at the University of Minnesota in the Department of Computer Science and Engineering, and I have substantial experience with human computer interaction and user interfaces, including well before April 26, 1999, the date I have been informed is the date of invention for the ’407 patent at issue in this matter. I was a Member of Technical Staff at AT&T Bell Laboratories from 1991 to 1996, and then a Principal Member of Staff at AT&T Labs – Research from 1996 to 2002. I was honored by the

Association for Computing Machinery (ACM) as a Distinguished Scientist in 2009, I served as the president of ACM's Special Interest Group on Computer-Human Interaction (ACM SIGCHI) from 2015-2018, was elected to the ACM SIGCHI Academy in 2019, and received the SIGCHI Lifetime Service Award in 2023.

4. I have taught numerous courses at the University of Minnesota related to human-computer interaction and user interface design. Additionally, I have published over 150 peer-reviewed articles, a book, contributed chapters in six additional books, and have given over 50 presentations all across the United States and internationally. My published works revolve around the fields of human-computer interaction, user interface design, and social computing. I am also a named inventor on ten U.S. patents related to user interfaces, interactive data analysis, and methods for selecting and displaying information to users. My publications and patents have addressed many aspects of searching for information on the World Wide Web, including algorithms to gather information from the World Wide Web, additional algorithms to parse and analyze the HTML content of web pages, data structures to represent this information, and user interfaces that allowed people to access the information my systems collected. Much of my research also involved graphical user interface techniques, for example: enabling users to navigate large information structures (including the World Wide Web), specify multimodal

interfaces including for interactive voice systems, interact with online maps, and tailor the performance of recommender systems.

5. I have served as Chair of the leading conferences in Human-Computer Interaction, served on four different editorial boards, and have sat on well over 20 program committees, including well over a dozen times on the program committee for the ACM Conference on Human Factors in Computing Systems (the CHI Conference), the leading international conference in Human-Computer Interaction.

II. METHODOLOGY; MATERIALS CONSIDERED

6. I have relied upon my education, knowledge, and experience with the technology of the World Wide Web including the Hypertext Markup Language (HTML) and graphical user interfaces, as well as the other materials as discussed in this declaration in forming my opinions.

7. For this work, I have been asked to review U.S. Patent No. 8,510,407 ("'*407 Patent*") (Ex. 1001) including the specification and claims, and the '407 Patent's prosecution history ("*'407 File History*") (Ex. 1002). In developing my opinions relating to the '407 Patent, I have considered the materials cited or discussed herein, including those listed below.

- U.S. Patent No. 8,510,407 ("*'407 Patent*") (Ex. 1001)
- Prosecution History for the '407 Patent ("*'407 FH*") (Ex. 1002)
- U.S. Patent No. 6,061,695 ("*Slivka*") (Ex. 1004)
- File History of U.S. Patent No. 6,061,695 ("*Slivka FH*") (Ex. 1005)
- U.S. Patent No. 6,091,518 ("*Anabuki*") (Ex. 1006)

- *HTML: The Complete Reference* by Thomas A. Powell (1998) ("*Powell*") (Ex. 1013)
- U.S. Patent No. 6,185,589 ("*Votipka*") (Ex.1014)
- U.S. Patent No. 6,031,989 ("*Cordell*") (Ex. 1015)

8. I have considered these materials from the viewpoint of a POSITA as of the priority date of the '407 Patent. For the purposes of this declaration, I have been asked to assume that the priority date of the '407 Patent is April 26, 1999. I note that my opinions provided in this declaration are made from the perspective of a POSITA as of this priority date of the '407 Patent, unless expressly stated otherwise. To the extent that I use any verb tense in this declaration that is present tense (e.g., "a POSITA would understand" instead of "a POSITA would have understood"), such verb tense should be understood to be my opinion as of the '407 Patent's priority date (again, unless expressly stated otherwise). I merely use the present verb tense for ease of reading.

III. OVERVIEW AND LEGAL STANDARDS

9. In formulating my opinions, I have been instructed to apply certain legal standards. I am not a lawyer. I do not expect to offer any testimony regarding what the law is. Instead, the following sections summarize the law as I have been instructed to apply it in formulating and rendering my opinions found later in this declaration. I understand that, in an *inter partes* review ("IPR") proceeding, patent claims may be deemed unpatentable if it is shown that they were anticipated or rendered obvious in view of the prior art. I understand that prior art in an IPR review

is limited to patents or printed publications that predate the priority date of the patent at issue. I understand that questions of claim clarity (definiteness) and enablement cannot be considered as a ground for considering the patentability of a claim in these proceedings.

A. Person of Ordinary Skill in the Art

10. I understand that the '407 Patent, the record of proceedings at the Patent Office (which I understand is called the "File History" or "Prosecution History"), and the teachings of the prior art are evaluated from the perspective of a person of ordinary skill in the art ("POSITA"). I understand that the factors considered in determining the ordinary level of skill in the art include: (i) the levels of education and experience of persons working in the field; (ii) the types of problems encountered in the field; and (iii) the sophistication of the technology. I may also consider, if available, the education level of the inventor, prior art solutions to the problems encountered in the art, and the rapidity with which innovations are made in the relevant art.

11. I understand that a person of ordinary skill in the art is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the factors above. This hypothetical person has knowledge of all prior art in the relevant field as if it were arranged on a workshop wall and takes from each reference what it would teach to a person having the skills of a POSITA.

B. Obviousness

12. I understand that a claim may be invalid under 35 U.S.C. § 103(a) if the subject matter described by the claim as a whole would have been "obvious" to a hypothetical POSITA in view of a single prior art reference or in view of a combination of references at the time the claimed invention was made. Therefore, I understand that obviousness is determined from the perspective of a hypothetical POSITA. I further understand that a hypothetical POSITA is assumed to know and to have all relevant prior art in the field of endeavor covered by the patent in suit and all analogous prior art. I understand that obviousness in an IPR review proceeding is evaluated using a preponderance of the evidence standard, which means that the claims must be more likely obvious than nonobvious.

13. I also understand that an analysis of whether a claimed invention would have been obvious should be considered in light of the scope and content of the prior art, the differences (if any) between the prior art and the claimed invention, and the level of ordinary skill in the pertinent art involved. I understand as well that a prior art reference should be viewed as a whole. I understand that in considering whether an invention for a claimed combination would have been obvious, I may assess whether there are apparent reasons to combine known elements in the prior art in the manner claimed in view of interrelated teachings of multiple prior art references, the effects of demands known to the design community or present in the marketplace,

and/or the background knowledge possessed by a POSITA. I also understand that other principles may be relied on in evaluating whether a claimed invention would have been obvious, and that these principles include the following:

- A combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results;
- When a device or technology is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or in a different one, so that if a POSITA can implement a predictable variation, the variation is likely obvious;
- If a technique has been used to improve one device, and a POSITA would have recognized that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill;
- An explicit or implicit teaching, suggestion, or motivation to combine two prior art references to form the claimed combination may demonstrate obviousness, but proof of obviousness does not depend on or require showing a teaching, suggestion, or motivation to combine;
- Market demand, rather than scientific literature, can drive design trends and may show obviousness;

- In determining whether the subject matter of a patent claim would have been obvious, neither the particular motivation nor the avowed purpose of the named inventor controls;
- One of the ways in which a patent's subject can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent's claims;
- Any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed;
- "Common sense" teaches that familiar items may have obvious uses beyond their primary purposes, and in many cases a POSITA will be able to fit the teachings of multiple patents together like pieces of a puzzle;
- A POSITA is also a person of ordinary creativity, and is not an automaton;
- A patent claim can be proved obvious by showing that the claimed combination of elements was "obvious to try," particularly when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions such that a POSITA

would have had good reason to pursue the known options within his or her technical grasp; and

- One should not use hindsight in evaluating whether a claimed invention would have been obvious.

14. I also understand that an obviousness determination includes the consideration of various factors such as: (1) the scope and content of the prior art, (2) the differences between the prior art and the asserted claims, (3) the level of ordinary skill in the pertinent art, and (4) the existence of secondary considerations such as commercial success, long-felt but unresolved needs, failure of others, and so forth.

15. I am informed that it is improper to combine references where the references teach away from their combination. I am informed that a reference may be said to teach away when a person of ordinary skill in the relevant art, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the patent applicant. In general, a reference will teach away if it suggests that the line of development flowing from the reference's disclosure is unlikely to be productive of the result sought by the patentee. I am informed that a reference teaches away, for example, if (1) the combination would produce a seemingly inoperative device, or (2) the references leave the impression that the product would not have the property

sought by the patentee. I also am informed, however, that a reference does not teach away if it merely expresses a general preference for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into the invention claimed.

16. I am informed that even if a *prima facie* case of obviousness is established, the final determination of obviousness must also consider "secondary considerations" if presented. In most instances, the patentee raises these secondary considerations of non-obviousness. In that context, the patentee argues an invention would not have been obvious in view of these considerations, which include: (a) commercial success of a product due to the merits of the claimed invention; (b) a long-felt, but unsatisfied need for the invention; (c) failure of others to find the solution provided by the claimed invention; (d) deliberate copying of the invention by others; (e) unexpected results achieved by the invention; (f) praise of the invention by others skilled in the art; (g) lack of independent simultaneous invention within a comparatively short space of time; and (h) teaching away from the invention in the prior art.

17. I am further informed that secondary considerations evidence is only relevant if the offering party establishes a connection, or nexus, between the evidence and the claimed invention. The nexus cannot be based on prior art features. The establishment of a nexus is a question of fact. While I understand that Patent

Owner here has not offered any secondary considerations at this time, I will supplement my opinions in the event that Patent Owner raises secondary considerations during the course of this proceeding.

C. Analogous Art

18. I have been informed that for a prior art reference to be proper for use in an obviousness analysis, the reference must be "analogous art" to the claimed invention. I have been informed that a reference is analogous art to the claimed invention if: (1) the reference is from the same field of endeavor as the claimed invention (even if it addresses a different problem); or (2) the reference is reasonably pertinent to the problem faced by the inventor (even if it is not in the same field of endeavor as the claimed invention). In order for a reference to be "reasonably pertinent" to the problem, it must logically have commended itself to an inventor's attention in considering his problem. In determining whether a reference is reasonably pertinent, one should consider the problem faced by the inventor, as reflected either explicitly or implicitly, in the specification. I believe that all of the references that my opinions in this IPR are based upon are well within the range of references a person having ordinary skill in the art would consult to address the type of problems described in the Challenged Claims.

D. Claim Construction

19. I understand that the claim terms in this IPR will be construed according to their plain and ordinary meaning as understood in light of the claim language, the patent's description, and the prosecution history viewed from the perspective of a POSITA. I further understand that where a patent defines claim language, the definition in the patent controls, even if there are other definitions that might be understood by those working in the art.

1. Constructions Pursuant to 37 C.F.R. § 42.104(b)(3)

20. I have been informed that claims of the '407 Patent include claim terms that were construed in a previous IPR proceeding and that were later affirmed by the Federal Circuit. I have been instructed to adopt the constructions set forth below.

Claim Term	*Construction*
Networked Information Monitor (NIM) (Claims 1-24)	"a fully configurable frame with one or more controls, through which content is presented to the user"
Networked Information Monitor (NIM) Template (Claims 1-24)	"data structure which defines the characteristics of a NIM, including the NIM frame, view and control characteristics, and which excludes executable applications/compiled code"

IV. LEVEL OF A PERSON OF ORDINARY SKILL

21. Based on my review and analysis of the '407 Patent, the prior art cited herein, and the ordinary skill factors described in this section, a POSITA in the field of the '407 Patent at the time of the earliest possible priority date (April 26, 1999)

would have been knowledgeable regarding the field of computer graphical user interfaces. In my experience working in this field, most workers of ordinary skill in the art as of the earliest possible priority date of April 26, 1999, would have had a bachelor's degree in computer science, computer engineering, or a related field, and at least two years of experience related to the design or development of Internet technologies, or the equivalent. *See, e.g.*, *'407 Patent* (Ex. 1001), 2:17-55. A person with less relevant practical experience but with additional education can also qualify as a POSITA in the field of the '407 Patent. When I refer to the understanding of a POSITA, I am referring to the understanding of such a person as of April 26, 1999.

22. As of April 26, 1999, I had more than ordinary skill in the art. I am, however, familiar with the skills and knowledge possessed by those I would have considered to be of ordinary skill in the art as of that date. For example, I knew people, and myself worked in the field while I spent time as a Member of Technical Staff at AT&T Bell Laboratories from 1991 to 1996, and then a Principal Member of Staff at AT&T Labs – Research from 1996 to 2002. I was also honored by the Association for Computing Machinery (ACM) as a Distinguished Scientist in 2009 and served as the president of ACM's Special Interest Group on Computer-Human Interaction (ACM SIGCHI) from 2015-2018, was elected to the ACM SIGCHI Academy in 2019, and received the SIGCHI Lifetime Service Award in 2023. Further, I have taught courses on graphical user interfaces for over 20 years as a

professor and I have contributed to creating a Coursera specialization on User Interface Design.

23. My opinions provided in this declaration would not change in view of minor modifications to this level of ordinary skill.

V. OVERVIEW OF THE TECHNOLOGY

24. I was asked to briefly summarize the background of the technology from the standpoint of a POSITA prior to April 26, 1999.

A. Client and Server Devices

25. Client and server computing devices were well known in the prior art before the priority date of the ’407 Patent. For example, *Powell* teaches the well-known client/server architecture where a client device requests data from a server device, which returns data to said client device. *Powell’s* Figure 2-6 depicts such a client/server overview:

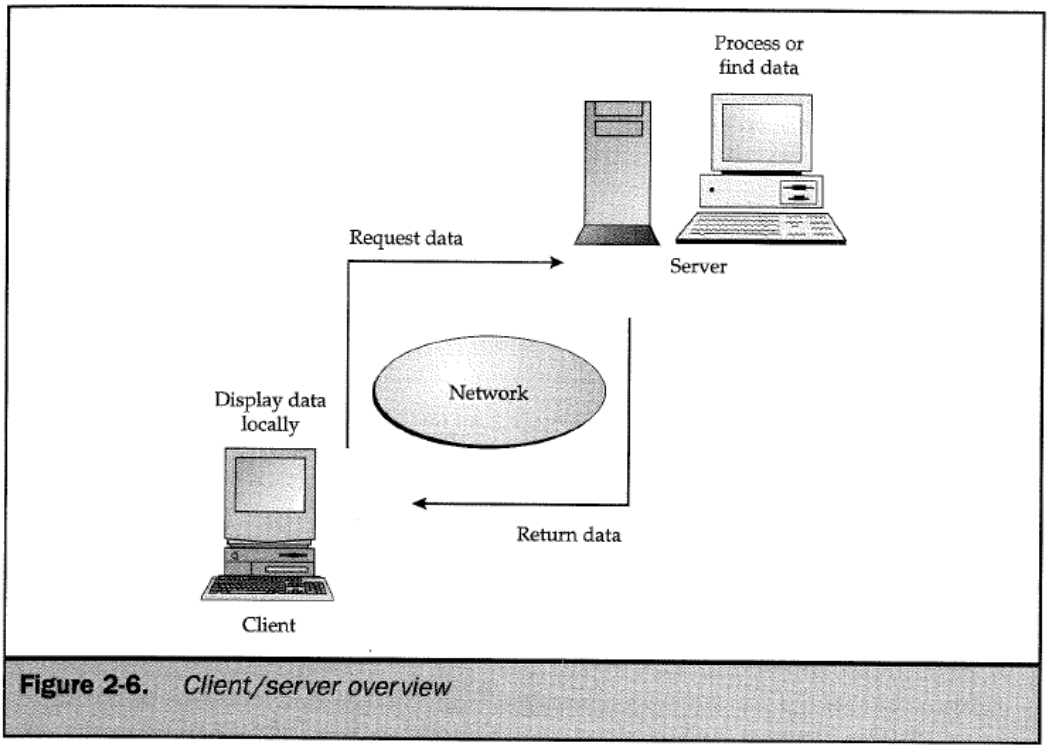


Figure 2-6. *Client/server overview*

Powell, 46. *Powell* teaches that such a client/server architecture is advantageous in that the workload is separated between a client and a server:

> The advantage to the client/server architecture is that it separates the computing workload between the client machine—typically your local computer—and the remote server. This separation is important because it allows one server to talk to many different types of clients. For example, a Windows server could easily give out information to a Macintosh client (and vice versa). Furthermore, the client/server architecture scales very well since users don't have to be dependent on one monolithic system.

Powell, 46. Further, *Powell* teaches that "[o]ver the years, there have been a variety of Internet-based information retrieval schemes[.]" *Id.*

26. *Powell* also teaches that the TCP/IP (Transmission Control Protocol / Internet Protocol) protocol was a common protocol for connecting a client and server over a network. "The Internet is simply a particular internetwork—a large public internetwork that shares a common network protocol. The key to understanding this definition is TCP/IP." *Powell*, 40. Additionally, *Powell* teaches that "*The Internet is the name given to the worldwide collection of data networks (an internetwork) that 'speak' the TCP/IP network protocol.*" *Id.* (italics original). *Powell* teaches that TCP "does exactly what its name indicates: it controls the transmission of data." *Powell*, 43. *Powell* teaches the IP protocol portion "handles the addressing scheme on the Internet … this would be read so that the data packet could be routed to the appropriate destination." *Id.*, *see also Powell*, 62 ("In summary, the Web uses a client/server model. The browser (client) requests pages from a Web server over a network like the Internet. The discussion is handled by the HTTP protocol. The actual transmission of data is handled by TCP/IP. The addressing of data objects to request takes the form of a Uniform Resource Locator (URL)[.]" *Powell*, 62.

B. Hypertext Documents

27. *Powell* also teaches that the Web "presented a method to organize information on the Internet as a collection of linked documents called hypertext[.]"

Powell, 48. *Powell* teaches that a hypertext document "is an electronic document that contains links to related pieces of information. It could be characterized as providing generalized footnotes. For example, a hypertext document about cows may feature a link from the word 'milk,' which, when followed, sends the reader to other documents about the types of milk, as shown in Figure 2-9." *Powell*, 50. *Powell* further teaches that hypertext "is a nonlinear way to access information. Many people find it similar to the way they think about problems." *Id. Powell* teaches an example of hypertext documents in Figure 2-9 below:

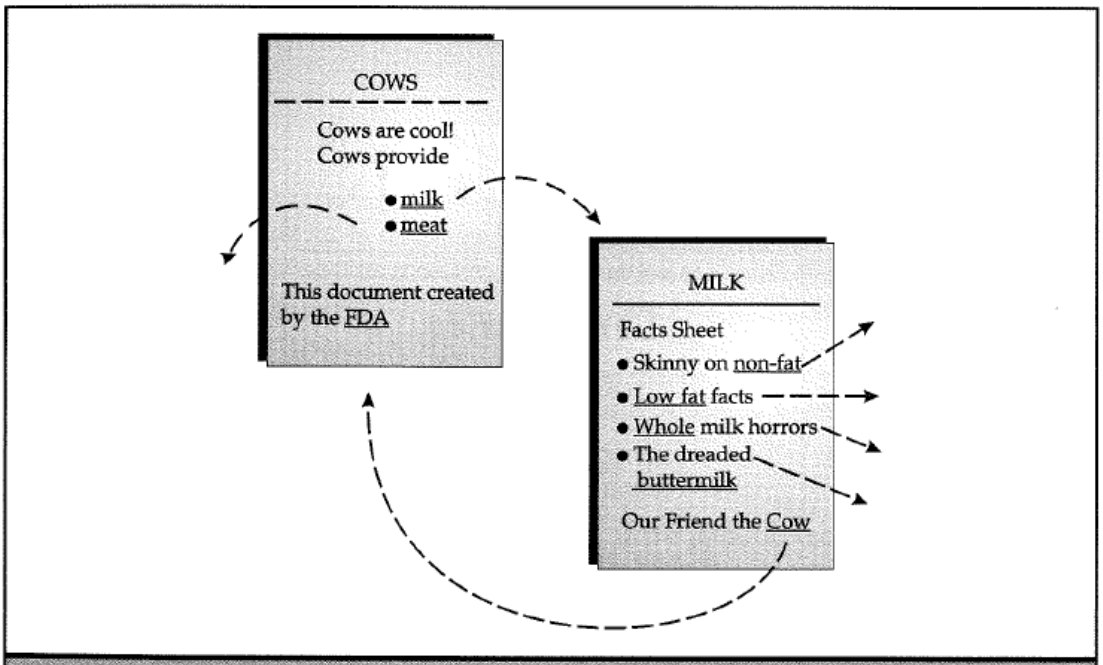


Figure 2-9. *Hypertext documents with underlined links*

Powell, 50. *Powell* additionally teaches that the concept of hypertext "is nearly 50 years old" and that "[s]erious research in hypertext theory has been done for nearly

35 years. The term 'hypertext' was coined in the mid-sixties by Ted Nelson." *Powell*, 51.

28. It was also known that the World Wide Web, also referred to as the Web, "is the name given to the collection of hypermedia documents spread out on machines all over the Internet. The links in these documents transcend the machine where the document is located." *Powell*, 52. Referring to the example of the cow and milk, *Powell* teaches that "the general COWS document might reside on a machine in the United States, while the MILK document might reside on a machine in England. When a user clicks on the 'milk' hyperlink, he or she fetches the milk information from the British machine over the Internet." *Powell*, 52-53. *Powell* depicts such a process in Figure 2-12 below:

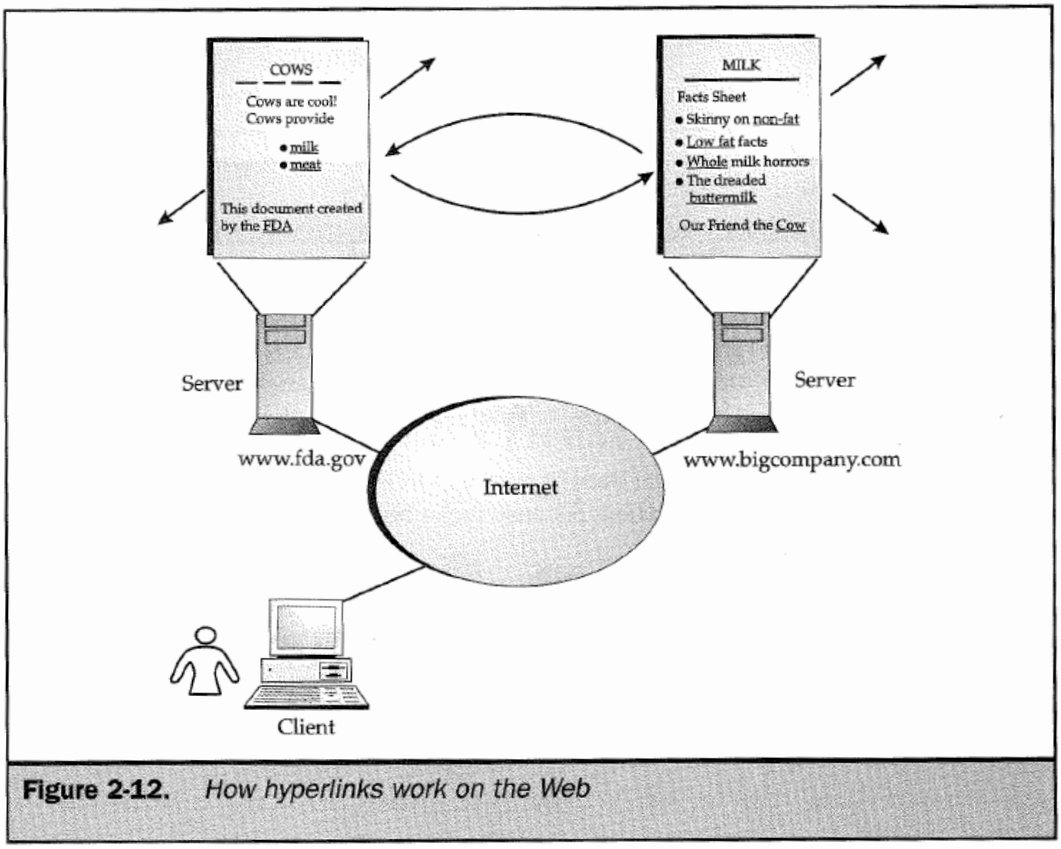


Figure 2-12. *How hyperlinks work on the Web*

Powell, 53.

29. In another example, *Cordell* teaches "'client' applications that accept commands from the user and obtain Internet data and services by sending requests to 'server' applications on other computers at other locations on the Internet." *Cordell*, 1:23-27.

C. HTML

30. *Powell* teaches that HTML is the "not-so-behind-the-scenes markup language that you use to tell Web browsers how to display Web pages." *Powell*, 22.

For example, *Powell* teaches "markup commands directed to your Web-based content tell the browser software the structure of the document, and where possible, how you want it to be displayed. If you wished to display a section of text in boldface, you would surround the corresponding text with the boldface markup tags <B> and </B>[.]" *Powell,* 22.

31. Further, an "HTML document is simply a text file that contains the information you want to publish. It also contains embedded instructions, called *elements*, that indicate how a Web browser should structure or present the document." *Powell*, 23. *Powell* teaches that a "markup language like HTML is simply a collection of codes–*elements* in this case–that are used to indicate the structure and format of a document. The codes have meaning that is interpreted by a formatting program, often a Web browser, which renders the document. Elements in HTML consist of alphanumeric tags within angle brackets." *Powell*, 28-29. In this way, HTML instructions are used as input to render a web page or other HTML frame. *Powell* further teaches that software and hardware serve up Internet pages, and browsers render the pages. *Powell*, 63.

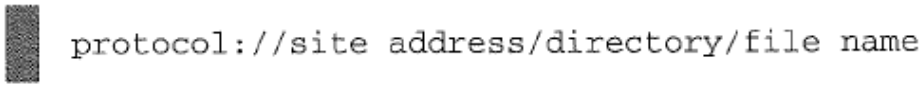
32. It was known before the priority date of the '407 Patent that HTML is not a programming language; HTML is a markup language. *Powell* teaches that "HTML is unlike programming in that it does not specify logic. It specifies only the

layout and structure of a document." *Powell*, 33, 34 ("HTML is not a programming language[.]").

33. *Powell* further teaches HTML is a tool for disseminating information and that this "information can be any message you wish to communicate to another individual and is not limited to text forms. It can be expressed as images, sound, movies, and just about any other form you can imagine. This information is distributed through a networked environment called the World Wide Web." *Powell*, 37.

34. It was also known to embed controls in HTML. For example, *Powell* teaches embedding ActiveX controls and using the <OBJECT> element to "insert an ActiveX control in a page." *Powell*, 272-273, 282-285 (teaching using a LiveAudio plug-in with controls for playing audio), 294-298 (teaching using QuickTime for playing text, images, video, and sound), 360 (teaching frames may "provide a scroll bar or other controls to manipulate the size of the frame.").

35. Regarding URLs (uniform resource locators) in particular, *Powell* teaches a URL is broken up into a protocol, site address, directory, and file name, as depicted below:



Powell, 155-167. In a particular example, *Powell* teaches a URL to link to a specific HTML file via a URL:



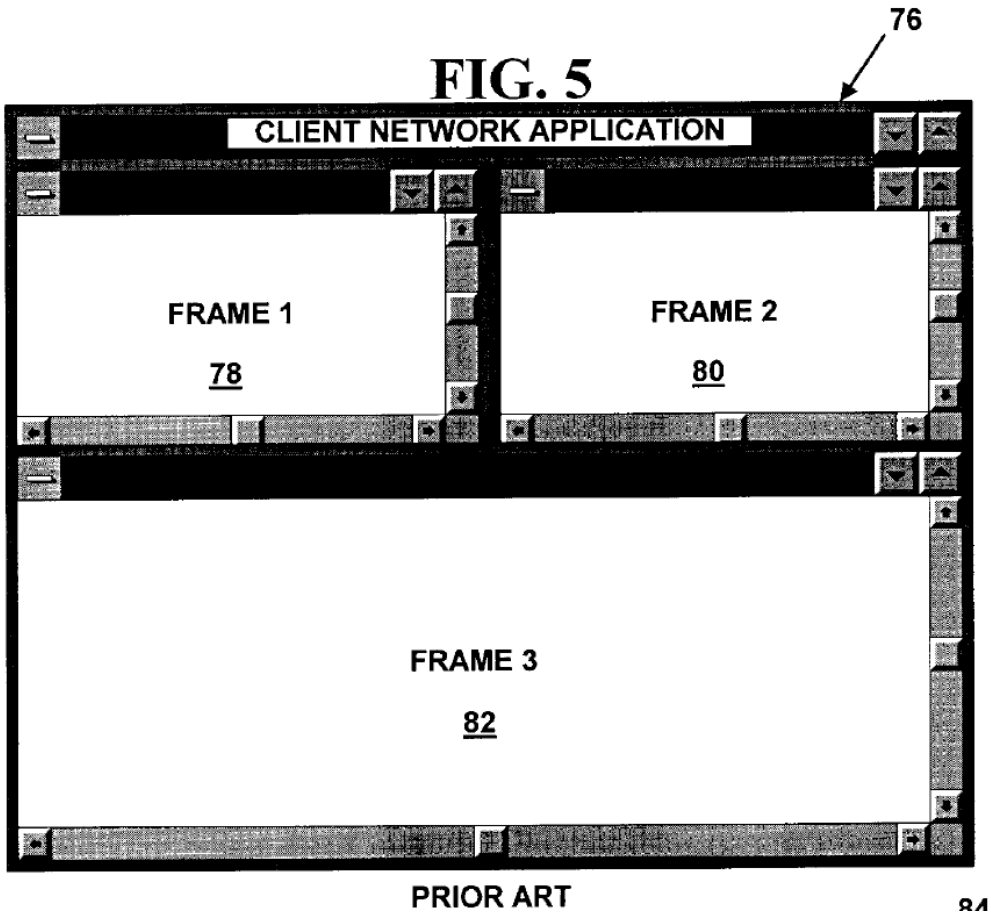
Powell, 165. *Powell* also teaches URLs refer to objects other than text files, such as images, audio files, or video files. *Powell*, 155 ("A URL is a standard, or, more appropriately, a uniform way to refer to objects and services on the Internet."), 155 ("[T]he URL simply describes where something is and how it will be retrieved. The 'how' is specified by the protocol, for example, HTTP. The 'where' is specified by a machine name, directory name, and filename. Slashes and other characters are used to separate the parts of the address into machine parseable pieces."), 166 ("In addition to referring to HTML documents, an HTTP URL can request any type of file. For example, http://www.company.com/images/logo.gif would retrieve a GIF image from a server rather than an HTML file.").

D. HTML Frames

36. HTML frames were well known before the priority date of the '407 Patent. *Cordell* teaches that "HTML allows the author of a document to split the information displayed by a network browser into a number of rectangular areas called 'frames.' HTML frames are created with the HTML <FRAME> and <FRAMESET> tags which are known to those skilled in the art." *Cordell*, 1:57-61.

Thus, each "frame can then separately display a HTML document or other HTML object (e.g., a photographic image) specified by a separate URL." *Cordell*, 1:64-67. *Cordell* teaches an example where "an author can create multiple frames to display text in one frame, a photographic image in another, and an animated sequence in a third frame." *Cordell*, 1:67-2:2. Further, *Cordell* teaches that "Authors can also specify a frame specifically for the purpose of navigational elements such as graphical toolbars. Clicking on the graphical toolbar frames with a mouse or other pointing device will update the content of other frames displayed." *Cordell*, 2:2-2:7.

37. *Cordell* teaches an example of a prior art frameset with three separate frames in Fig. 5 below:



Cordell, Fig. 5.

VI. OVERVIEW OF THE '407 PATENT

38. I have reviewed the '407 Patent (Ex. 1001). Descriptions of the '407 Patent that may be pertinent to my analysis are provided herein, and my descriptions of the '407 Patent are intended only as a summary of the '407 Patent and/or intended as being pertinent to the Challenged Claims of the '407 Patent. My opinions provided herein are not intended as a discussion of my entire understanding of the '407 Patent or any other claims in any related patent to the '407 Patent.

39. The ’407 Patent describes conveying Internet content to a user via “Dots” or “NIMs.” *’407 Patent*, 2:59-61, Abstract. Said Dots or NIMs are software components that a Viewer application processes to present internet content to a user in a frame where the frame is distinguished from a browser. *’407 Patent*, 5:21-28. Additionally, the ’407 Patent describes “NIM templates” that is used to create a NIM, or frame, in which the user can view Internet content. *’407 Patent,* 2:59-65, 25:61-63, 26:2-4.

VII. THE PROSECUTION HISTORY OF THE ’407 PATENT

40. I have reviewed the prosecution history for the ’407 Patent (Ex. 1002). Pertinent aspects of the prosecution history of the ’407 Patent are described below.

A. Prosecution History of the ’407 Patent

41. The ’407 Patent issued from an application that was filed on October 31, 2007. *’407 Patent*. The ’407 Patent also is a continuation of Application 09/558,922 that was filed on April 26, 2000. *Id.* The ’407 Patent also claims priority to several provisional applications, with the earliest filing date of April 26, 1999. *’407 Patent*, 1:8-19. I note that during prosecution of the application that issued as the ’407 Patent, the examiner issued a first office action rejecting the claims. ’*407 FH*, 975. The applicant amended the claims in response including limitations that the GUI be “outside of any graphical user interface of any web browser application” and that the GUI be presented “without the utilization of any web browser

application." *'407 FH*, 963-64. The examiner again rejected the claims, and the applicant subsequently amended the claims to include the limitation that the GUI "lacks control enabling a user to specify a network location at which content for the networked information monitor is available." *'407 FH*, 498. The applicant also amended the claims with a limitation requiring that the GUI be presented "outside of and separate from any graphical user interface of any other application." *Id*. The examiner issued another rejection, and the applicant filed a terminal disclaimer. *'407 FH*, 139-141, 121. A Notice of Allowance was subsequently issued on April 5, 2013. *'407 FH*, 107.

VIII. SUMMARY OF UNPATENTABILITY

Proposed Grounds of Unpatentability	
Ground 1	Claims 1-4, 6-11, 13-16, and 18-23 are **obvious** under pre-AIA 35 U.S.C.§ 103(a) over *Slivka* in view of *Powell*
Ground 2	Claims 5 and 17 are **obvious** under pre-AIA 35 U.S.C. § 103(a) over *Slivka* in view of *Powell* and *Votipka*
Ground 3	Claims 12 and 24 are **obvious** under pre-AIA 35 U.S.C. § 103(a) over *Slivka* in view of *Powell* and *Anabuki*

42. I have reproduced the Proposed Grounds of Unpatentability from the Petition for ease of reference.

43. As I opine below, *Slivka,* in view of *Powell*, renders obvious every limitation of claims 1-4, 6-11, 13-16, and 18-23. Specifically, *Slivka* teaches sets of HTML instructions ("NIM templates") and HTML frames for presenting content to a user ("NIMs"). *Powell*, another prior art reference, teaches specific aspects about the set of HTML instructions such as content references and various visual

modifications to the HTML frames such as defining a background as an image referenced through a URL (*see* Claim 6).

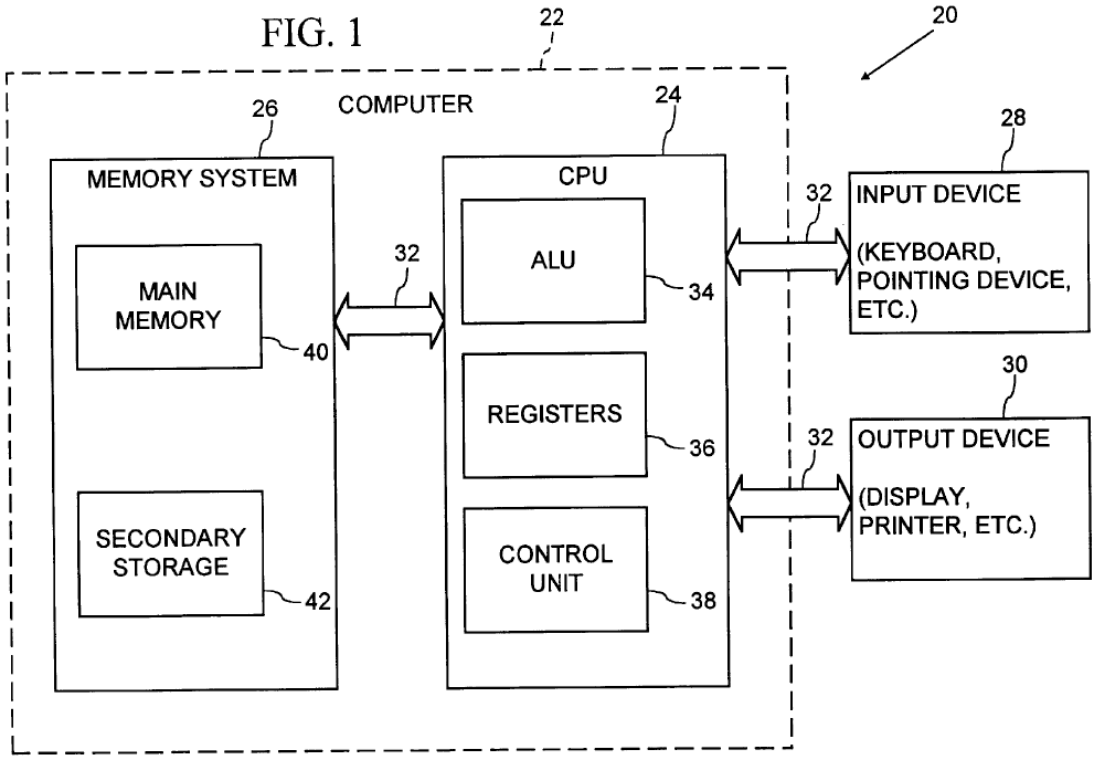
44. Further, as I opine below, *Votipka*, another prior art reference, teaches a specific implementation of HTML elements that allow "designers to build visual banners that are sized automatically." *Votipka*, 3:21-23. *Slivka* in view of *Powell* and *Votipka* thus teach or render obvious Claims 5 and 17.

45. Further, as I opine below, *Anabuki*, another prior art reference, teaches HTML instructions and requesting and downloading HTML templates for formatting and presenting content on a display device. *Slivka* in view of *Powell* and *Anabuki* thus teach or render obvious claims 12 and 24.

IX. OVERVIEW OF THE PRIOR ART

A. Overview of Slivka

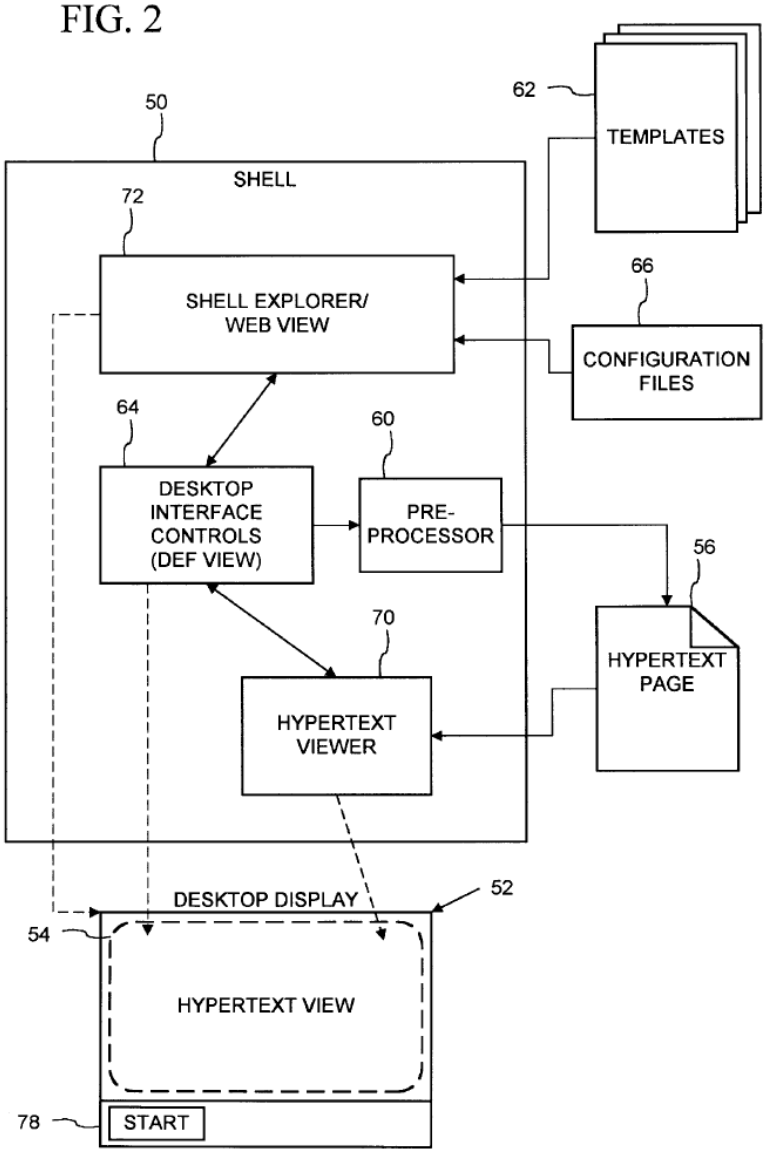
46. *Slivka* teaches a computer system 20 including a computer 22, output device 30 (including display), memory system 26, and CPU 24. *Slivka* (Ex. 1004), 4:63-5:57. *Slivka* teaches said computer system 20 includes other input or output devices such as a "network interface or a modem[.]" *Id. Slivka's* Fig. 1 below depicts said components, among others:



Slivka, Fig. 1.

47. *Slivka* also teaches a shell 50 for an operating system of the computer system 20 where the shell 50 "provides a graphical user interface for a user of the computer to interact with the operating system." *Slivka*, 5:59-62. *Slivka's* graphical user interface also includes desktop display 52 (presented by shell 50) that is presented on output device 30. *Slivka*, 5:63-66, 6:4-38, 6:54-67, 10:7-39. I note that *Slivka's* Fig. 2 depicts said shell 50 and desktop display 52.

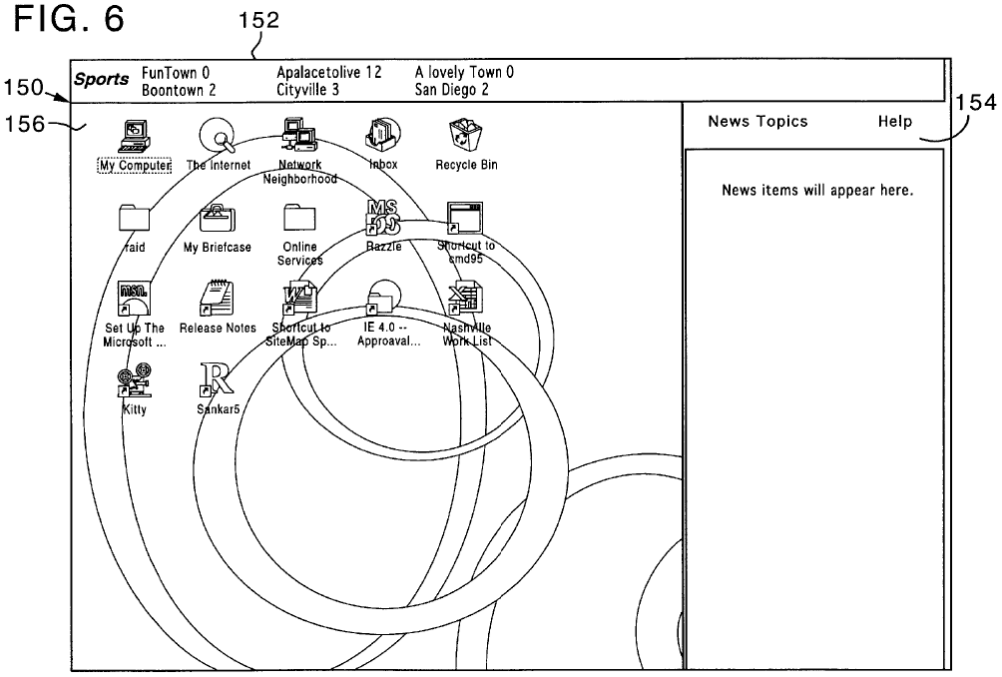
FIG. 2



Slivka, Fig. 2.

48. *Slivka* also teaches that independent frames for displaying content to a user are presented on the desktop display. *Slivka*, 18:49-19:11,[1] Fig. 6. Fig. 6 below depicts ticker 152 for displaying sports or stock content retrieved from the Internet and news pane 154 depicts news content retrieved from the Internet. *Slivka*, 18:49-19:11.

[1] I note that a POSITA would have understood that *Slivka* has a typographical error at 18:49, where "FIG. 5" should read "FIG. 6." *Slivka*, 18:49. A POSITA would have understood from *Slivka's* teachings at 18:49-19:18 that Fig. 6 is described rather than Fig. 5 because element numbers 150, 152, 154, and 156 do not appear in Fig. 5 but do appear in Fig. 6. In particular, *Slivka's* teachings regarding ticker 152 and news pane 154 are not depicted in Fig. 5. Similarly, a POSITA would have understood or found obvious that *Slivka* at 19:20 "FIG. 6" is a typographical error that should read "FIG. 7" because elements 170, 172, 176, 178, and 180 are depicted in Fig. 7 and not in Fig. 6. *Slivka*, 19:20-20:7.



Slivka, Fig. 6.

49. *Slivka* also teaches synthesizing a hypertext page from various sources, such as templates, stored hypertext pages, and/or HTML format files, where said synthesized hypertext page ultimately comprises sets of HTML instructions which define separate HTML frames on the desktop display. *Slivka*, 3:14-30, 18:49-19:11, Fig. 6. I note that *Slivka* also teaches Appendices that comprise exemplary HTML instructions for said HTML frames, and where there are separate frames defined for "tickerframe," "infopaneframe" (news), and "icons" (all of which are displayed in Fig. 6, above). *See Slivka FH*, 69-77. An example of said HTML instructions is depicted below in an annotated figure I have reproduced from the Petition, where

DESKTOP.HTM ("Appendix A") references Appendices E-F for ticker 152 and Appendices C-D for news pane 154:

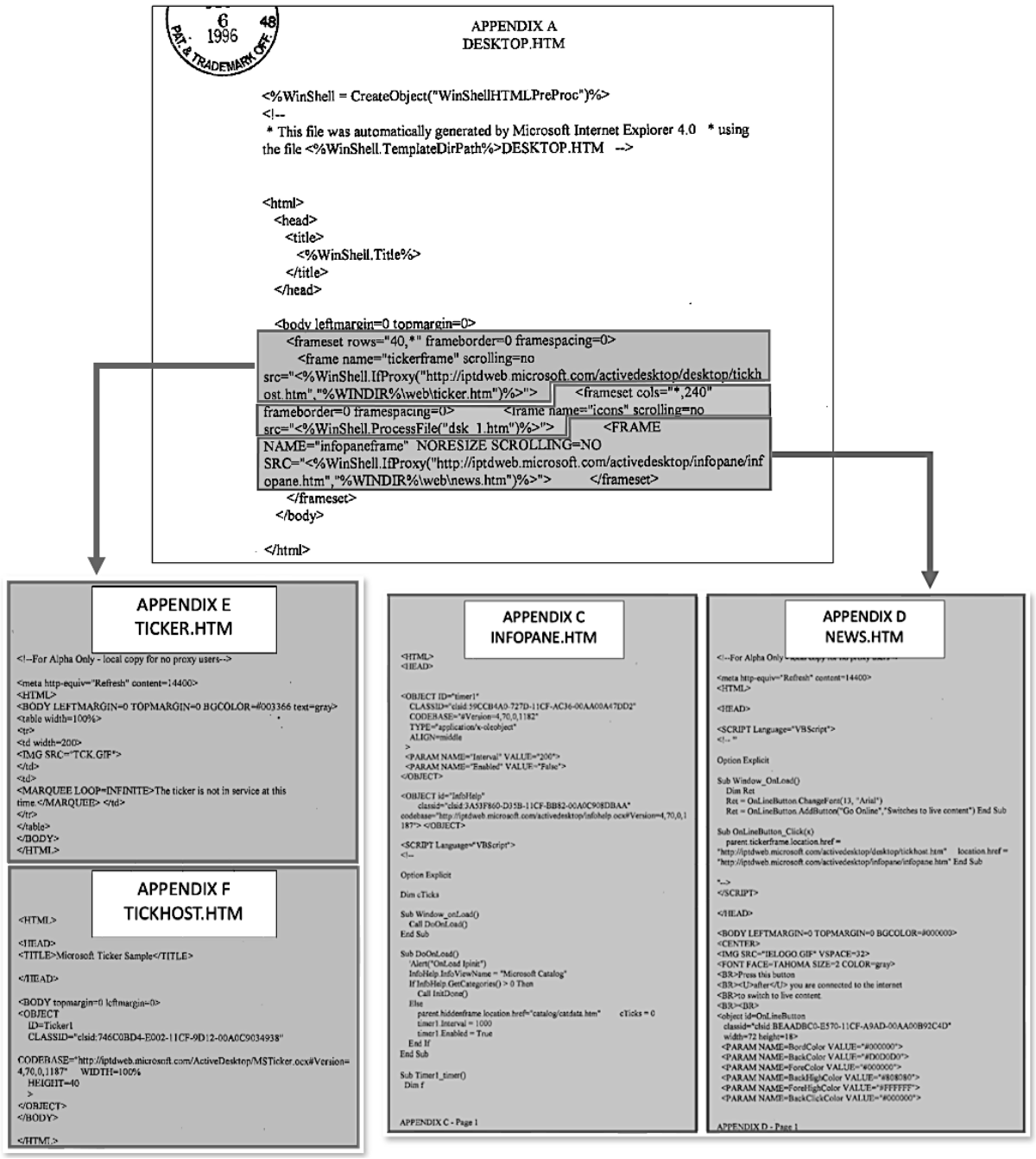
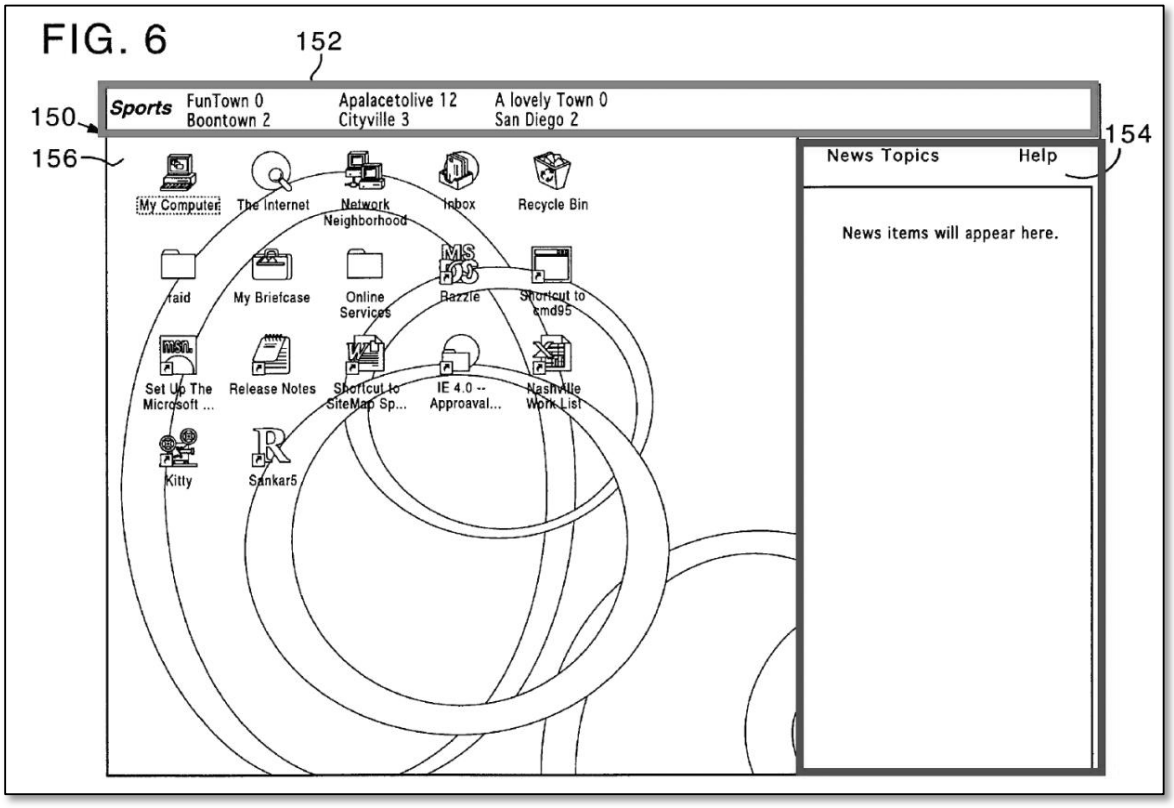


Figure A*; Slivka FH*, 69, 72-77 (excerpt, annotated). Thus, I note that each frame is defined by a set of HTML instructions that are within a larger synthesized hypertext page. As seen above, each set of HTML instructions includes information necessary

for generating a corresponding HTML frame and presenting content for said frame. *Slivka* teaches that there are various sources for said sets of HTML instructions, including "templates" and "HTML format files." *Slivka,* 3:31-34, 18:52-67. A POSITA would have understood that *Slivka's* synthesized hypertext page would have included all the necessary sets of HTML instructions, to produce (for example) the graphical user interface ("hypertext desktop view 150") *Slivka*, 18:49) shown in Fig. 6. *Slivka* teaches the resulting desktop comprises HTML frames such as ticker 152 and news pane 154, as depicted in annotated Fig. 6 below (which I have reproduced from the Petition):



Slivka, Fig. 6 (annotated).

50. In my opinion, both *Slivka* and the ’407 Patent are directed to systems and methods for presenting Internet content to a user and therefore *Slivka* is in the same field of endeavor as the ’407 Patent. *Compare*, *Slivka*, Abstract, 11:54-65, 18:49-19:17, Figs. 1, 2, 6 *with ’407 Patent*, Abstract, 2:59-65, 5:19-28. Further, because *Slivka* is directed to a problem of enhancing a graphical user interface and *Slivka* teaches presenting HTML frames that receive content from the Internet on a user interface, *Slivka* is reasonably pertinent to a problem faced by the inventors of the ’407 Patent. *Compare Slivka*, 3:14-16, 11:54-65, 18:49-19:17, Fig. 6, *with ’407 Patent*, Abstract, 2:59-3:3, 5:19-28.

B. Overview of Anabuki

51. *Anabuki* teaches HTML documents that are stored at a server and that a user can request and retrieve. *Anabuki* (Ex. 1006), 10:4-13, 11:54-12:24, 13:17-19. In particular, annotated Fig. 4 below depicts such a request and receipt of an HTML document.

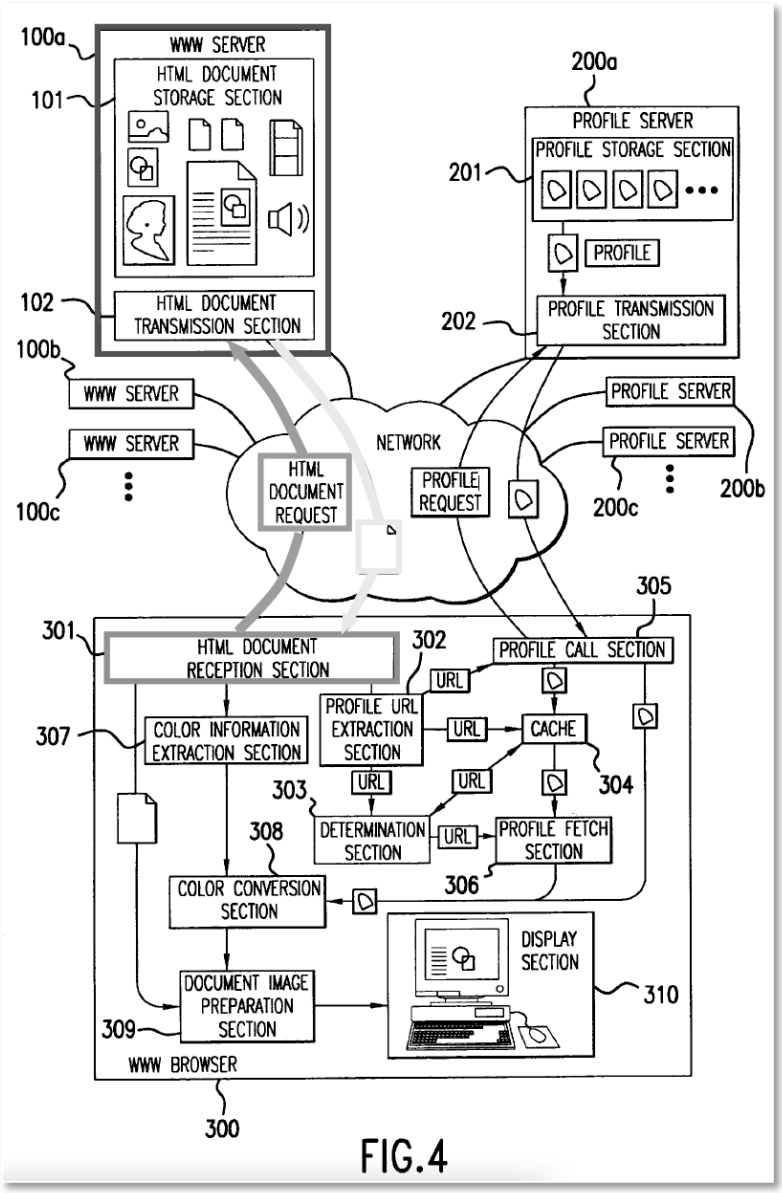


FIG.4

Anabuki, Fig. 4 (annotated).

52. In my opinion, both *Anabuki* and the ’407 Patent are directed to systems and methods for presenting Internet content to a user and therefore, *Anabuki* is in the same field of endeavor as the ’407 Patent. *Compare ’407 Patent*, 2:59-65, *with Anabuki*, 10:4-13, 11:54-12:24, 13:17-19, Fig. 4. Similarly, both *Anabuki* and the

'407 Patent recognize challenges involved in displaying Internet content to a user and to present content on a GUI. Thus, *Anabuki* is reasonably pertinent to a problem described in the '407 Patent. *Compare Anabuki*, 10:4-13, 11:54-12:24, 13:17-19, Fig. 4, *with '407 Patent*, Abstract, 2:59-3:3, 5:19-28.

C. Overview of Powell

53. *Powell* teaches well known HTML instructions including techniques for presenting content on a display using HTML instructions. For example, *Powell* teaches using a URL to retrieve any type of file, such as image files. *Powell* (Ex. 1013), 166 ("In addition to referring to HTML documents, an HTTP URL can request any type of file. For example, http://www.company.com/images/logo.gif would retrieve a GIF image from a server rather than an HTML file.").

54. In my opinion, both *Powell* and the '407 Patent are directed to systems and methods for presenting Internet content to a user. *Compare '407 Patent*, 2:59-65, *with Powell*, 58, 62, 152-156, 164-167, 174-178. As such, *Powell* is in the same field of endeavor as the '407 Patent. Further, both *Powell* and the '407 Patent recognize the challenges with utilizing markup language to specify frame characteristics, such as color, size, and position on a display; therefore, *Powell* is reasonably pertinent to a problem described by the '407 Patent. *Powell*, 174-184, 245-250, 255-256, 260-262, 267-268, 336, 361-362, 372-376; *'407 Patent*, 21:45-60.

D. Overview of Votipka

55. *Votipka* teaches a method for adaptively resizing web page banners. *Votipka* (Ex. 1014), 1:6-9. In particular, *Votipka* teaches a banner created using HTML that allows designers to build banners that are sized automatically. *Votipka*, 3:22-25.

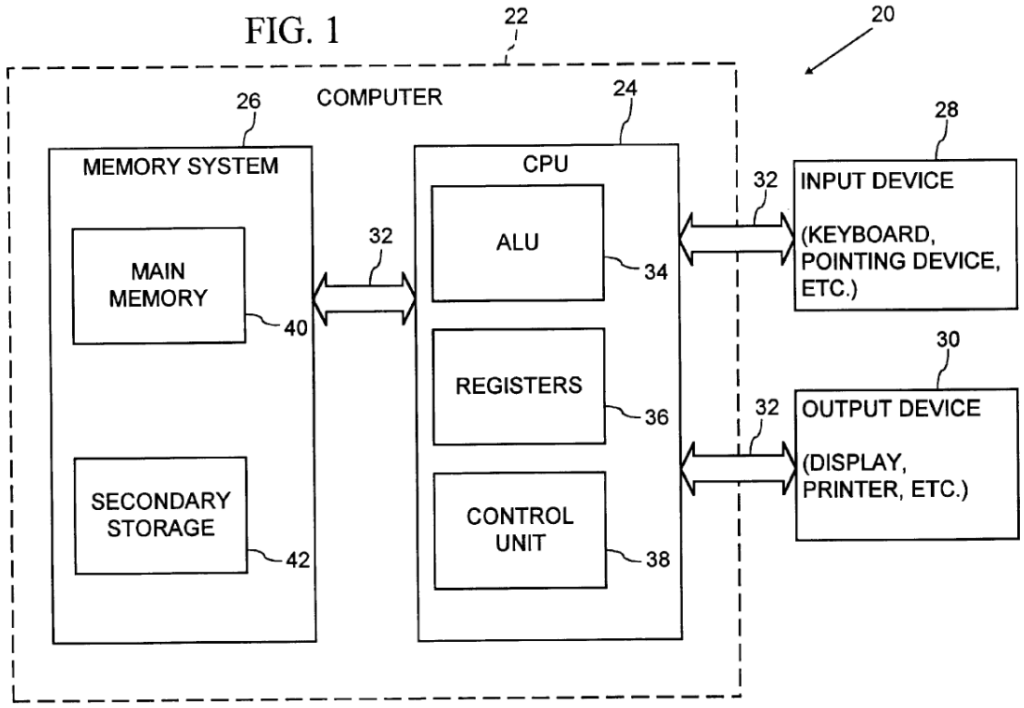
56. Both *Votipka* and the '407 Patent are directed to systems and methods for presenting Internet content to a user and therefore *Votipka* is in the same field of endeavor as the '407 Patent. *Compare '407 Patent*, 2:59-65, *with Votipka*, 1:44-60, 2:65-3:7. Further, both *Votipka* and the '407 Patent recognize the challenges with displaying Internet content to users and enhancing a graphical user interface; therefore, *Votipka* is reasonably pertinent to a problem described by the '407 Patent. *Votipka*, 1:44-60, 2:1-41, 2:65-3:7; *'407 Patent*, Abstract, 2:59-3:3, 5:19-28.

X. OPINIONS REGARDING GROUND 1: CLAIMS 1-4, 6-11, 13-16, AND 18-23 ARE OBVIOUS OVER *SLIVKA* IN VIEW OF *POWELL*

A. Claim 1(Pre): A client computing device configured to access content over a network, the client computing device comprising:

57. In my opinion, to the extent the preamble is limiting, *Slivka* teaches a computer-implemented method of obtaining content (e.g., images, text) over a network (e.g., the Internet) and displaying the content to a user (e.g., on a display device). *Slivka* further teaches a client computing device in operative communication with a server over a network, as claimed. For example, *Slivka* teaches a computer system 20 (i.e., client computing device) that includes a

computer 22, memory system 26 (i.e., electronic storage), CPU 24 (i.e., one or more processors), input device 28, and output device 30 (including a display). *Slivka*, 4:63-5:57. In particular, *Slivka* teaches computer system 20 includes components for accessing a computer network. For example, *Slivka* teaches utilizing a "network interface or a modem" "as input and/or output devices." *Slivka*, 5:29-31. Fig. 1 below depicts *Slivka's* computer system 20 including computer 22:



Slivka, Fig. 1.

58. In my opinion, *Slivka's* computer system 20 is a "client computing device" as claimed because computer system 20 includes a computer 22 and because said computer system 20 accesses and retrieves content from at least one online

server. For example, *Slivka* teaches that computer system 20 receives content over the Internet, including images and text related to sports and news. *Slivka*, 18:49-19:11 ("The ticker 152 presents scrolling HTML format information retrieved from the Internet, such as stock quotes and sports scores. The news pane 154 also presents HTML format information retrieved from the web, such as images and text relating to news events."), 6:21-38, 3:4-7, 4:25-30, 17:14-19. As I discussed above, it was well known in the prior art that a server stores content for a client to access and retrieve. *See* Section V.A (discussing *Powell* in the Overview of the Technology). A POSITA would have understood or found obvious that *Slivka's* ticker 152 and news pane 154 are HTML frames that present HTML format information retrieved from at least one server over a network such as the Internet. *Slivka*, 18:49-19:11.

59. Therefore, in my opinion, a POSITA would have understood that *Slivka* teaches a client computing device, as claimed, because *Slivka's* computer system 20 accesses and retrieves content from at least one server over a network, such as the Internet.

B. Claim 1(a): electronic storage configured to store networked information monitor template associated with a networked information monitor, the networked information monitor template having therein a definition of a viewer graphical user interface having a frame within which time-varying content in a web browser-readable language may be presented on a display associated with the client computing device, wherein the frame of the viewer graphical user interface lacks controls for enabling a user to specify a network location at which content for the networked information monitor is available; and

1. Electronic Storage

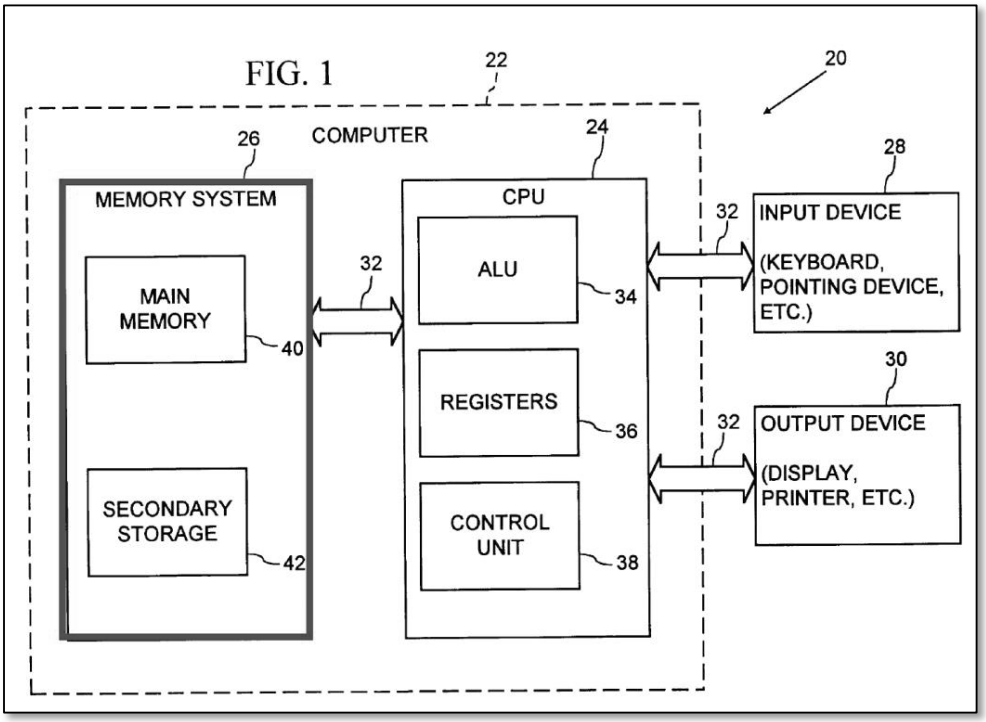
60. In my opinion, *Slivka* teaches that computer system 20 includes both volatile and non-volatile memory. As I discuss below, a POSITA would have understood that either type of memory (volatile or non-volatile) would have been "electronic storage," as claimed. As I discuss further below, *Slivka* teaches storing sets of HTML instructions ("networked information monitor templates," "NIM templates") defining a plurality of HTML frames ("networked information monitors," "NIMs") in memory system 26 ("electronic storage"). *See* Claim 1(a) (Section X.B.2).

61. *Slivka* teaches computer system 20 includes a memory system 26. *Slivka*, 4:63-67 ("Referring to FIG. 1, an operating environment for an illustrated embodiment of the present invention is a computer system 20 with a computer 22 that comprises at least one high speed processing unit (CPU) 24, in conjunction with a memory system 26[.]"). *Slivka* also teaches that memory system 26 includes both

main memory 40 with high-speed memory and secondary storage 42 for long-term storage:

> The memory system 26 generally includes high-speed main memory 40 in the form of a medium such as random access memory (RAM) and read only memory (ROM) semiconductor devices, and secondary storage 42 in the form of long term storage mediums such as floppy disks, hard disks, tape, CD-ROM, flash memory etc. and other devices that store data using electrical, magnetic, optical or other recording media. The main memory 40 also can include video display memory for displaying images through a display device. Those skilled in the art will recognize that the memory 26 can comprise a variety of alternative components having a variety of storage capacities.

Slivka, 5:12-24. A POSITA would have understood from *Slivka's* teachings that memory system 26 includes both volatile memory (e.g., RAM) and non-volatile memory (e.g., ROM, floppy disks, hard disks, tape, CD-ROM, flash memory, and *Slivka's* other long term storage mediums such as "other devices that store data using electrical, magnetic, optical or other recording media"). I have reproduced annotated Fig. 1 of *Slivka* from the Petition below, which depicts both main memory 40 and secondary storage 42 as part of memory system 26 (blue):



Slivka, Fig. 1 (annotated).

62. *Slivka* also teaches that memory system 26 stores both an operating system that "is the set of software which controls the computer system's operation and the allocation of resources" and at least one application program that "is the set of software that performs a task desired by the user, using computer resources made available through the operating system." *Slivka*, 5:32-40. Further regarding computer system operations, *Slivka* teaches computer-executed operations including involving memory system 26. *Slivka*, 5:41-57. Therefore, in my opinion, a POSITA would have understood or found obvious that *Slivka* teaches storing application programs, an operating system, and other electronic information in memory system

26 and executing such programs. Thus, *Slivka* teaches "electronic storage configured to store networked information monitor template associated with a networked information monitor" as claimed.

2. NIM Template and Associated NIM

63. I was informed that "networked information monitor template" ("NIM template") was previously construed as "data structure which defines the characteristics of a NIM, including the NIM frame, view and control characteristics, and which excludes executable applications/compiled code." *See* Section III.D. I was further informed that "networked information monitor" ("NIM") was previously construed as "a fully configurable frame with one or more controls, the frame through which content is presented to the user." *Id.* I have applied these constructions in my analysis.

64. I note that I discussed above how HTML instructions are processed and how HTML instructions result in an "HTML page" or HTML frame. *See* Section V; *Slivka*, 3:16-26. In my opinion, a POSITA would have understood that *Slivka* teaches hypertext pages that contain HTML instructions (also referred to synonymously as HTML data or HTML elements) and that said HTML instructions may originate from various sources including templates 62 that are stored locally and pre-processed. *Slivka*, 6:53-67, Fig. 2. A POSITA would have understood or found obvious that "HTML instructions" and "HTML data"/"HTML elements" would

have been understood to be synonymous terms describing instructions written in HTML format, and that a set of such instructions was thus a "set of HTML instructions." *See* Section V. *Slivka* also teaches sets of HTML instructions from "HTML format files." *Slivka*, 3:31-34, 18:52-67. Regardless of the source, *Slivka* teaches sets of HTML instructions that are processed by hypertext viewer 70 (and shell 50) and is displayed to a user on a display device, where a plurality of HTML frames (e.g., ticker 152, news pane 154) are presented on said display device. *Slivka*, 6:53-67, 11:54-65, 18:49-19:11, 5:25-29 (teaching an output device such as a display), 5:59-66, Figs. 1, 2, 6.

65. Specifically, I refer to "sets" of HTML instructions to describe HTML instructions contained within a single HTML frame element (i.e., <FRAME>) that together generate (or customize) HTML frames. As I explain in detail below, *Slivka* teaches synthesizing various sources of HTML instructions and elements into a single hypertext page for an entire desktop view (including multiple separate HTML frames). As such, when performing such processing, a POSITA would have understood or found obvious that all relevant and necessary HTML instructions to generate the complete and entire desktop view (including a plurality of separate HTML frames) would have been present within said hypertext page. Prior to synthesizing said hypertext page, *Slivka* teaches storing said various sources of HTML instructions in various locations (e.g., at a server, in a local directory). *See*

Claim 1(a). However, a POSITA would have understood or found obvious that each set of HTML instructions within a single FRAME element would have contained all the information necessary to generate an HTML frame within which content is presented to a user. Thus, a POSITA would have understood or found obvious that each set of HTML instructions thus constitutes a NIM template and that when parsed, each set of HTML instructions also generates a corresponding HTML frame ("NIM").

66. For example, a "set" of HTML instructions may be contained within a single HTML document (or multiple HTML documents) and which, when parsed, results in an HTML frame generated (and/or customized) on a user's display device. A single hypertext page may contain multiple sets of HTML instructions for generating multiple HTML frames or may contain a single set of HTML instructions for generating a single HTML frame. Thus, a POSITA would have understood or at least found obvious that a single hypertext page, which contains multiple sets of HTML instructions, meets the claimed plurality of NIM templates. For example, *Slivka* teaches exemplary HTML instructions in its File History where Appendix A (DESKTOP.HTM file) defines multiple sets of HTML instructions that correspond to, in part, news frame 154 and ticker 152. I have reproduced Figure A from the Petition below, which depicts multiple sets of HTML instructions and the Appendices in which they appear:

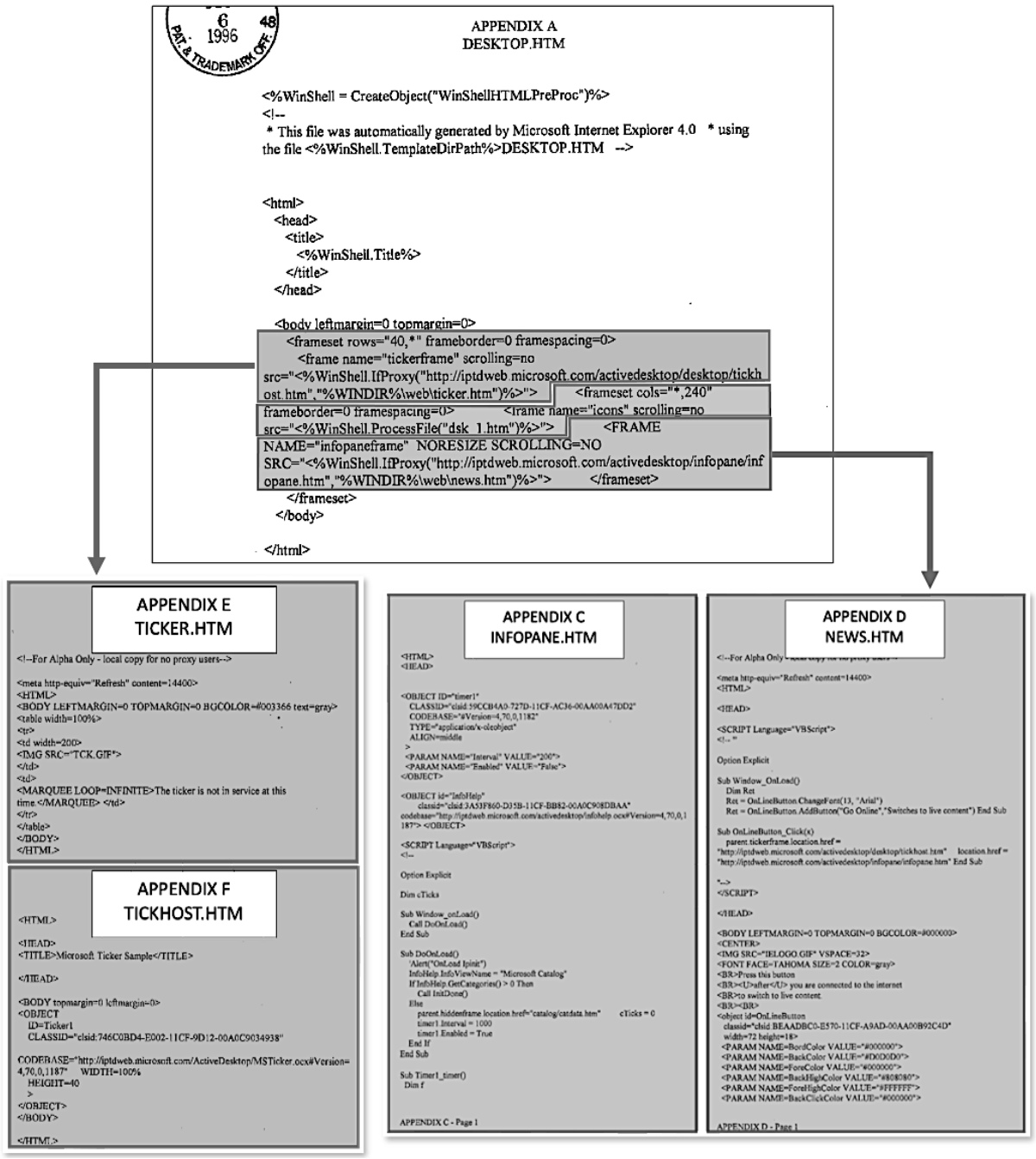


Figure B*; Slivka FH*, 69-70, 72-77 (excerpt, annotated).

67. In another example, HTML instructions may be sourced from multiple HTML documents, where HTML instructions for frame characteristics such as a

background color for a particular HTML frame are contained within one HTML document and HTML instructions specifying a codebase for a portion of an HTML frame are contained within another HTML document. For example, *Slivka* teaches exemplary HTML instructions in individual HTML documents, such as Appendices C-F (INFOPANE.HTM, NEWS.HTM, TICKER.HTM, TICKHOST.HTM), where each appendix (either separately or together) includes different types of HTML instructions for generating or customizing HTML frames. *See Slivka FH,* 72-77. Indeed, as I discuss below, some of *Slivka's* HTML instructions are utilized for formatting (e.g., size, color) an HTML frame. A POSITA would have understood or found obvious that such "divisions" between the sources of HTML instructions are largely unimportant for *Slivka*, because *Slivka* teaches incorporating all necessary and relevant sources of HTML instructions into a synthesized hypertext page to generate a desktop view.

68. I note that *Slivka* teaches generating a hypertext page that incorporates multiple sets of HTML instructions for multiple HTML frames, such as news pane 154 and sports ticker 152. *Slivka*, 18:49-19:11. In my opinion, each set of HTML instructions that corresponds to each generated HTML frame (e.g., news pane 154, sports ticker 152) meets the claimed "NIM template." Thus, in my opinion, *Slivka* teaches a plurality of "NIM templates" for a plurality of "NIMs."

a) *Slivka's* Set of HTML Instructions (NIM Template)

69. As I discussed above, I was informed that "networked information monitor template" ("NIM template") was previously construed as a "data structure which defines the characteristics of a NIM, including the NIM frame, view and control characteristics, and which excludes executable applications/compiled code." *See* Section III.D.

70. A POSITA would understand that a data structure consists of a set of data values, relationships between the values, and functions for operating on those values. HTML instructions fit this definition. The HTML language defines the data structures that produce Web pages. Specifically, the HTML language defines a set of *elements*, and further properties and behavior of each element may be specified by some number of defined *attributes*. For example, the *anchor* element <a> is used to create hyperlinks between documents, and its *href* attribute specifies the web page that the hyperlink refers to, and web browsers (or other applications) know how to display this data (e.g., by underlining and coloring blue the hyperlink text) and that if a user selects the link (e.g., by clicking or tapping on it), the browser (or application) will navigate to the referred-to web page.

71. In my opinion, a POSITA would have understood or found obvious that *Slivka's* set of HTML instructions meets the claimed NIM template. First, in my opinion, a set of HTML instructions is a data structure. *Slivka's* HTML instructions are written in HTML, which is a markup language, and which is parsed by a

processor (e.g., CPU 24). *See* Section V. Additionally, *Slivka's* sets of HTML instructions are stored in memory system 26 (whether in RAM, ROM, or long-term storage). *See* Claim 1(a). Further, HTML instructions contain "elements," which inform the processor how to present or structure the HTML instructions on the display. *Powell*, 23-25; *see* Section V. Additionally, *Slivka* teaches sets of contiguous HTML instructions, as depicted in Figure A below, which I have reproduced from the Petition:

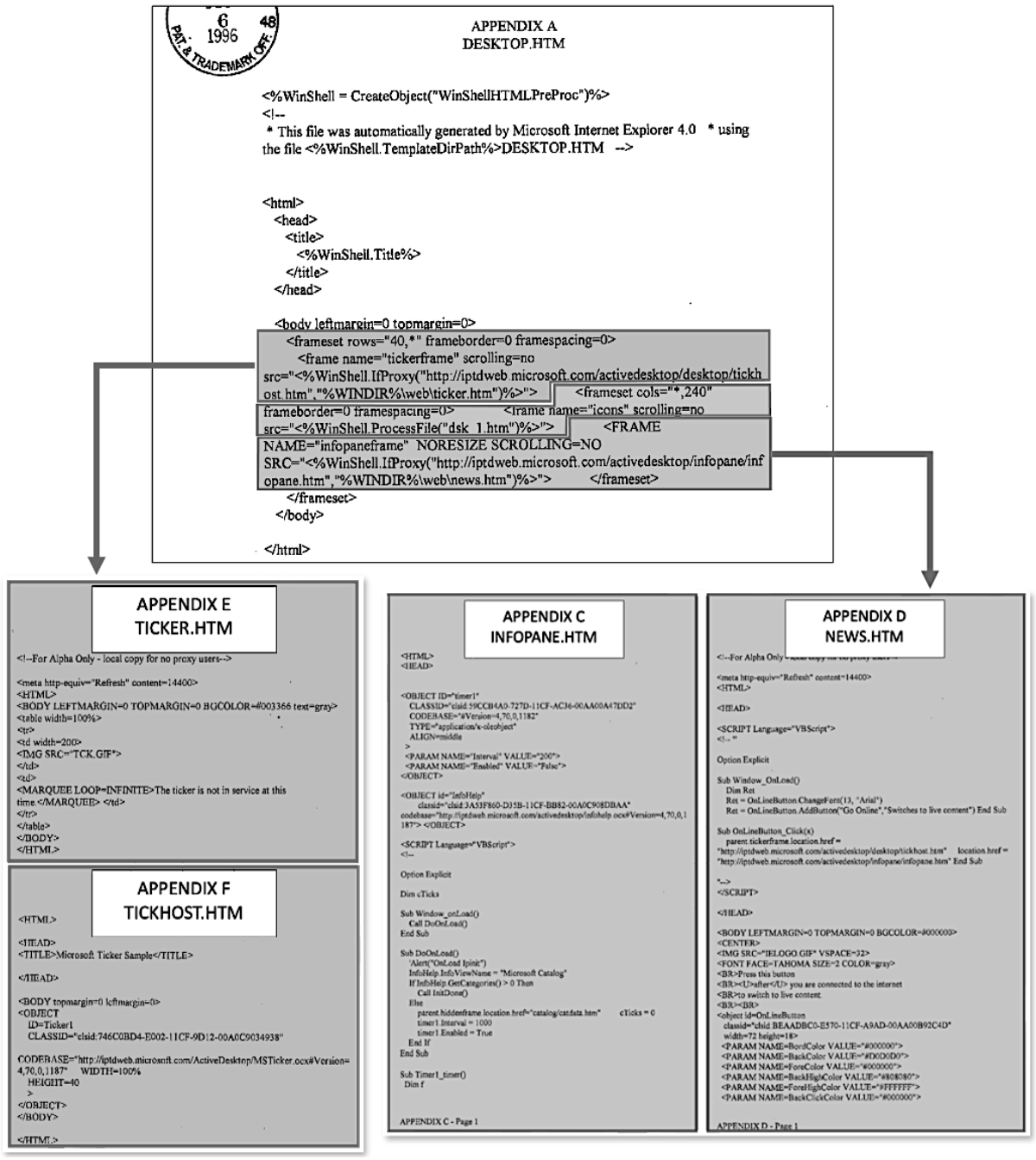


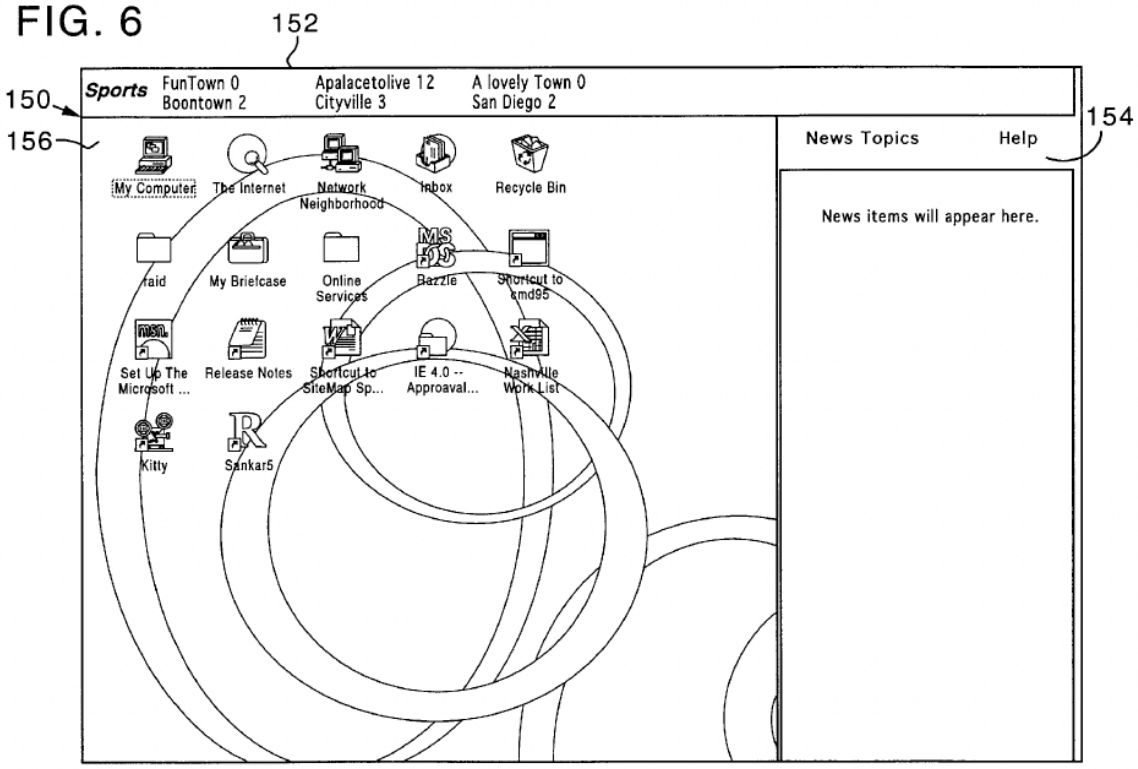
Figure C*; Slivka FH*, 69, 72-77 (excerpt, annotated). As depicted in Figure A, sets of HTML instructions are utilized for generating an HTML frame ticker 152 and HTML frame news pane 154. Therefore, a POSITA would have understood or found

obvious that that *Slivka's* sets of HTML instructions are thus a data structure. For example, all the instructions for generating the HTML frame ticker 152 would be contained within the HTML FRAME element, with its various attributes defining the content to be displayed in the frame, how to display it, and controls for operating on the content.

72. It is my opinion that *Slivka's* sets of HTML instructions define the characteristics of a NIM, including the NIM frame, view and control characteristics." For example, *Slivka* teaches HTML frames include view characteristics (*Slivka*, 20:16-21, teaching multi-media elements implemented using HTML tags such as HTML frames, tables, fonts, hypertext links, embedded images, and sounds)) and control characteristics (*Slivka*, 11:51-53, Fig. 6; *Slivka FH*, 72-77).

73. Further regarding view and control characteristics, *Slivka* teaches examples of control characteristics, such as an online button and a help button. For example, Fig. 6 below depicts a help button in news pane 154:

FIG. 6



Slivka, Fig. 6. *Slivka* also teaches an "OnLineButton" in the exemplary HTML instructions for NEWS.HTM, where said OnLineButton switches to "live content" after being pressed (and after a user connects to the Internet):

```
</HEAD>

<BODY LEFTMARGIN=0 TOPMARGIN=0 BGCOLOR=#000000>
<CENTER>
<IMG SRC="IELOGO.GIF" VSPACE=32>
<FONT FACE=TAHOMA SIZE=2 COLOR=gray>
<BR>Press this button
<BR><U>after</U> you are connected to the internet
<BR>to switch to live content.
<BR><BR>
<object id=OnLineButton
  classid="clsid:BEAADBC0-E570-11CF-A9AD-00AA00B92C4D"
  width=72 height=18>
  <PARAM NAME=BordColor VALUE="#000000">
  <PARAM NAME=BackColor VALUE="#D0D0D0">
  <PARAM NAME=ForeColor VALUE="#000000">
  <PARAM NAME=BackHighColor VALUE="#808080">
  <PARAM NAME=ForeHighColor VALUE="#FFFFFF">
  <PARAM NAME=BackClickColor VALUE="#000000">
```

Slivka FH, 74 (excerpt, annotated).

74. While *Slivka* teaches such controls and control characteristics for the news pane 154, *Slivka* does not expressly teach such for ticker 152. A POSITA would have been motivated and found it obvious to modify *Slivka's* ticker 152 to include such controls. Modifying ticker 152 to include controls such as "OnLineButton" or "help" would have advantageously been use of a known technique to improve *Slivka's* ticker 152 in the same way as news pane 154. Indeed, *Slivka* already teaches that such controls and characteristics for controls (e.g., button colors, border colors) were known, and a POSITA would have been motivated and found it obvious to modify ticker 152 to include such controls and control characteristics in the same way as news pane 154. For example, such a modification

would have provided a similar "OnLineButton" for a user to press after connecting to the Internet to present live sports content in the same way as the OnLineButton for news pane 154 provides live news content. Further, a POSITA would have been motivated and found it obvious to include other controls for a user to control both news pane 154 and ticker 152, such as resizing button, pause button, or even content selection button(s) (e.g., for a particular region, local or national coverage, or particular sport). Additionally, adding such a control would have allowed a user to obtain more information about a particular item in ticker 152, such as information on a recap story for a completed sports game or a full box score instead of only the current score, for example. A POSITA would have appreciated that such a modification would have had a reasonable expectation of success because implementing controls in HTML was well known and would have required only straightforward modifications to HTML instructions. Indeed, *Slivka* teaches that "synthesizing the desktop and other displays from template further allows the multi-media enhancements to be easily and flexibly added and changed." *Slivka*, 4:3-5. It is also my opinion that such modifications would not have required undue experimentation because implementing such features in HTML was well known.

75. It is also my opinion that *Slivka's* sets of HTML instructions exclude "executable applications/compiled code." Indeed, a POSITA would have understood or found obvious that HTML is a markup language ("hypertext markup language")

not a programming language. *See* Section V (discussing *Powell*). A POSITA would have understood that while such HTML instructions may *refer* to executable applications or compiled code, the HTML instructions themselves are not executable applications or compiled code. In other words, while *Slivka's* HTML instructions may include embedded VBScript or *references* to Active-X controls, a POSITA would have understood or at least found obvious that such HTML instructions are not executable applications nor are they compiled code.

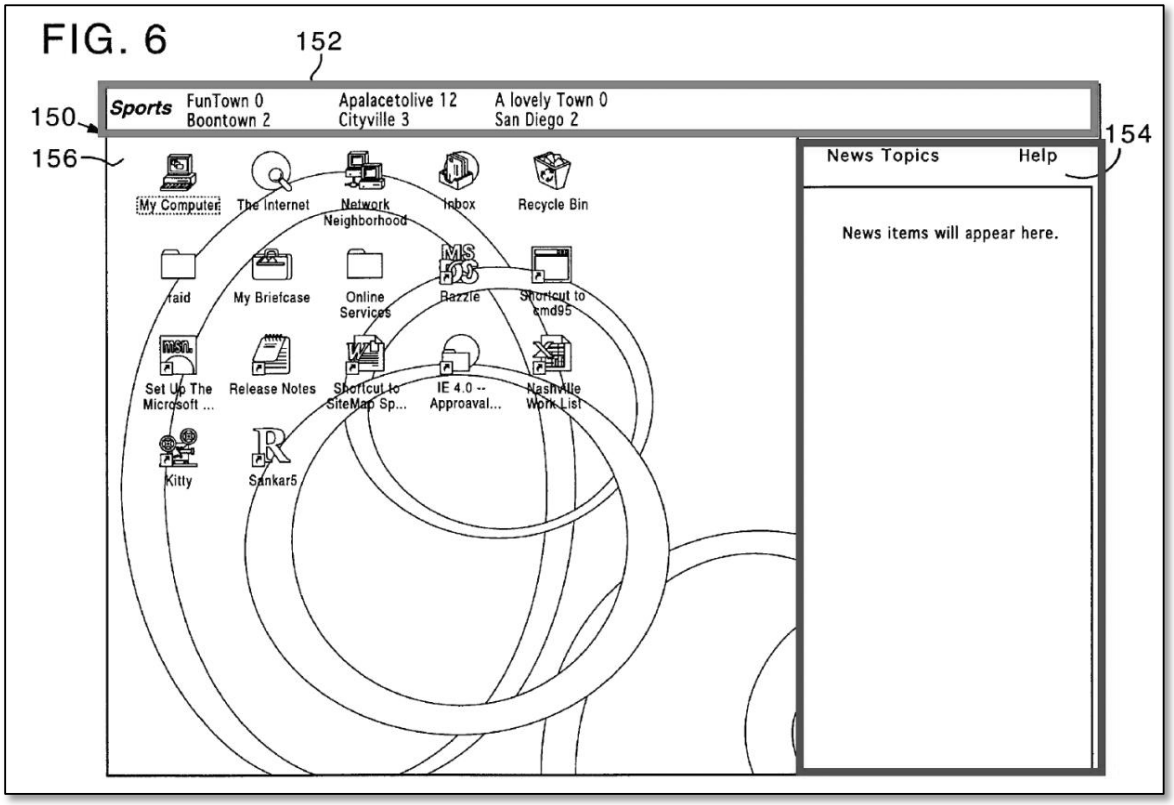
76. Therefore, a POSITA would have understood or found obvious that a set of HTML instructions constitutes a "NIM template," as claimed.

b) *Slivka's* HTML Frame (NIM)

77. As I discussed above, I was informed that "networked information monitor" ("NIM") was previously construed as "a fully configurable frame with one or more controls, the frame through which content is presented to the user."

78. In my opinion, a POSITA would have understood that *Slivka's* HTML frames, such as news pane 154 and ticker 152 each would have met the claimed "NIM." Further, I note that *Slivka* teaches a plurality of such NIMs (i.e., news pane 154 *and* ticker 152). *Slivka's* HTML frames are "fully configurable" based on sets of HTML instructions ("NIM templates") used to configure said HTML frames. Additionally, as I discussed above, *Slivka* either teaches "one or more controls" (in the case of news pane 154) or it would have been obvious to a POSITA to modify

Slivka's ticker 152 HTML frame to include one or more controls. *See* Claim 1(a). *Slivka* also teaches that the HTML frames such as news pane 154 and ticker 152 are frames through which content (e.g., news, sports, stocks) are presented to a user. *Slivka*, 18:49-19:11. Fig. 6 below (reproduced from the Petition) depicts frames where sports and news content are presented to a user:



Slivka, Fig. 6 (annotated). I note that while *Slivka* does not expressly provide examples of news content, a POSITA would have understood or found obvious from *Slivka's* teaching of "News items will appear here" that news items appear in the news pane 154 HTML frame after news content is retrieved from the Internet. *Slivka*,

18:49-19:11 (teaching presenting news and sports/stocks content to a user in HTML frames).

79. Therefore, it is my opinion that *Slivka* teaches a plurality of "NIMs" (i.e., ticker 152 *and* news pane 154) because such HTML frames are frames through which content is displayed and said HTML frames are fully configurable because HTML instructions specify size, color, position, embedded controls, for example. *Slivka*, 4:4-15 (teaching multi-media enhancements with the user interface elements in the GUI), 6:20-26, 6:42-52, 11:54-65, 12:36-40, 18:49-19:11, 20:35-37.

3. Time-Varying Content

80. It is my opinion that *Slivka* teaches time-varying content. For example, *Slivka* teaches an OnLineButton that a user may press to switch to live news content; the description of OnLineButton in the HTML instructions in Appendix D is "Press this button after you are connected to the internet to switch to live content".

```
<BODY LEFTMARGIN=0 TOPMARGIN=0 BGCOLOR=#000000>
<CENTER>
<IMG SRC="IELOGO.GIF" VSPACE=32>
<FONT FACE=TAHOMA SIZE=2 COLOR=gray>
<BR>Press this button
<BR><U>after</U> you are connected to the internet
<BR>to switch to live content.
<BR><BR>
<object id=OnLineButton
  classid="clsid:BEAADBC0-E570-11CF-A9AD-00AA00B92C4D"
  width=72 height=18>
 <PARAM NAME=BordColor VALUE="#000000">
 <PARAM NAME=BackColor VALUE="#D0D0D0">
 <PARAM NAME=ForeColor VALUE="#000000">
 <PARAM NAME=BackHighColor VALUE="#808080">
 <PARAM NAME=ForeHighColor VALUE="#FFFFFF">
 <PARAM NAME=BackClickColor VALUE="#000000">


APPENDIX D - Page 1
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Slivka FH, 74 (excerpt, annotated). A POSITA would have understood "live" content to constitute "time varying" content. Indeed, receiving live content would have been receiving time-varying content because live content changes over time. Additionally, I note that *Slivka's FH* includes exemplary HTML instructions including a content "Refresh" instruction with a time period of 14400. *Slivka FH*, 74. A POSITA would have understood or found obvious that such a "Refresh content" HTML instruction would have resulted in *Slivka's* news pane 154 refreshing news content to provide *new* news periodically at the indicated time interval.

```
<meta http-equiv="Refresh" content=14400>
<HTML>
```

Slivka FH, 74 (excerpt). A POSITA would have further understood that refreshing content was done to account for the content changing with time. Thus, a POSITA would have understood that *Slivka* teaches time-varying content.

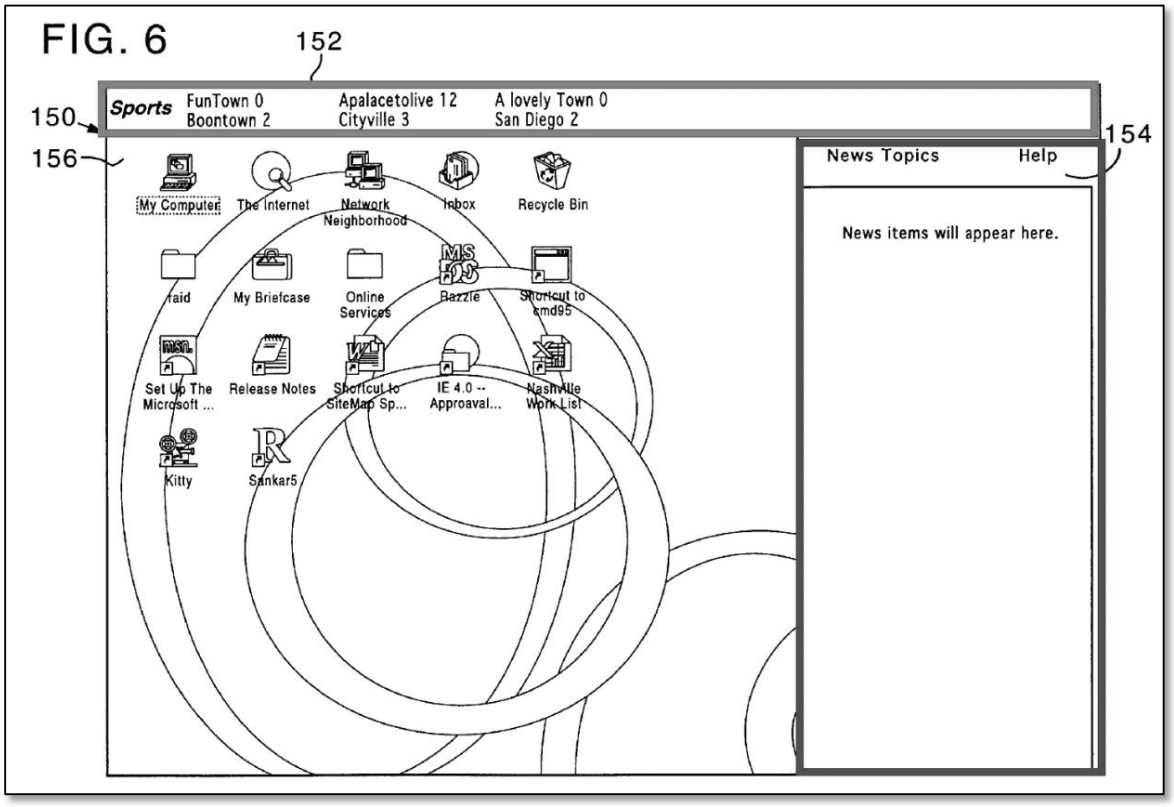
81. Furthermore, I note that *Slivka* teaches HTML is a web browser-readable language. *Slivka*, 11:54-65, 20:12-16; *Powell* also discloses the same. *See* Section V.C.

4. Lacks Controls for Enabling a User to Specify a Network Location

82. In my opinion, *Slivka* teaches HTML frames (e.g., news pane 154, ticker 152) ("NIMs") that lack controls for enabling a user to specify a network location, as claimed.

83. Similarly, I note that *Slivka* does not depict any such controls for enabling a user to specify a first network location in Fig. 6. Specifically, *Slivka* does not depict forward or backward browsing buttons nor a URL entry field nor other manual navigation controls or controls for enabling a user to specify a network location. Further, in my opinion, *Slivka's* frames are separate and outside of any GUI that includes such controls. I have reproduced annotated Fig. 6 from the Petition

below, where ticker 152 (red) and news pane 154 (blue) are depicted and lack said controls for enabling a user to specify a network location:



84. *Slivka*, Fig. 6 (annotated). Further, *Slivka* does not teach any such controls for specifying a network location in *Slivka's* exemplary HTML instructions. *See generally Slivka FH*, 69-80. Indeed, a POSITA would have understood or found obvious that *Slivka's* HTML frames do not function as a conventional browser and lack the aforementioned URL entry field, forward and backward navigation buttons, and other navigation controls for specifying a network location. As I opine for Claim 1, *Slivka* teaches receiving content (e.g., images, text) from the Internet/web in

HTML frames rather than controls for enabling a user to specify a network location for content in said HTML frames. *See* Claims 1(a), 1(b)(i), and 1(b)(ii).

5. Electronic Storage Configured to Store NIM Template

85. In my opinion, a POSITA would have understood or found obvious that *Slivka* teaches shell 50 (including hypertext page viewer 70) can synthesize a hypertext page for display by either utilizing a stored hypertext page or by synthesizing a hypertext page from HTML format files, templates, or one or more hypertext pages. *Slivka*, 6:53-67. As I discuss below, a POSITA would have understood or found obvious that *Slivka* teaches the claimed "electronic storage having stored thereon a plurality of NIM templates defining a plurality of NIMs" whether synthesizing a hypertext page or using a stored hypertext page.

86. As I opined above, *Slivka* teaches electronic storage (both volatile and non-volatile memory) for storing an operating system, at least one application program, and other information. *See* Claim 1(a). I note that *Slivka* also teaches storing a plurality of hypertext pages containing HTML instructions in memory system 26. *Slivka*, 20:25-30, 9:24-32, 10:7-39, 3:58-60, 4:11-15, 7:65-8:2. Additionally, it is my opinion that *Slivka* teaches that memory system 26 also stores configuration files, such as a system registry. *Id.*

87. A POSITA would have understood or at least found obvious that *Slivka's* sets of HTML instructions would have been stored at least temporarily in

RAM because *Slivka* teaches that computer system 20 (including shell 50 and hypertext viewer 70) synthesizes hypertext pages locally. Indeed, *Slivka* teaches synthesizing a hypertext page from HTML instructions from one or more sources (e.g., exemplary appendices in *Slivka's FH*). *Slivka,* 20:12-16, 3:55-67, 11:54-65, 18:49-19:11, Fig. 6, *see generally* 6:53-7:64; *see generally Slivka FH*, 69-92.

88. Thus, a POSITA would have understood that *Slivka* teaches storing sets of HTML instructions ("NIM templates") in two ways: 1) in long term storage (e.g., hard drive, non-volatile memory) and 2) in volatile memory (e.g., RAM). A POSITA would have understood or found obvious that storing said sets of HTML instructions in either non-volatile memory or volatile memory would have met "electronic storage having stored thereon a plurality of NIM templates," as claimed.

C. Claim 1(b): one or more processors configured to execute one or more computer program modules, the one or more computer program modules being configured to access the networked information monitor template, wherein accessing the networked information monitor defined by the networked information monitor template results in:

89. As I discussed above, *Slivka* teaches a client computer with at least one CPU 24. *See* Claim 1(Pre). *Slivka* teaches that computer operations are controlled by CPU 24. *Slivka* 5:32-57; *see* Claim 1(Pre). In my opinion, a POSITA would have understood or found obvious that *Slivka's* shell 50 would have been controlled by CPU 24. Indeed, *Slivka's* shell 50 "extends the framework of the Windows® 95 operating system shell" and "provides a graphical user interface of the computer to

interact with the operating system[.]" *Slivka*, 16:23-52, 5:59-66, 11:54-12:13, 18:49-19:18, 20:8-34. *Slivka* also teaches shell 50 includes hypertext viewer 70. *Id.* As I discussed above in the Overview of the Technology, software parses HTML instructions to generate a desktop view on a display device. *See* Section V. *Slivka* teaches shell 50 (including hypertext viewer 70) parses at least one set of HTML instructions (e.g., for news pane 154) to generate an HTML frame on a user's display. *Slivka*, 16:23-52, 5:59-66, 11:54-12:13, 18:49-19:18, 20:8-34. Therefore, a POSITA would have understood and found obvious that CPU 24 ("one or more processors") is thus "configured to execute one or more computer program modules, the one or more computer program modules being configured to access the networked information monitor template" as claimed.

D. Claim 1(b)(i): transmission, over a network to a web server at a network location, of a content request for content to be displayed within the frame of the viewer graphical user interface defined by the networked information monitor template;

1. Slivka

90. As I opined above, *Slivka* teaches a set of HTML instructions for news pane 154 and a set of HTML instructions for ticker 152. *Slivka*, 18:49-19:11; *Slivka FH*, 69-77; *see* Claim 1(a). Further as I opined above, a POSITA would have understood or found obvious that *Slivka's* set of HTML instructions meet the claimed "NIM template" and either of *Slivka's* HTML frames (news pane 154 and ticker 152) meets the claimed "NIM." *See* Claim 1(a).

91. It is my opinion that *Slivka* teaches retrieving images and text content from the Internet for display in, for example, news pane 154. *Slivka*, 19:1-11. A POSITA would have understood or found obvious that *Slivka* thus would have had HTML instructions including a content reference that comprises a network location to retrieve said content from the Internet. A POSITA would have further understood that such content reference subsequently corresponds with a "content request" upon parsing the HTML instructions. Indeed, a POSITA would have understood that such was common and was the typical way a hypertext document and HTML functioned, as I discussed above regarding the Overview of the Technology. *See Section* V. Thus, to the extent it is argued that *Slivka's* exemplary HTML instructions do not include specific URLs for content, a POSITA would have understood or found obvious that *Slivka* would have utilized such content references (e.g., URLs) to retrieve the content *Slivka* teaches is retrieved from the Internet.

92. Further, assuming it is argued *Slivka's* exemplary HTML instructions do not include specific URLs, a POSITA would have been motivated and found it obvious to include such content references in *Slivka's* HTML instructions. Such would have been merely use of a known technique that was common in HTML, as I opined above. *See* Section V. Further, such would have advantageously provided URLs to specific content to be retrieved, which would have been use of a known

technique to advantageously improve *Slivka's* exemplary HTML instructions in a known manner. *Id.*

2. Slivka in View of *Powell*

93. In my opinion, a POSITA would have been motivated and found it obvious to modify *Slivka* to include a definition of a content reference such as a URL (uniform resource locator) in *Slivka's* sets of HTML instructions in light of *Powell's* teachings.

94. *Powell* teaches the well-known HTML technique of using the SRC (source) attribute to include a URL from which to retrieve content for presentation within the frame defined by said set of HTML instructions. *Powell*, 29 ("HTML elements often have attributes that affect the rendering of the element's content by modifying the function of the element. Attributes are very common with complex elements such as <IMG>, which specifies an image to load into a Web page. The name and location of the image in question are set via the SRC attribute, which indicates the 'source' of the image file. <IMG SRC='logo.gif'> tells the browser to display the file called logo.gif.")

Attribute Name	Possible Value(s)	Description
SRC	URL	References the source (URL) of an image file (GIF or JPG)
ALIGN	ABSBOTTOM, ABSMIDDLE, BASELINE, BOTTOM, LEFT, and MIDDLE	Sets alignment for the image within the page relative to text
ALT	"*Alternative text description*"	Provides a text alternative to the image

Table 6-3. *Complete Syntax of* ***<IMG>***

Powell, 255 ("Table 6-3," excerpt), 155 ("A URL is a standard, or, more appropriately, a uniform way to refer to objects and services on the Internet."), 155 ("The URL simply describes where something is and how it will be retrieved. The 'how' is specified by the protocol, for example, HTTP. The 'where' is specified by a machine name, directory name, and filename. Slashes and other characters are used to separate the parts of the address into machine-parseable pieces."), 368 ("the SRC attribute, which indicates the URL of the frame content[.]"), 370 ("The SRC attribute specifies the URL of the document to load into the given frame. It is not allowed to use a local target, such as #area1 and point to a location within a document. The URL should be a relative or complete URL to an outside document."). *Powell* also teaches that using a URL is "the address of an object; it specifies where and how to retrieve or activate that object. Users should already be familiar with URLs like http://www.toyota.com/, as they are bombarded by them on a daily basis in

advertisements on the Web." *Powell*, 58, 62 ("The addressing of data objects to request takes the form of a Uniform Resource Locator (URL)[.]"). *Powell* depicts the basic structure of a URL below:

```
protocol://site address/directory/file name
```

Powell, 155, *see generally* 155-167 (including teaching linking to images such as JPEG and GIF). *Powell*, 166 ("In addition to referring to HTML documents, an HTTP URL can request any type of file. For example, http://www.company.com/images/logo.gif would retrieve a GIF image from a server rather than an HTML file."). Therefore, in my opinion, a POSITA would have found it obvious to use a URL for referencing content such as an image to retrieve from the Web and present in an HTML frame on a display device, such as *Slivka's*.

95. As I discussed above, *Slivka* teaches receiving images and text content in news pane 154 from the Internet. A POSITA would have been motivated to modify *Slivka's* sets of HTML instructions to advantageously utilize standard, well-known URLs for retrieving content, such as from the Internet. Such a modification would have been use of the known technique of using HTML instructions including a URL to reference content to be retrieved over a network, such as the Internet and would have modified *Slivka's* similar sets of HTML instructions in the same manner as *Powell's* HTML instructions. Indeed, URLs were already well known and used,

with *Powell* teaching users are "bombarded" with URLs on a daily basis. *Powell*, 58.

96. Further, such a modification would have been straightforward, requiring only minor modifications to *Slivka's* exemplary sets of HTML instructions for HTML frames, such as news pane 154. A POSITA would have had a reasonable expectation of success when making such a modification because such would have been straightforward and would have utilized well-known and understood HTML instructions.

97. A POSITA would have understood that such a content request (e.g. URL) that is contained within a set of HTML instructions (e.g., for news pane 154) would have caused a content request to be transmitted to the first network location referenced. I note I also discussed the well-known client and server interaction above. *See* Section V. Further, a POSITA would have understood or found obvious that the Internet is a network, as claimed. *See* Section V.

E. Claim 1(b)(ii): reception, over the network from the web server at the network location, of content transmitted from the web server in response to the content request, the content being time-varying;

98. In my opinion, a POSITA would have understood that in response to transmitting a request for a first content element, a web server would have transmitted a first content element to the requesting device. Indeed, *Slivka* teaches receiving content from over the Internet, and a POSITA would have found obvious

that such content would have been requested, such as via a URL within *Slivka's* set of HTML instructions, such as *Slivka* as modified by *Powell's* teachings. *Slivka*, 18:49-19:11. *See* Claim 1(b)(ii).

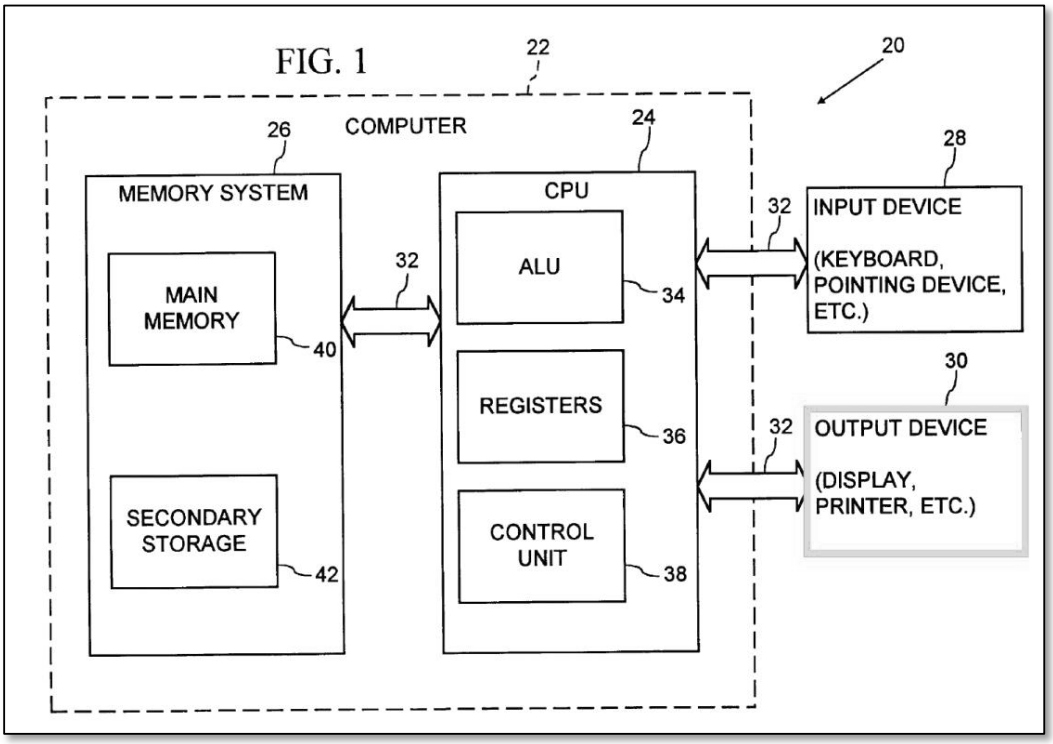
99. I also note my discussion that such content is time-varying. *See* Section X.B.3 (Claim 1(a)).

F. Claim 1(b)(iii): presentation, on the display, of the viewer graphical user interface defined by the networked information monitor template outside of and separate from any graphical user interface of any other application; and

100. As I discussed above, *Slivka* in view of *Powell* renders obvious a first content element and a viewer GUI defined by the NIM template. *See* Claim 1(b)(ii).

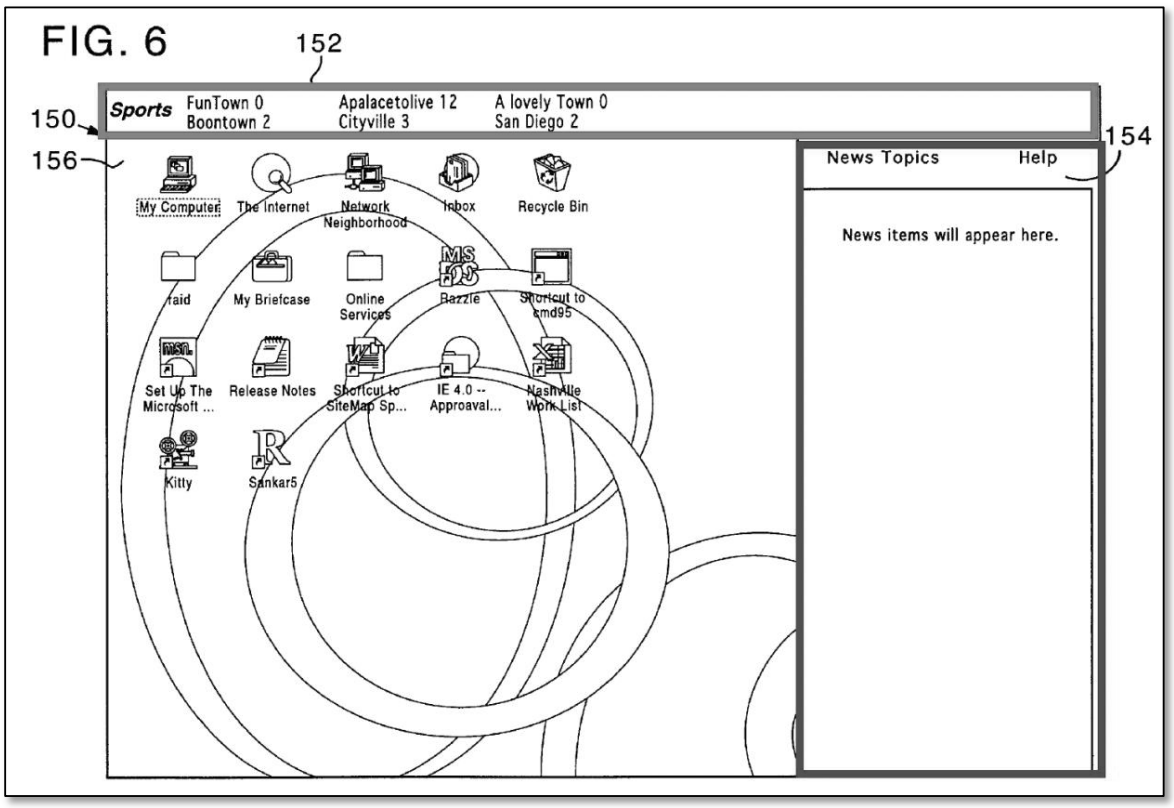
101. In my opinion, a POSITA would have understood or found obvious that *Slivka's* shell 50 would have been controlled by CPU 24. Indeed, *Slivka's* shell 50 "extends the framework of the Windows® 95 operating system shell" and "provides a graphical user interface of the computer to interact with the operating system[.]" *Slivka*, 16:23-52, 5:59-66, 11:54-12:13, 18:49-19:18, 20:8-34. *Slivka* also teaches shell 50 includes hypertext viewer 70. *Id.* As I discussed above in the Overview of the Technology, software parses HTML instructions to generate a desktop on a display device. *See* Section V. *Slivka* teaches shell 50 (including hypertext viewer 70) parses at least one set of HTML instructions (e.g., for news pane 154) to generate an HTML frame on a user's display. *Slivka*, 16:23-52, 5:59-66, 11:54-12:13, 18:49-19:18, 20:8-34. I have reproduced annotated Fig. 1 from the Petition below, which

depicts *Slivka's* output device 30 (display) on which *Slivka's* HTML frames are displayed.



Slivka, Fig. 1 (annotated). Therefore, a POSITA would have understood and found obvious that CPU 24 thus presents the received content in the viewer GUI defined by the NIM template, as claimed.

102. Further, as I discussed above, *Slivka* teaches receiving content from a content request, as claimed. *See* Claim 1(b)(i), 1(b)(ii). *Slivka's* Fig. 6 below depicts HTML frames (ticker 152 (red), news pane 154(blue)) that depict content received from the Internet. *Slivka*, 18:49-19:11.



Slivka, Fig. 6 (annotated). I note that while *Slivka* does not expressly provide examples of news content, a POSITA would have understood or found obvious from *Slivka's* teaching of "News items will appear here" that news items appear in the news pane 154 HTML frame after news content is retrieved from the Internet. *Slivka*, 18:49-19:11 (teaching presenting news and sports/stocks content to a user in HTML frames).

103. It is also my opinion that *Slivka* presents its HTML frames separate and outside of any other application. *Slivka* teaches the "example hypertext desktop view 150 has separate HTML frames (i.e., areas on an HTML page) for a ticker 152, a

news pane 154, and desktop icons frame 156." *Slivka*, 19:1-6. As I noted earlier, *Slivka* teaches that its HTML frames are presented as a result of parsing a synthesized hypertext page. *See* Claim 1(a). *Slivka's* exemplary hypertext page teaches presentation of various frames in a manner that takes up the entire desktop view of the output display device. *Id. Slivka's* Fig. 6 expressly shows *Slivka's* ticker 152 frame and news pane 154 presented independently. *Slivka,* Fig. 6. A POSITA would understand that as a result, *Slivka's* frames are thus presented "separate and outside any other application" as claimed.

G. Claim 1(b)(iv): presentation, on the display within the frame of the viewer graphical user interface defined by the networked information monitor, of the time-varying content received from the web server.

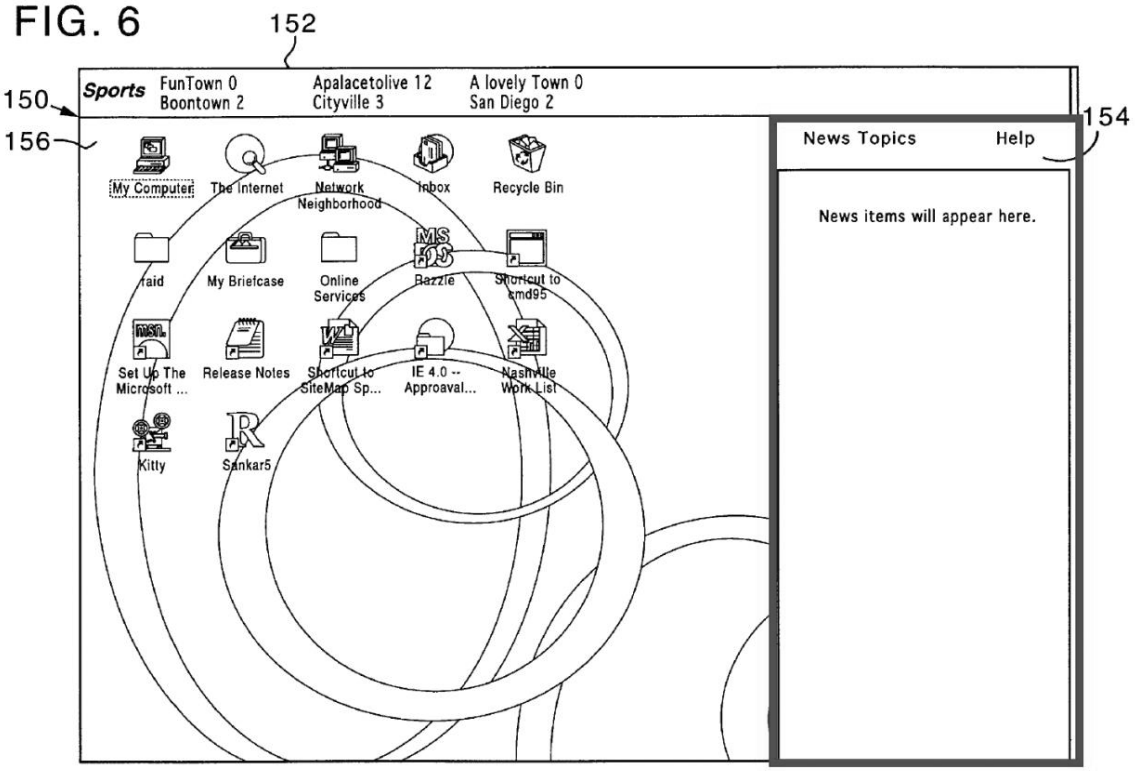
104. As I noted above, *Slivka* teaches a set of HTML instructions (NIM template) that defines an HTML frame. *See* Claim 1(a). I further explained in Claim 1(b)(iii) that *Slivka* in view of *Powell* teaches presenting time-varying news content in the news pane 154 HTML frame. *See* Claim 1(b)(iii).

H. Claim 2: "The method of claim 1, further comprising, responsive to reception of one or more elements included in the received time-varying content, modifying a feature of said viewer graphical user interface defined by the networked information monitor template in accordance with a modification corresponding to the received one or more elements."

105. *See* Claim 1. *See* also my opinions regarding a specific example of "modifying a feature of said viewer GUI" in Claim 6 below. *See* Claim 6. My

opinions regarding Claim 6 are hereby incorporated by reference. In my opinion, *Slivka* teaches a viewer GUI that is defined by a set of HTML instructions. *See* Claim 1. *Slivka* also teaches receiving time-varying content, which I opined on above. *See* Claims 1(a), 1(b)(ii), 1(b)(iv). In my opinion, a POSITA would have understood that in response to receiving time-varying content as I discussed above, a feature of said viewer GUI would have been modified responsive to one or more elements included in the received time-varying content, as claimed.

106. In my opinion, *Slivka* teaches news pane 154 receives "HTML format information retrieved from the web, such as images and text relating to news events" and displays such images and text on the display. I have reproduced annotated Fig. 6 of *Slivka* from the Petition below, which depicts news pane 154 (blue) where news content appears in an HTML frame:



Slivka, Fig. 6 (annotated).

107. As I opined above, *Slivka* teaches time-varying news content. For example, *Slivka* teaches an OnLineButton for news pane 154 to receive live news content and *Slivka's* exemplary HTML instructions for news pane 154 include a "Refresh" instruction to refresh content. *See* Claim 1(a) above where I opined regarding both refreshing content and *Slivka's* OnLineButton. Therefore, in my opinion, a POSITA would have understood that *Slivka* teaches refreshing the news content (e.g., images, text) for news pane 154, which thus would have modified the images and text that are presented in news pane 154. Further, a POSITA would have understood that a feature of the viewer GUI defined by the set of HTML instructions

for news pane 154 (such as images or text) would have been modified upon receiving modified content.

I. Claim 3: "The client computing device of claim 2, wherein said modification corresponding to the received one or more elements comprises a modification to an image defined by the networked information monitor template as forming a part of said viewer graphical user interface."

108. *See* Claim 2. As I discussed above, *Slivka* teaches news pane 154 is modified in relation to receiving one or more elements (e.g., text and images that are related to news content). *Slivka*, 18:49-19:11, Fig. 6. Further, I note that a POSITA would have understood that said modification also includes modifying an image that is defined by the set of HTML instructions that are used to form part of the viewer GUI of news pane 154. In my opinion, *Slivka's* teaching of receiving images and text related to news stories would have informed a POSITA that news pane 154 would have been modified to display such images and text. Additionally, because *Slivka* teaches time-varying content, a POSITA would have understood that images and text displayed by news pane 154 would have been modified over time. *See* Claims 1(a), 2.

J. Claim 4: "The client computing device of claim 2, wherein the correspondence between the modification and the received one or more elements is defined by the networked information monitor template."

109. *See* Claim 2. In my opinion, *Slivka* teaches presenting time-varying content in news pane 154, which meets the claimed viewer GUI having a frame, and

wherein news pane 154 is displayed on *Slivka's* display. *See* Claim 1. I also note that *Slivka* teaches a set of HTML instructions that include a definition of a viewer GUI that presents said time-varying content on *Slivka's* display. *See* Claim 1. Further, as I opined above for Claim 2, *Slivka* teaches news pane 154 is modified to present text and images for news stories and that the text and images are received via the Internet. *Slivka*, 18:49-19:11, Fig. 6 (including depicting news pane 154). *See* Claim 2.

110. In my opinion, a POSITA would have understood that *Slivka's* set of HTML instructions defines the correspondence between the modification to news pane 154 and receiving one or more elements such text and images. Indeed, *Slivka* teaches a set of exemplary HTML instructions for news pane 154 that define news pane 154, which is an HTML frame. Therefore, in my opinion, modifications to *Slivka's* set of HTML instructions for news pane 154 would have thus modified news pane 154 according to said modifications.

K. Claim 6: "The client computing device of claim 2, wherein the one or more computer program modules and the networked information monitor template are configured such that modifying the feature of the viewer graphical user interface comprises changing a color of a frame border or background of the viewer graphical user interface."

111. *See* Claim 2. In my opinion, a POSITA would have understood that *Slivka* as modified by *Powell* renders Claim 6 obvious. As I opine below, a POSITA would have found it obvious and advantageous that modifying *Slivka* in light of *Powell's* teachings would have allowed *Slivka* to use customized background colors

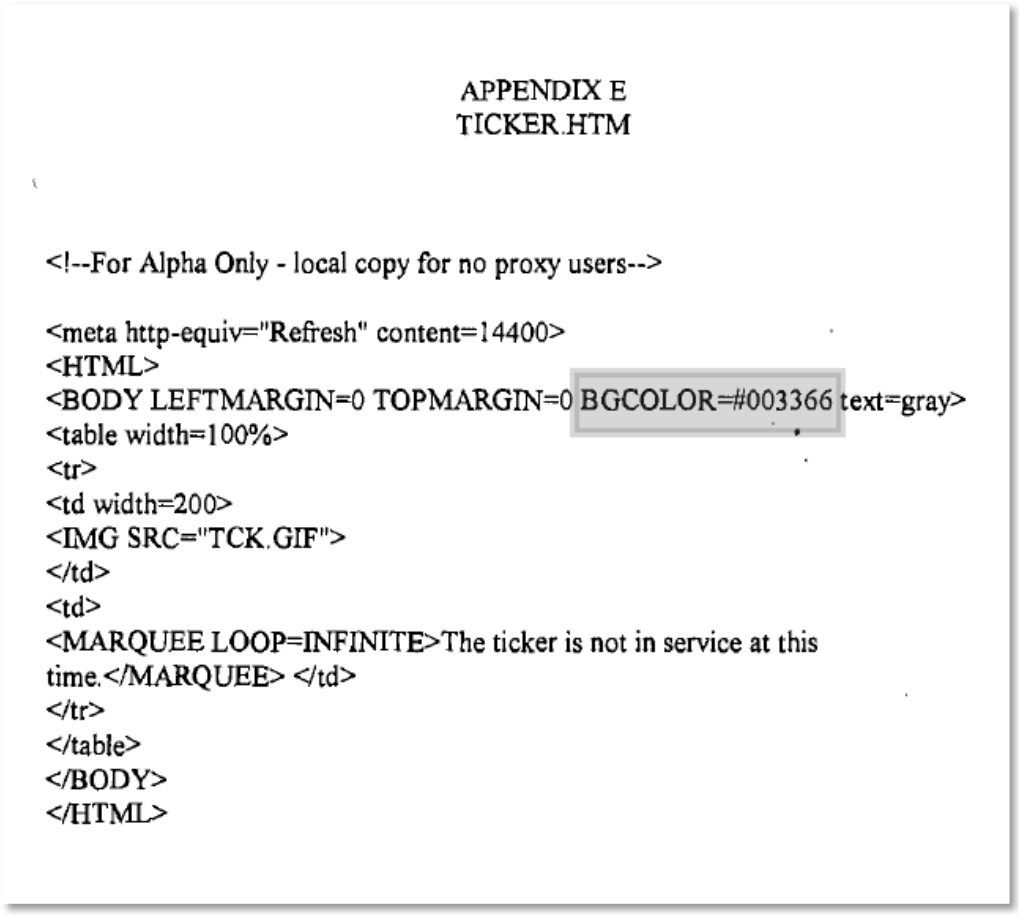
that change over time to correspond with particular news stories, such as using somber colors for tragic news events or bright, happy colors when conveying funny or uplifting news content.

112. It is my opinion that *Slivka* teaches specifying a background color of a frame. For example, *Slivka's* exemplary HTML instructions teach BGCOLOR, which a POSITA would have understood or found obvious is the HTML instruction to specify the background color of *Slivka's* HTML frame. *Slivka's* Appendix D (annotated purple), which contains exemplary HTML instructions for the news pane, is depicted below:

```
<BODY LEFTMARGIN=0 TOPMARGIN=0 BGCOLOR=#000000>
<CENTER>
<IMG SRC="IELOGO.GIF" VSPACE=32>
<FONT FACE=TAHOMA SIZE=2 COLOR=gray>
<BR>Press this button
<BR><U>after</U> you are connected to the internet
<BR>to switch to live content.
<BR><BR>
<object id=OnLineButton
  classid="clsid:BEAADBC0-E570-11CF-A9AD-00AA00B92C4D"
  width=72 height=18>
 <PARAM NAME=BordColor VALUE="#000000">
 <PARAM NAME=BackColor VALUE="#D0D0D0">
 <PARAM NAME=ForeColor VALUE="#000000">
 <PARAM NAME=BackHighColor VALUE="#808080">
 <PARAM NAME=ForeHighColor VALUE="#FFFFFF">
 <PARAM NAME=BackClickColor VALUE="#000000">


APPENDIX D - Page 1
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Slivka FH, 74 (excerpt, annotated). Additionally, *Slivka* teaches exemplary HTML instructions in Appendix E for the ticker 152, which also includes BGCOLOR (annotated purple) as depicted below:



APPENDIX E
TICKER.HTM

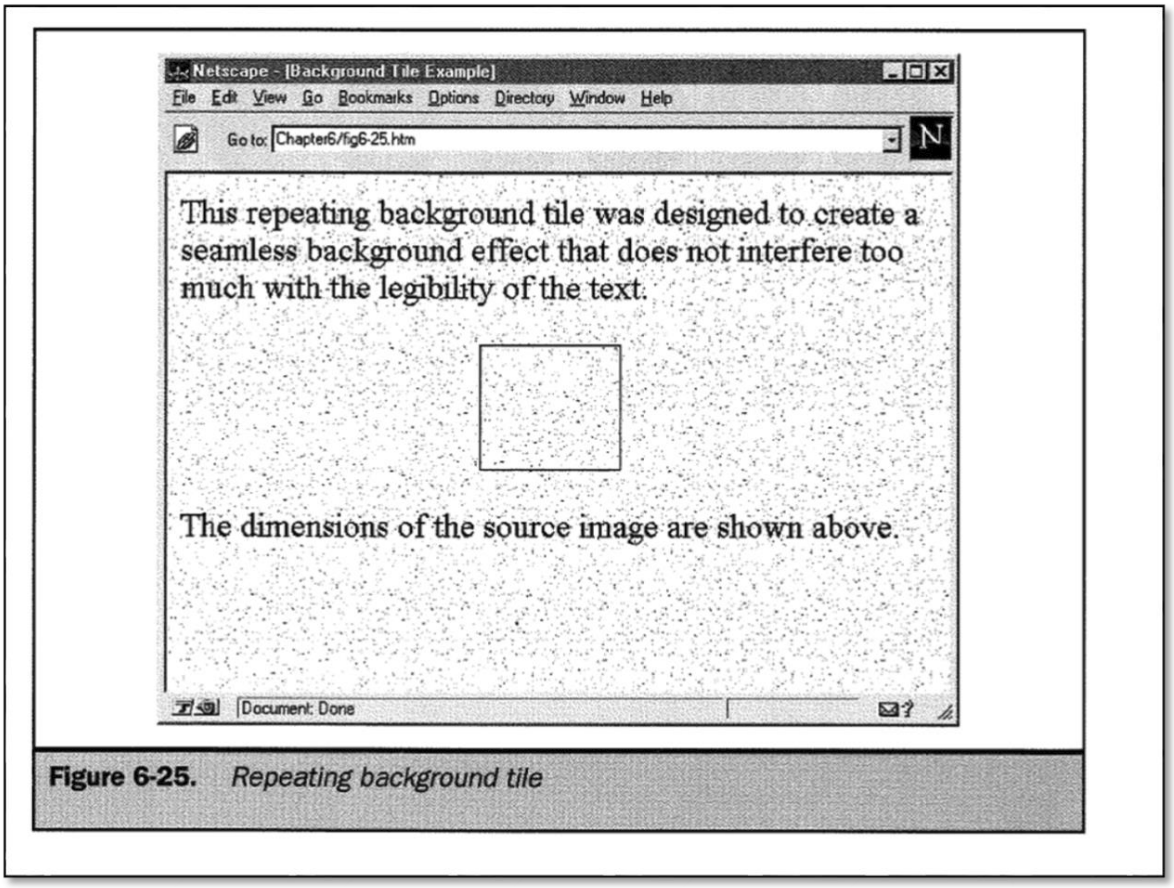
```
<!--For Alpha Only - local copy for no proxy users-->

<meta http-equiv="Refresh" content=14400>
<HTML>
<BODY LEFTMARGIN=0 TOPMARGIN=0 BGCOLOR=#003366 text=gray>
<table width=100%>
<tr>
<td width=200>
<IMG SRC="TCK.GIF">
</td>
<td>
<MARQUEE LOOP=INFINITE>The ticker is not in service at this
time.</MARQUEE> </td>
</tr>
</table>
</BODY>
</HTML>
```

Slivka FH, 76 (annotated); *see also Slivka FH*, 99 ("BGCOLOR=*color* Sets the background color of the page. The *color* can be either a hexadecimal, red-green-blue color value or a predefined color name."); *Powell*, 260, which teaches "BGCOLOR … defines the document's background color."

113. However, while *Slivka* teaches using HTML instructions to specify a background color, *Slivka* does not expressly teach its set of HTML instructions and computer program instructions are "configured such that modifying the feature of the viewer GUI comprises changing a color of a frame border or background of the viewer GUI," as claimed.

114. I note that *Powell* teaches using the BACKGROUND HTML attribute to set a background image. *Powell*, 245 ("[Y]ou can also change the appearance of a Web page by setting a background image using the BACKGROUND attribute. The value of BACKGROUND is the URL for a GIF or JPEG file[.]"). *Powell's* Figure 6-25 below depicts a background that is created by utilizing a repeating background tile, which is specified by a URL.



Powell, 264 ("Figure 6-25").

115. In another example, *Powell* teaches using background images or tiles to create a page layout where a left portion uses a different color than a right portion, which results in a two-tone background for display in the frame. *Powell*, 264 ("Background images, or tiles, can also be used to create other effects. A single GIF 5 pixels high and 1,200 pixels wide could be used to create a useful page layout. The first 200 horizontal pixels of the GIF could be black, while the rest could be white."), 264-265 ("Assuming 1,200 pixels as the maximum width of a browser, this tile

would only repeat vertically, thus creating the illusion of a two-tone background. This has become a very common concept on the Web. Many sites use the left-hand color for navigation buttons, while the remaining area is used for text, as shown in Figure 6-26."). *Powell's* Figure 6-26 is depicted below:

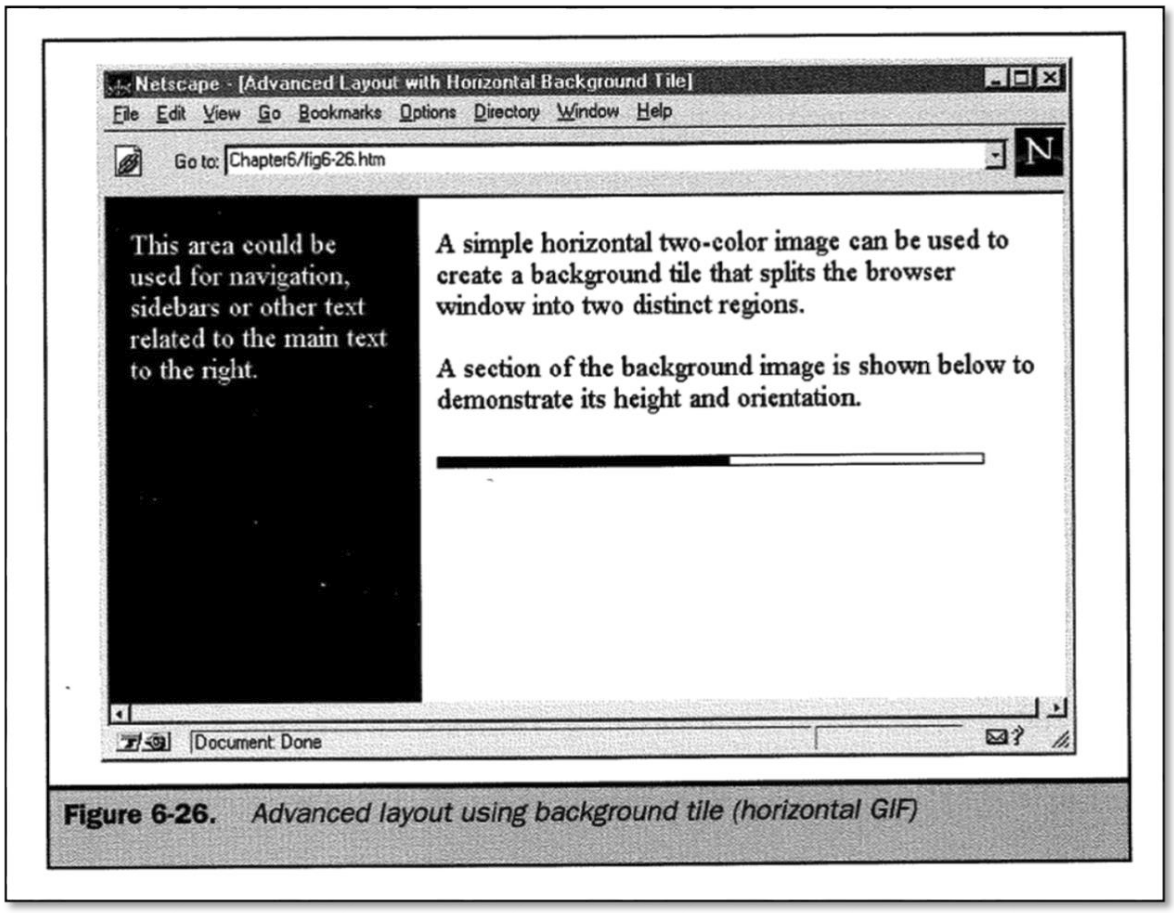


Figure 6-26. *Advanced layout using background tile (horizontal GIF)*

Powell, 265 ("Figure 6-26"), 266 ("Figure 6-27").

116. In my opinion, a POSITA would have been motivated and found it obvious to modify *Slivka* in view of *Powell's* teachings to improve *Slivka's* HTML frames by modifying *Slivka's* sets of HTML instructions of *Slivka's* hypertext pages.

Indeed, a POSITA would have been motivated and found it obvious to modify *Slivka's* sets of HTML instructions in light of *Powell's* teachings so that modifying a feature of the viewer GUI (e.g., image, text) would have included changing a color of a frame border or color of a background of the viewer GUI. As I noted above, *Powell* teaches specifying a background image using a URL as its source. Modifying *Slivka* according to *Powell's* teachings would have thus advantageously modified *Slivka's* background color of the viewer GUI as *Slivka's* time-varying content changes (such as being refreshed). Indeed, *Powell* teaches advantages of using HTML instructions in such a manner, including to create a useful background layout. Such a modification would have advantageously allowed customization and improvements to *Slivka's* HTML frames including the on-screen layout and frame characteristics. A POSITA would have found it obvious and advantageous that such a modification to *Slivka* in light of *Powell's* teachings would have allowed *Slivka* to use customized background colors that change over time to correspond with particular news stories, such as using somber colors for tragic news events or bright, happy colors when conveying funny or uplifting news content. Further, such a modification would have allowed background colors to contrast with news text and images to create a more eye-catching, attractive, or otherwise customized news pane 154. Such a modification would have been use of the known technique of using HTML instructions to set background or border colors to advantageously improve

Slivka's HTML frames in the same way as *Powell's* frames. Additionally, such a modification would have advantageously improved *Slivka*'s set of HTML instructions in the same way as *Powell's*, especially since *Slivka* already teaches presenting images in news frame 154 and using BGCOLOR to specify a background color for the viewer GUI.

117. In my opinion, such a modification would have had a reasonable expectation of success because *Slivka* already teaches specifying a background color and frame size using a set of HTML instructions, and a POSITA would have understood that modifying *Slivka's* set of HTML instructions would have been straightforward. Such a modification would have required only minor modifications to *Slivka's* set of HTML instructions using well known HTML techniques per *Powell's* teachings. Indeed, such a modification would not have required extensive or complex system or hardware changes to implement. Therefore, such a modification would not have required undue experimentation to implement known, well understood HTML instructions (per *Powell's* teachings) as modifications to *Slivka's* set of HTML instructions. Indeed, *Powell* teaches that using such HTML instructions to create a background layout or modify background colors was "very common." *Powell*, 264-265. Therefore, such a modification to *Slivka* would have had a reasonable expectation of success, in my opinion.

L. Claim 7: "The client computing device of claim 2, wherein the one or more computer program modules and the networked information monitor template are configured such that modifying the feature of the viewer graphical user interface comprises modifying text of the viewer graphical user interface in a manner defined by the networked information monitor template."

118. *See* Claim 2. As I opined above, *Slivka* teaches news pane 154 receives text and images related to news stories. *Slivka*, 18:49-19:11. *See* Claim 2. In my opinion, a POSITA would have understood that modifying an image defined by a set of HTML instructions that form part of the viewer GUI would have included a modification to text defined by said set of HTML instructions. *Slivka* teaches font color and size are specified in exemplary HTML instructions, with "FONT FACE=TAHOMA," "SIZE=2," and "COLOR=gray" as examples for news pane 154 below:

```
<BODY LEFTMARGIN=0 TOPMARGIN=0 BGCOLOR=#000000>
<CENTER>
<IMG SRC="IELOGO.GIF" VSPACE=32>
<FONT FACE=TAHOMA SIZE=2 COLOR=gray>
<BR>Press this button
<BR><U>after</U> you are connected to the internet
<BR>to switch to live content.
<BR><BR>
<object id=OnLineButton
  classid="clsid:BEAADBC0-E570-11CF-A9AD-00AA00B92C4D"
  width=72 height=18>
 <PARAM NAME=BordColor VALUE="#000000">
 <PARAM NAME=BackColor VALUE="#D0D0D0">
 <PARAM NAME=ForeColor VALUE="#000000">
 <PARAM NAME=BackHighColor VALUE="#808080">
 <PARAM NAME=ForeHighColor VALUE="#FFFFFF">
 <PARAM NAME=BackClickColor VALUE="#000000">
```

Slivka FH at 74 (excerpt), 76 ("text=gray" for ticker 152). I note that *Powell* teaches setting a document's text color and that it is desirable to use certain font styles such as bold or italics to "set off certain text" and that artistic style, color theory, and typography are important concerns for the Web design process along with text readability. *Powell*, 109, 141, 70, 264. In my opinion, a POSITA would have been motivated and found it obvious to modify *Slivka* in light of *Powell's* teachings to modify text font, text size, and/or text color to accommodate varying news content such as tragic news stories or happy news stories. I opined regarding similarly modifying *Slivka* in view of *Powell* regarding frame background color above. *See* Claim 6. My opinions regarding the motivation to modify *Slivka* in view of *Powell* and the reasonable expectation of success for such a modification for Claim 6 apply equally here for Claim 7, with the minor difference that instead of background color, the modification is text color (or size, bold/italics, or font choice). It is my opinion that for the reasons I discussed above, such a combination would have been desirable to a POSITA and would have had a reasonable expectation of success, especially because *Slivka* already teaches HTML instructions to set font type, text size, and text color.

M. Claim 8: "The client computing device of claim 1, wherein the networked information monitor template includes a markup language file."

119. *See* Claim 1. In my opinion, *Slivka* teaches a set of HTML instructions ("NIM template"). A POSITA would have understood that HTML stands for HyperText Markup Language and is a markup language. Thus, *Slivka's* sets of HTML instructions would have included a markup language file. Indeed, *Slivka* teaches exemplary HTML files (.htm extension) in *Slivka's FH*. *See Slivka FH*, 69-77, Section IX.A, Claim 1(a).

N. Claim 9: "The client computing device of claim 1, wherein one or more computer program modules are configured such that the time-varying content is received from the web server over the network according to the TCP/IP protocol."

120. *See* Claim 1. As I noted above, *Slivka* teaches one or more computer program modules configured such that the time-varying content is received from the web server over the network. *See* Claims 1(a) and 1(b)(i). It is further my opinion that *Slivka* teaches the claimed TCP/IP protocol. I note that *Slivka's FH* includes exemplary HTML instructions with URLs including "http." *Slivka FH*, 69-77. A POSITA would have understood or found obvious that an HTTP URL would have utilized the TCP/IP protocol at the time of *Slivka*. For example, *Powell* teaches such, as I discussed above in the Overview of the Technology. *See* Section V (discussing *Powell*, 40, 43, 62). Additionally, I note that a POSITA Would have understood or found obvious that *Slivka* would have used the TCP/IP protocol because such

protocol is a "reliable" protocol that allows for retransmission of packets that are lost during transmission, as *Powell* teaches. *Id.*

O. Claim 10: "The client computing device of claim 1, wherein the network location corresponds to a uniform resource locator included in the networked information monitor template."

121. As I discuss above, *Slivka*, modified in light of Powell's teachings, renders obvious a URL (uniform resource locator) content reference included in *Slivka's* set of HTML instructions. *See* Claims 1(a) and 1(b)(ii). As such, it is my opinion that *Slivka*, in light of *Powell*, renders obvious a "uniform resource locator included in the networked information monitor template."

P. Claim 11: "The client computing device of claim 10, wherein the one or more computer program modules are further configured such that accessing the networked information monitor defined by the networked information monitor template results in transmission of the content request to the uniform resource locator included in the networked information monitor template, and the content request being transmitted according to the TCP/IP protocol over the network."

122. *See* Claims 10 and 9.

Q. Claim 13(Pre): "A computer-implemented method of accessing content over a network on a client computing device, the client computing device having electronic storage and one or more processors configured to execute one or more computer program modules, the client method comprising:"

123. In my opinion, *Slivka* teaches a computer-implemented method of accessing content over a network on a client computing device. Indeed, *Slivka* teaches a computer device and a method for presenting Internet content (e.g. images,

text) to a user in a news pane 154 HTML frame and a ticker 152 HTML frame. *Slivka*, 18:49-19:11, Fig. 6. Further, as I discussed above, *Slivka* teaches a client computing device that comprises electronic storage and one or more processors configured to execute one or more "computer program modules" as claimed. *See* Claims 1(Pre), 1(a) and 1(b).

R. Claim 13(a): "storing, to the electronic storage, a networked information monitor template associated with a networked information monitor, the networked information monitor template having therein a definition of a viewer graphical user interface having a frame within which time-varying content in a web browser-readable language may be presented on a display associated with the client computing device, wherein the frame of the viewer graphical user interface lacks controls for enabling a user to specify a network location at which content for the networked information monitor is available;"

124. *See supra* Claim 1(a).

S. Claim 13(b): "accessing the networked information monitor defined by the networked information monitor template, wherein accessing the networked information monitor defined by the networked information monitor template results in:"

125. *See supra* Claim 1(b).

T. Claim 13(b)(i): "transmission, over a network to a web server at a network location, of a content request for content to be displayed in the viewer graphical user interface defined by the networked information monitor template;"

126. *See supra* Claim 1(b)(i).

U. Claim 13(b)(ii): "reception, over the network from the web server at the network location, of content transmitted from the web server in response to the content request, the content being time-varying;"

127. *See supra* Claim 1(b)(ii).

V. Claim 13(b)(iii): "presentation, on the display, of the viewer graphical user interface defined by the application media package template outside of and separate from any graphical user interface of any other application; and"

128. *See supra* Claim 1(b)(iii).

W. Claim 13(b)(iv): "presentation, on the display within the frame of the viewer graphical user interface defined by the networked information monitor, of the time-varying content received from the web server."

129. *See supra* Claim 1(b)(iv).

X. Claim 14: "The method of claim 13, responsive to reception of one or more elements included in the received time-varying content, modifying a feature of said viewer graphical user interface defined by the networked information monitor template in accordance with a modification corresponding to the received one or more elements."

130. *See supra* Claims 2 and 13.

Y. Claim 15: "The method of claim 14, wherein said modification corresponding to the received one or more elements comprises a modification to an image defined by the networked information monitor template as forming a part of said viewer graphical user interface."

131. *See supra* Claims 3 and 14.

Z. Claim 16: "The method of claim 14, wherein the correspondence between the modification and the received one or more elements is defined by the networked information monitor template."

132. *See supra* Claims 4 and 14.

AA. Claim 18: "The method of claim 14, wherein modifying the feature of the viewer graphical user interface comprises changing a color of a frame border or background of the viewer graphical user interface."

133. *See supra* Claims 6 and 14.

BB. Claim 19: "The method of claim 14, wherein modifying the feature of the viewer graphical user interface comprises modifying text of the viewer graphical user interface in a manner defined by the networked information monitor template."

134. *See supra* Claims 7 and 14.

CC. Claim 20: "The method of claim 13, wherein the networked information monitor template includes a markup language file, and wherein storing the networked information monitor template comprises storing the markup language file."

135. *See supra* Claims 8 and 13.

DD. Claim 21: "The method of claim 13, wherein the time-varying content is received from the web server over the network according to the TCP/IP protocol."

136. *See supra* Claims 9 and 13.

EE. Claim 22: "The method of claim 13, wherein the network location corresponds to a uniform resource locator included in the networked information monitor template."

137. *See supra* Claims 10 and 13.

FF. Claim 23: "The method of claim 22, wherein accessing the networked information monitor defined by the networked information monitor template results in transmission of the content request to the uniform resource locator included in the networked information monitor template, and the content request being transmitted according to the TCP/IP protocol over the network."

138. *See supra* Claims 11 and 22.

XI. OPINIONS REGARDING GROUND 2: CLAIMS 5 AND 17 ARE OBVIOUS OVER *SLIVKA* IN VIEW OF *POWELL* AND *VOTIPKA*

A. Claim 5: "The client computing device of claim 2, wherein the one or more computer program modules and the networked information monitor template are configured such that modifying the feature of the viewer graphical user interface comprises adjusting a size of the frame of the viewer graphical user interface."

139. *See* Claim 2. In my opinion, *Votipka* teaches automatically adjusting the size of a frame or banner on a display using HTML instructions. *Votipka*, 3:21-23 ("[T]he banner is created using a HyperText Markup Language (HTML) table to allow designers to build visual banners that are sized automatically."), 3:34-37 ("[W]henever the user loads a page that includes the banner into their web browser, the browser itself determines the width of the display area and automatically adjusts the size of the table to fit the display area."). *Votipka* further teaches that such an automatically adjusting banner or frame gives "the perception that the banner has been built specifically for the width of the display area" of a user's display. *Votipka*, 3:40-43. *Votipka* teaches an example of such a banner/frame with an automatically adjusting size in Fig. 4 below:

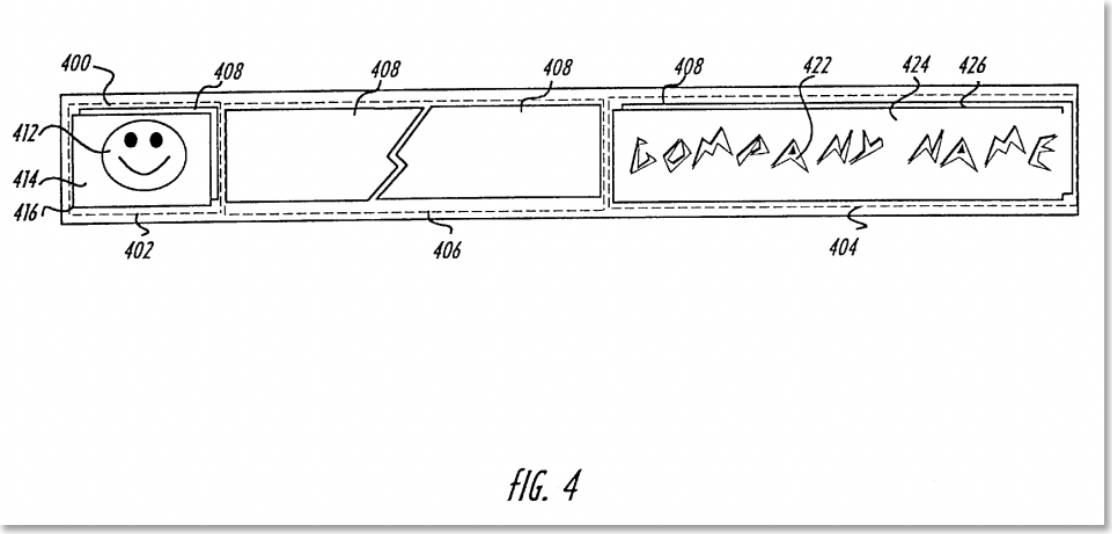


FIG. 4

Votipka, FIG. 4, 2:66-3:7.

140. In my opinion, a POSITA would have been motivated and found it obvious to modify *Slivka-Powell* in light of *Votipka's* teachings. Indeed, such a modification would have advantageously configured *Slivka-Powell's* HTML frame to resize automatically based on received content including text or images (including a logo or company name). *Votipka*, 2:35-41 ("As another example, the substantive content (e.g., detailed photographs or instrumentation snapshots) often require a high resolution display for proper viewing. If the web page graphics are designed to maximize the display area to optimize the available space for a high resolution display, the web page requires a larger application frame, and therefore an appropriately expanded banner to cover the width of the application frame."), 2:54-63. Such a modification would have been use of a known technique of using HTML instructions to improve *Slivka-Powell's* HTML frame in the same manner as

Votipka's HTML banner. I note that *Votipka* also teaches express advantages that would have motivated a POSITA to make such a modification. For example, *Votipka* teaches reusing the same banner instead of needing to create multiple banners to accommodate different sizes of user displays. *Votipka*, 5:61-6:11. *Votipka* further teaches an automatic size-adjusting banner that will "adjust to expand to the size of the web page window rather than display resolution, and accordingly, may be used to automatically adjust in width as the user adjusts the web page window." *Id.* Indeed, a POSITA would have understood that such an adjustment in width as implemented in *Slivka-Powell* per *Votipka's* teachings would have met the claimed adjusting a size of the frame of the viewer GUI, as claimed. Thus, in my opinion, a POSITA would have been motivated and found it obvious to modify *Slivka-Powell* in light of *Votipka's* teachings to advantageously automatically resize HTML frame width ("a size") based on received time-varying content. Such automatic adjust to frame size would have resulted in *Slivka-Powell's* HTML frame automatically adjusting to take up more or less room based on received time-varying content, such as taking up reduced space to display sports scores or taking up more space to feature a large resolution image or important breaking news story, for example.

141. It is also my opinion that such a modification would have had a reasonable expectation of success because *Slivka-Powell* already teaches using sets of HTML instructions and includes exemplary HTML instructions which would

require merely minor modifications to implement *Votipka's* teachings. Thus, such a modification using well-known and well-understood HTML instructions would have been straightforward and would not have required undue experimentation nor would hardware or complex system changes have been required to modify *Slivka-Powell* in view of *Votipka's* teachings. Indeed, *Votipka* teaches an implementation of its invention that is less than two dozen "lines" in length, such that modifying *Slivka-Powell's* set of HTML instructions according to *Votipka's* teachings would have been straightforward with a reasonable expectation of success and would not have required undue experimentation. *See Votipka*, 5:20-35 ("Table 1").

B. Claim 17: "The method of claim 14, wherein modifying the feature of the viewer graphical user interface comprises adjusting a size of the frame of the viewer graphical user interface."

142. *See supra* Claims 5 and 14.

XII. OPINIONS REGARDING GROUND 3: CLAIMS 12 AND 24 ARE OBVIOUS OVER *SLIVKA* IN VIEW OF *POWELL* AND *ANABUKI*

A. Claim 12(Pre): "The client computing device of claim 1, wherein the one or more computer program modules are further configured:"

143. *Slivka-Powell* renders obvious Claim 1. *See supra* Claim 1. *Slivka* teaches one or more computer program modules. *See supra* Claim 1(b).

B. Claim 12(a): "to transmit, over the network to a networked information monitor server, a request for the networked information monitor template"

144. In my opinion, *Slivka's* computer system 20 is a "client computing device" as claimed because computer system 20 includes a computer 22 and because said computer system 20 accesses and retrieves content from at least one online server. For example, *Slivka* teaches that computer system 20 receives content over the Internet, including images and text related to sports and news. *Slivka*, 18:49-19:11 ("The ticker 152 presents scrolling HTML format information retrieved from the Internet, such as stock quotes and sports scores. The news pane 154 also presents HTML format information retrieved from the web, such as images and text relating to news events."), 6:21-38, 3:4-7, 4:25-30, 17:14-19. As I discussed above, it was well known in the prior art that a server stores content for a client to access and retrieve. *See* Section V.A (discussing *Powell* in the Overview of the Technology). A POSITA would have understood or found obvious that *Slivka's* ticker 152 and news pane 154 are HTML frames that present HTML format information retrieved from at least one server over a network such as the Internet. *Slivka*, 18:49-19:11.

145. Therefore, in my opinion, a POSITA would have understood or at least found obvious that *Slivka* teaches a client computing device, as claimed, because *Slivka's* computer system 20 accesses and retrieves content from at least one server over a network, such as the Internet.

146. I note that *Slivka* does not expressly teach transmitting a request to a server over a network for a NIM template, as claimed. In my opinion, *Anabuki* teaches a user requests an HTML document that is stored at a server and the remote server transmits the requested HTML document back to the requesting user.

147. *Anabuki* teaches a server 100a that stores HTML documents and data embedded in said documents (e.g., images, moving pictures, voice, objects) and that the "locations of the documents and data stored in the HTML document storage section 101 can be specified uniquely by URLs." *Anabuki*, 10:4-10. *Anabuki* further teaches that "[w]hen a request for transmitting an HTML document and its attached data comes through the network, an HTML document transmission section 102 transmits the requested document and data to the requestor." *Anabuki*, 10:10-13, 11:54-12:24, 13:17-19.

148. For example, annotated Fig. 4 (which I copied from the Petition) below depicts *Anabuki's* HTML document request (orange) to a remote server (blue) that stores HTML documents and wherein said remote server (blue) transmits an HTML document (yellow) back to the requesting device's HTML document reception section (pink):

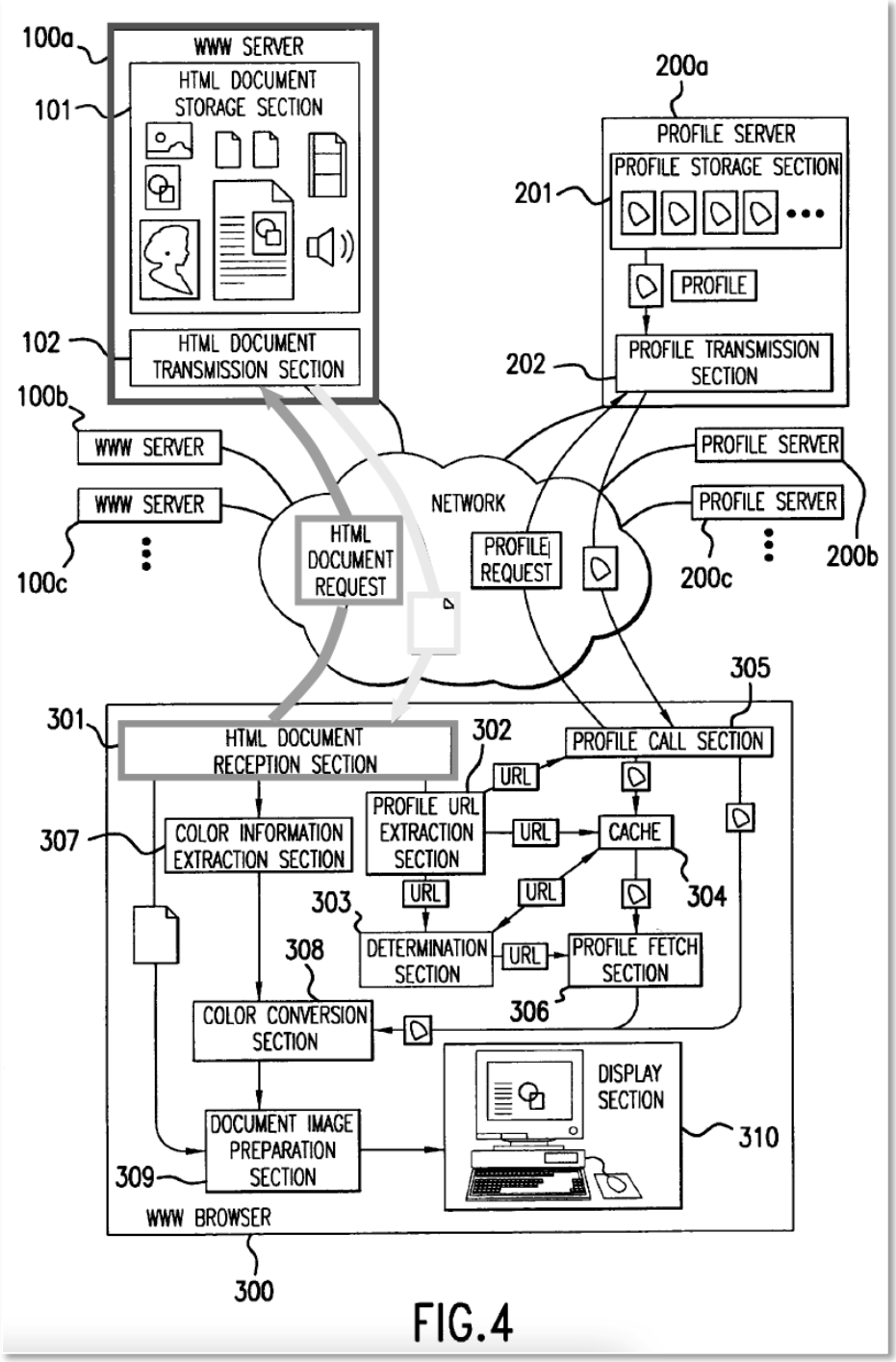


FIG.4

Anabuki, Fig. 4 (annotated).

149. In my opinion, a POSITA would have been motivated and found it obvious to modify *Slivka-Powell* to store sets of HTML instructions at a server to be downloaded by a user upon request to generate corresponding HTML frames. I note that *Slivka* itself already teaches or renders obvious downloading resources from a server over the Internet/web, such as images and text. *Slivka*, 18:49-19:11. I note that while *Slivka* does not expressly teach downloading sets of HTML instructions, a POSITA would have been motivated and found it obvious to make such a modification in light of *Anabuki's* teachings. Indeed, *Anabuki* teaches requesting an HTML document from a remote server and then receiving said HTML document from said server. *Anabuki*, 10:10-13, 11:54-12:24, 13:17-19, Fig. 4 (reproduced above). A POSITA would have understood that one of the primary functions of a server is to provide content to a requesting client. *See* Section V.A.

150. In my opinion, such a modification to *Slivka-Powell* in light of *Anabuki's* teachings would have advantageously improved *Slivka's* system to allow a user to request a new or updated set of HTML instructions to display a new or updated HTML frame. For example, such a modification would have allowed a user to update to a newer version of an HTML frame (e.g., ticker 152, news pane 154) or to acquire a new HTML frame (e.g., weather, conditions, stock market information, or some other HTML frame for displaying additional content). There are multiple types of information displays a user would be interested in, but to avoid ending up

with an overly cluttered display, a POSITA would understand it would be advantageous for the user to be able to customize the actual displays they wanted to see (e.g., one user is interested in weather, another is not), and therefore would want to enable users to request the NIMs they wanted, thus requiring the retrieval of the appropriate NIM template(s) from a library of templates on a server. Such a modification would have been use of a known technique of requesting and receiving an HTML document or set of HTML instructions per *Anabuki's* teachings and would have advantageously improved *Slivka's* system in the same way as *Anabuki's* system.

151. Further, it is my opinion that a POSITA would have had a reasonable expectation of success when making such a modification because storing sets of HTML instructions or HTML documents in electronic storage (e.g., at a server) was known, requesting said HTML documents or sets of HTML instructions was well known, and client-server interactions were already well known. *See* V.A above. Indeed, modifying *Slivka* would have been straightforward, requiring only storing sets of HTML instructions or HTML documents at a server and configuring *Slivka* to allow a user to request and download/receive such sets of HTML instructions. I note that *Slivka* already teaches retrieving images and text content over the Internet, such that modifying *Slivka* to also retrieve sets of HTML instructions would have been straightforward. Thus, a POSITA would have had a reasonable expectation of

success when making such a modification and said modification would not have required undue experimentation. Indeed, such a modification to *Slivka* would not have required adding extensive amounts of additional memory or file storage capacity because a set of HTML instructions, such as those taught by *Slivka*, took only a trivial amount of storage space. Indeed, *Slivka's* exemplary HTML instructions are each on the order of a few dozen "lines" long. *See Slivka FH*, 69-80. Further, a POSITA would have understood that such modifications would have applied the same to *Slivka-Powell* because *Slivka's* modifications regarding *Powell's* URL content reference would not have impacted the retrieval of sets of HTML instructions from a server.

C. Claim 12(b): "to receive, from the networked information monitor server over the network, the networked information monitor template; and"

152. As I discussed above for Claim 12(a), a POSITA would have been motivated and found it obvious to modify *Slivka* to store sets of HTML instructions at a server to be downloaded by a user upon request to generate corresponding HTML frames. *See* Claim 12(a). Further, a POSITA would have understood or found obvious that in response to a user's request for a set of HTML instructions from a server, said set of HTML instructions would have been downloaded from said server and received at *Slivka's* client computing device. *See* Claim 12(a). Indeed, *Anabuki* teaches such. As I opined above, a POSITA would have been motivated and found

it obvious to modify *Slivka* in light of *Anabuki's* teachings, such that the modified *Slivka* would have received the requested set of HTML instructions ("NIM template") in the same way as *Anabuki*. *See* Claim 12(a).

D. Claim 12(c): "to store the networked information monitor template to the electronic storage."

153. As I opined above, a POSITA would have been motivated and found it obvious to modify *Slivka* to store sets of HTML instructions at a server to be downloaded by a user upon request to generate corresponding HTML frames. *See* Claim 12(a). I further opine above that upon downloading the sets of HTML instructions, a POSITA would have understood such instructions to be stored in electronic storage consistent with *Slivka's* teachings regarding electronic storage. *See* Claims 1(a) and 12(a).

E. Claim 24(Pre): "The method of claim 13, further comprising:"

154. *See supra* Claims 12(Pre) and 13.

F. Claim 24(a): "prior to storing the networked information monitor template to the electronic storage, transmitting, over the network to a networked information monitor server, a request for the networked information monitor template; and"

155. *See supra* Claims 12(a) and 13.

G. Claim 24(b): "receiving, from the networked information monitor server over the network, the networked information monitor template."

156. *See supra* Claims 12(b) and 13.

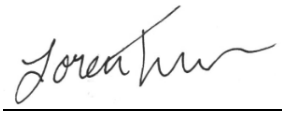
XIII. CONCLUSION

157. For the aforementioned reasons, in my opinion, to a POSITA, the claims of the '407 Patent are rendered obvious by the prior art.

158. I hereby declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both. *See* 18 U.S.C. § 1001. If called to testify as to the truth of the matters stated herein, I could and would testify competently.

Date: May 22, 2023

Respectfully submitted:

By: 

Dr. Loren Terveen

Loren G. Terveen

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Education

Ph.D. in Computer Sciences	University of Texas	1991
M.S. in Computer Sciences	University of Texas	1988
B.A. in Computer Science, Mathematics, History	University of South Dakota	1984

Affiliations Member of ACM, ACM/SIGCHI

Research Interests Human-Computer Interaction, Social Computing

Professional Experience

Professor	University of Minnesota	2002 --
Distinguished McKnight University Professor		2017 --
Principal Member of Technical Staff	AT&T Labs - Research	1996-2002
Member of Technical Staff	AT&T Bell Labs	1991-1996
Graduate Research Intern	Microelectronics and Computer Corporation	1986-19991
Teaching Assistant	University of Texas at Austin	1985

AWARDS AND MAJOR ROLES

ACM Distinguished Scientist (awarded 2009)

ACM SIGCHI Academy (2019)

ACM SGICHI Lifetime Service Award (2023)

ACM SIGCHI President (2015-2018)

ACM Council, SIG Governing Board Representative (2016 – 2018)

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RESEARCH

External Funding

NSF:CISE: Community-Engaged Design and Implementation of a Framework for Ethical Online Communities Research (**Co-PI**, with Svetlana Yarosh PI, Stevie Chancellor Co-PI, Joseph Konstan Co-PI, Kangjie Lu Co-PI), $400,000 for 01/01/2023 to 12/31/2025.

Cisco: Detecting and Reducing Bias in Collaborative Virtual Meetings (**Co-PI**, with Stevie Chancellor PI). **$177,915** for 9/1/2021 to 12/31/2022.

NSF:CHS:Small: Incorporating and Balancing Stakeholder Values in Algorithm Design (UMN **PI**), Award Total $500,000, UMN Share $243,941 for 8/1/2019 to 7/31/2022.

NSF: EAGER: AI-DCL: Capture, Explain and Negotiate the Inherent Trade-offs in Machine Learning Algorithms (UMN **co-PI**), Award Total $295,713, UMN Share $103,267 for 10/1/2019 to 9/30/2022.

NSF:CHS: Small: Collaborative Research: Structured Data Peer Production: Addressing Challenges and Leveraging Opportunities (**PI**), $249,738 for 9/1/2018 - 8/31/2021.

National Cancer Institute (NCI): Restore: Improving sexual outcomes of gay and bisexual prostate cancer survivors (R. Simon Rosser **PI**; my role: **Co-PI);** $2,039,220 (directs) $3,039,541 (total), 2017-2022.

NSF: "PFI:BIC: Smart Human-Centered Collision Warning System: sensors, intelligent algorithms and human-computer interfaces for safe and minimally intrusive car-bicycle interactions" (Co-PI, with Rajesh Rajamani (PI), Max Donath, and Nichole Morris), $999,773 for September 1, 2016 to August 31, 2019.

NSF: "Computer-Supported Cooperative Work Doctoral Colloquium" (**PI**), $25,000 for 03/01/2016 to 02/28/2017.

National Institute on Drug Abuse: "A Technology-Delivered Peer-to-Peer Support ARB Adherence Intervention for HIV+ Adults", (Co-PI, with Keith Horvath (PI) and Darin Erickson), $3,302,62 for 07/01-2015 to 05/31/2020.

NSF: "HCC: Tools and Mechanisms to Support Social Participation Efforts", (**PI)**, $499,399 for 10/01/2012 to 09/30/2015.

NSF: "SoCS: Collaborative Research: Novel Algorithms and Interaction Mechanisms to Enhance Social Production", (**PI**), $527,140, for 7/01/2012 to 06/30/2015.

NSF: "Collaborative Research: Supporting Newcomer Socialization in Online Production Communities", (**PI**), $301,135.00 for 08/2011 to 08/31/2015.

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Minnesota Department of Transportation: “Statewide Cycloplan: A Bicycle Planning Tool with Participatory GIS”, (**PI**), $130,000, for 10/01/2011 to 06/30/2013.

Metropolitan Council: “Cycloplan II”, (**PI**), $71,350, for 08/15/2011 to 05/31/2012.

NSF: “Wikisym Doctoral Consortium”, (**PI**), $13,163, for 05/01/2011 to 04/30/2012.

IBM: “Mobile Crowdsensing”, (**PI**), $100,000 awarded 04/01/2011

NSF: “Social-Computational Systems (SoCS) Community Meeting” (**PI**), $48,801 for 09/01/2010 to 08/31/2011

NSF: “SoCS: Collaborative Research: Information Framing: Intelligent Interfaces for an Online Production Community”, (**PI)**, $375,000 for 09/15/2010 to 08/31/2015.

NSF: “Collaborative Research: Guiding Folksonomy Development to Enable Novel Tagging Applications” (**PI,** with J. Riedl and S. Sen (Macalester College)). $949, 788 for 04/1/2010 to 03/312014 (UMN Share).

Minnesota Department of Transportation: Bike, Bus, and Beyond: Extending Cyclopath to Enable MultiModal Routing (**PI**), $60,627, for 07/08/2010 to 01/31/2012

NIH: An Interactive Website to Promote Communication about Sexual Health and Dating Relationships between Parents and Teens (**Co-PI**, with Sonya Brady (PI), Simon Rosser, and Renee Sieving), $679,500 for 09/30/2009 to 08/31/2011.

Metropolitan Council: “Cycloplan” (**PI**), $185,000, October 2009 – March 2011.

NSF “Collaborative Research: Understanding Online Volunteer Communities: Toward Theory-Based Design” (**co-PI,** with J. Riedl, J. Konstan, M. Snyder, & Y. Ren; R. Kraut (CMU)

$2,400,000 for 08/01/2008 to 07/31/2013.

NSF: “Recommender Systems Doctoral Consortium” (**PI**) $15,415, 2007-2008.

NSF: “Mining Spatiotemporal Data: From Personal Use to Community Knowledge” (**PI**) $449,570 for 12/1/2005 to 11/30/2009.

NSF: “Collaborative Research: Mark This! - Operationalizing the notion of "place" for interactive community systems” (**PI**, with Q. Jones (NJIT) and S. Whittaker (Univ. of Sheffield)). $173,411 for 6/1/2003 to 5/31/2007 (UMN share).

NSF: “Being There: Mobile Devices for Community and Commerce” (**PI**, with J. Konstan, J. Riedl, and S. Shekhar). $120,000 for 9/1/2002 to 8/31/2005.

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NSF: “ITR: Collaborative Research: Designing On-Line Communities to Enhance Participation” (**co-PI**, with J. Konstan & J. Riedl, R. Kraut & S. Kiesler (CMU), P. Resnick and Y. Chen (Univ. of Michigan)). $1,246,017 for 9/1/2003 to 8/31/2009 (UMN share).

AT&T: “VURI: Collaborative Filtering and Intelligent Interface Design for Enhanced TV Applications” (**PI**). $35,000 for November 1, 2008 to October 31, 2009.

AT&T: “VURI: Collaborative Filtering and Intelligent Interface Design for Enhanced TV Applications” (**PI**). $35,000 for June 1, 2007 to May 31, 2008.

Internal Funding

Minnesota/China Collaborative Research Grant: "Expertise Oriented Mining for Web Community". $10,000 for July 1, 2007 to June 30, 2008 (PI, with Jie Tang, Tsinghua University, Beijing China).

University of Minnesota TEL grant: “The Next Generation Online Learning Environment: Designing for Community and Collaboration”. $10,00 for September 2006 to May 2007. (co-PI, with Joan Hughes, David Ernst, and Ann Ooms, College of Education and Human Development).

University of Minnesota Digital Technology Center: “Indoor Navigation Aids for Visually Impaired People”. $25,67 for June 2005 to December 2006. (co-PI, with S. Shekhar and G. Legge).

University of Minnesota Digital Technology Center: “Eye-Tracking Research on Community Websites: Photo Directories and Building Social Networks”. $19,300 for June 2004 to June 2005. (co-PI, with J. Konstan).

University of Minnesota Grant-In-Aid: “Facilitating Participation in Online Communities”. $20,397 for 1/1/2003 to 6/30/2004.

Books

1. Bickhard, M.H. and Terveen, L.G. Foundational Issues in Artificial Intelligence and Cognitive Science: Impasse and Solution, (1995), Elsevier Science.

Refereed Journal Papers

2. Mo Houtti, Moyan Zhou, Loren Terveen, and Stevie Chancellor. “All of the White People Went First": How Video Conferencing Consolidates Control and Exacerbates Workplace Bias. *PACM Human-Computer Interaction (2023).*
3. Mo Houtti, Isaac Johnson, Joel Cepeda, Soumya Khandelwal, Aviral Bhatnagar, and Loren Terveen. 2022. “We Need a Woman in Music”: Exploring Wikipedia’s Values on Article Priority. *PACM Human-Computer Interaction* 7, (2022).
4. Charles Chunkai Zhang*, Mo Houtti*, C, Estelle Smith, Ruoyan Kong, and Loren Terveen. Working for Invisible Machines or Pumping Information into an Empty Void? An Exploration of Wikidata Contributors’ Motivations. In *Proceedings of the ACM on Huma-Computer Interaction*, Vol. 6 (2022). (* co-first authors)
5. C. Estelle Smith, William Lane, Hannah Miller Hillberg, Daniel Kluver, Loren Terveen, and Svetlana Yarosh. Effective Strategies for Crowd-Powered Cognitive Reappraisal Systems: A

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Field Deployment of the Flip*Doubt Web Application for Mental Health. In *Proceedings of the ACM on Human-Computer Interaction,* Vol. 5 (2021). **Best Paper Honorable Mention.**

6. C. Estelle Smith, Avleen Kaur, Katie Z. Gach, Loren Terveen, Mary Jo Kreitzer, and Susan O'Conner-Von. What is Spiritual Support and How Might It Impact the Design of Online Health Communities? In *Proceedings of the ACM on Human-Computer Interaction,* Vol. 5 (2021).
7. Levonian, Z., Dow, M., Erickson, D.R., Ghosh, S., Miller Hillberg, H., Narayanan, S., Terveen, L. and Yarosh, L. Patterns of Patient and Caregiver Mutual Support Connections in an Online Health Community. In *Proceedings of the ACM on Human-Computer Interaction,* Vol. 4 (2020).
8. Zhu, H., Yu, B., Halfaker, A., and Terveen, L. Value-Sensitive Algorithm Design: Method, Case Study, and Lessons. In *Proceedings of the ACM on Human-Computer Interaction,* Vol. 2, No. 2 (2018).
9. Miller Hillberg, H., Levonian, Z., Terveen, L., and Hecht, B. What I See is What You Don't Get: Effects of Seeing Emoji Rendering Differences Across Platforms. In *Proceedings of the ACM on Human-Computer Interaction,* Vol. 2, No. 2 (2018).
10. Hall, A., Terveen, L., and Halfaker, A. Bot Detection in Wikidata Using Behavioral Cues. In *Proceedings of the ACM on Human-Computer Interaction,* Vol. 2, No. 2 (2018).
11. Sheppard, S.A., Turner, J., Thebault-Spieker, J., Zhu, H., and Terveen, L. Never Too Old, Cold or Dry to Watch the Sky: A Survival Analysis of Citizen Science Volunteerism. In *Proceedings of the ACM on Human-Computer Interaction,* Vol. 1, No. 2 (2017).
12. Thebault-Spieker, J., Kluver, D., Klein, M., Halfaker, A., Hecht, B., Terveen, L., and Konstan, J. Simulation Experiments On (The Absence of) Ratings Bias in Reputation Systems. In *Proceedings of the ACM on Human-Computer Interaction,* Vol. 1, No. 2 (2017).
13. Yu, B., Wang, X., Lin, A.Y., Ren, Y., Terveen, L., and Zhu, H. Out With The Old, In With The New? Unpacking Member Turnover in Online Production Groups. In *Proceedings of the ACM on Human-Computer Interaction,* Vol. 1, No. 2 (2017).
14. Nguyen, T.T., Harper, F.M., Terveen, L., and Konstan, J. User Personality and User Satisfaction with Recommender Systems. In *Information Systems Frontiers* (2017).
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144. Society for Personality and Social Psychology, San Antonio, TX. January, 2011. "Past volunteerism predicts amount of content contributed in an online community" (with P. C. Dwyer, J. Filson Moses, P. T. Fuglestad, J. S. Kim, C. A. Mannino, R Davies, & M. Snyder)
145. Society for Personality and Social Psychology, San Antonio, TX. January, 2011. "Social motives and personality as predictors of online participation" (with J. Filson Moses, P. C. Dwyer, P. T. Fuglestad, J. S. Kim, C. A. Mannino, R Davies, & M. Snyder)
146. Kapoor, N., Frankowski, D., Konstan, J., and Terveen, L. Lessons Learned in Implementing the CHIplace Online Community, in *Proceedings of Human-Computer Interaction International 2005*.
147. Zhou, C., Ludford, P., Frankowski, D., and Terveen, L. An Experiment in Exploring How People Describe Places, Short Paper in *Proceedings of Pervasive 2005*.
148. Zhou, C., Ludford, P., Frankowski, D., and Terveen, L. An Experiment in Discovering Personally Meaningful Places from Location Data, Short Paper in *Proceedings of CHI 2005*.
149. Kapoor, N., Konstan, J., and Terveen, L. How Peer Photos Influence Member Participation in Online Communities, Short Paper in *Proceedings of CHI 2005*.
150. Amento, B., Hill, W., and Terveen, L. The Sound of One Hand: A Wrist-mounted Bio-acoustic Fingertip Gesture Interface, Short Paper in *Proceedings of CHI 2002*, 724-725. *33% acceptance rate.*
151. Terveen, L., Hill, W., and Amento, B. Collaborative Filtering to Locate, Comprehend, and Organize Collections of Websites, in SIGART Bulletin, 9, 3&4 (1998), 10-17.
152. Terveen, L., Hill, W., Amento, B., McDonald, D., and Creter, J. 1997. PHOAKS: a system for sharing recommendations. *Commun. ACM* 40, 3 (Mar. 1997), 59-62.
153. Terveen, L.G., Stolze, M., and Hill, W. From 'Model World' to 'Magic World', in *SIGCHI Bulletin*, 27, 4 (1995), 31-34.
154. Terveen, L.G., Papavero, E., and Tuomenoksa, M. DynaDesigner: A Tool for Rapid Design and Deployment of Device-Independent Interactive Services, Refereed Formal Demonstration in *Adjunct Proceedings of CHI'95*, 29-30.

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155. Terveen, L.G. Person-Computer Cooperation through Collaborative Manipulation. Ph.D. Thesis, University of Texas Department of Computer Sciences, 1991.

Invited Presentations

Carnegie Mellon University

Northwestern University

The University of California Irvine

Carleton College

Twin Cities MetroGIS Policy Board

Hennepin County Bicycle Advisory Committee

University of Minnesota Digital Humanities Collaborative

University of Minnesota Advanced Transportation Technologies Seminar Series

Georgia Tech

University of Minnesota Urban Ecosystems Symposium

University of Minnesota New Media

IBM T.J. Watson Research

University of Illinois

University of Maryland

University of Washington

Carnegie-Mellon University

Swedish Institute of Computer Science / Royal Institute of Technology

Uppsala University, Sweden

New Jersey Institute of Technology

Microsoft Research

Vassar University

Rensselaer Polytechnic Institute

University of Colorado

Virginia Tech

University of Nebraska

Conference Presentations

- ACM Conference on Computer-Supported Cooperative Work (CSCW), 2014.
- ACM Conference on Computer-Supported Cooperative Work (CSCW), 2012.
- ACM Conference on Computer-Supported Cooperative Work (CSCW), 2002.
- ACM Conference on Computer-Supported Cooperative Work (CSCW), 1998.
- ACM Conference on Human Factors in Computing Systems (CHI), 1998.
- ACM Conference on Design of Interactive Systems, 1997.

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- ACM Conference on Human Factors in Computing Systems (CHI), 1997.
- ACM Conference on Human Factors in Computing Systems (CHI), 1996.
- IFIP TC13 International Conference on Human-Computer Interaction (INTERACT), 1995.
- IEEE Conference on Knowledge-Based Software Engineering, 1994.
- ACM Conference on Human Factors in Computing Systems (CHI), 1993.
- Conference on Information and Knowledge Management, 1993.
- Conference on Information and Knowledge Management, 1992.
- National Conference on Artificial Intelligence (AAAI), 1991.
- International Joint Conference on Artificial Intelligence (IJCAI), 1991.
- National Conference on Artificial Intelligence (AAAI), 1990.

Workshop Presentations

- CHI 2013 GeoHCI Workshop
    - "Geographical Social Production: Lessons from Cyclopath"
- CSCW 2002 Workshop on "The Role of Place in Shaping Virtual Communities":
    - "Place-Based Community Information Systems".
- CHI 99 Workshop on "Interacting with Recommender Systems":
    - "Visualization Interfaces for Recommender Systems".
- 1999 Human-Computer Interaction Consortium Workshop:
    - "A Reference Task Agenda for Human-Computer Interaction".
- 1998 AAI Workshop on "Recommender Systems":
    - "The PHOAKS Recommender System".
- 1997 Human-Computer Interaction Consortium Workshop:
    - "The PHOAKS Recommender System".
- 1995 Lifelike Computer Characters Workshop:
    - "Hidden Hands, not Talking Heads: The Magic World Interaction Paradigm".
- 1995 Lifelike Computer Characters Workshop:
    - "Moving Agent-User Voice Dialogue towards Natural Conversation".
- CHI 95 Workshop on "'Model World' to 'Magic World': Making Visual Objects the Medium for Intelligent Design Assistance":
    - "The 'Magic World' Approach to Human-Computer Collaboration".
- 1993 AAAI Fall Symposium: "Human-Computer Collaboration: Reconciling Theory, Synthesizing Practice":
    - "A Framework for Human-Computer Collaboration"
- 1993 AI-ED Workshop on "Collaborative Problem Solving: Theoretical Frameworks and Innovative Systems":

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    - "Collaborative Problem Solving in Interactive Systems".
- 1992 CAIA Workshop on "Applying AI To Software Problems: Assessing Promises and Pitfalls":
    - "Representing and Disseminating Software Design Knowledge".
- 1992 AAAI Spring Symposium on "Cognitive Aspects of Knowledge Acquisition":
    - "In The Footprints of The Masters: Embedding Knowledge Acquisition in Organizational Activity".
- AAAI 90 Workshop on "Complex Systems, Ethnomethodology, and Interaction Analysis":
    - "Resources for Person-Computer Collaboration".
- 1990 AAAI Spring Symposium on "Knowledge-Based Human-Computer Communication":
    - "Tools for Human-Computer Collaboration".

Patents

U.S. Patent # 5,388,188. Apparatus and methods for providing design advice. (with P. Selfridge). Issued February 7, 1995.

U.S. Patent #5,659,724. Interactive data analysis apparatus employing a knowledge base. (with A. Borgida, R.J. Brachman, T. Kirk, and P. Selfridge). Issued August 19, 1997.

U.S. Patent #5,680,530. Graphical environment for interactively specifying a target system (with P. Selfridge). Issued October 21, 1997.

U.S. Patent #5,806,060. Interactive data analysis employing a knowledge base. (with A. Borgida, R.J. Brachman, T. Kirk, and P. Selfridge). Issued September 8, 1998.

U.S. Patent # 5,809,492. Apparatus and method for defining rules for personal agents. (with L. Murray). Issued September 15, 1998.

U.S. Patent # 5,953,393. Personal Telephone Agent. (With P. Culbreth, P. Danielsen, R.J. Hall, E. Papavero, and M. Tuomenoksa). Issued September 14, 1999.

U.S. Patent #6,029,192. System and method for locating resources on a network using resource evaluations derived from electronic messages. (with W.C. Hill). Issued February 22, 2000.

U.S. Patent #6,244,873. Wireless myoelectric control apparatus and methods. (with W.C. Hill, F.C. Pereira, and Y. Singer). Issued June 12, 2001.

U.S. Patent #6,256,648. System and method for selecting and displaying hyperlinked information resources. (with W.C. Hill). Issued July 3, 2001.

U.S. Patent #9,430,043. Bioacoustic Control System, Method, and Apparatus. (with B. Amento and W.C. Hill). Issued August 30, 2016.

CONSULTING

This is my consulting record for the years 2019-2023. I have received compensation for the patent litigation cases listed below in these years. I provide details for the cases where my role unless the client requested I do not do so; in the latter case I provide general descriptions.

- (2023) Retained on behalf a consumer and information technology company. General technology area: graphical and touch-based user interfaces. Writing declaration in support of inter partes review petitions.

- (2023) Retained on behalf of a computer software, hardware, and consumer electronics company. General technology areas: graphical user interfaces for web information access Writing declaration in support of inter partes review petitions.

- (2022) Retained on behalf of a computer software company. General technology areas: map-based user interfaces, mobile computing, messaging. Writing declarations in inter partes review proceedings involving patents owned by the company.

- (2022) Retained as expert witness on behalf of a computer software and hardware company. General technology area: group collaboration systems. Writing declaration in support of inter partes review petitions.

- (2022) Retained as expert witness on behalf of a consumer electronics company. General technology area: graphical user interfaces. Analyzed possible infringements of the company's patents.

- (2022) Retained as expert witness on behalf of a computer software company. General technology areas: Web-based and mobile user interfaces.

- (2022) Retained as expert witness on behalf of a computer software company. General technology areas: Web-based and mobile user interfaces.

- (2021) Retained to write declaration in support of inter partes review petitions. General technology area: information discovery.

- (2021) Retained on behalf of a computer software and hardware company. General technology area: graphical user interfaces. Writing declaration in support of inter partes review petitions.

    - **Deposed: September 2022**

- (2021) Retained on behalf of a computer software and hardware company. General technology areas: web information access, voice interaction, home automation. Writing declaration in support of inter partes review petitions.

- (2021) Retained on behalf of a computer software company. General technology area: multimedia messaging. Analyzing potential infringement of company's patents.

- (2021) Retained on behalf of a computer software company. General technology areas: map-based user interfaces, mobile computing, messaging. Writing declarations in support of patent holder's position in *ex parte* reexaminations.

- (2020) Retained on behalf of a computer software and hardware company. General technology area: information processing, hypertext, inference. Writing expert reports.

- (2020) Retained on behalf of a computer software and hardware company. General technology area: graphical user interfaces. Analyzed potential invalidity of patents.

- (2020) Retained by on behalf of a consumer electronics company. General technology area: graphical user interfaces. Analyzed possible infringements of the company's patents.

- (2020) Retained by Erise IP on behalf of Apple
    - Worked on *Inter Partes* review declaration
    - **Deposed: December 2020**

- (2019) Retained on behalf of Comcast. General technology area: interactive program guide systems. Writing expert reports.
    - **Deposed July 2021**
    - **Testified July 2022**
    - **Testified at jury trial April 2022:** Judge William Jung of the U.S. District Court for the Middle District of Florida granted judgment as a matter of law of no infringement for Comcast.

- (2019) Retained on behalf of a computer and internet software company. General technology area: information search. Did not write expert reports.

SERVICE

University of Minnesota Committees

- College of Science & Engineering Consultative Committee: 2015-2018
- College of Science & Engineering Honors & Awards Committee, 2017-2020

External Professional Activities

ACM Special Interest Group on Computer Human Interaction

- President: 2015-2018
- Executive Committee: Adjunct Chair for Awards, 2012 – 2015.
- Executive Committee: Vice President for Membership and Communication, 2009 – 2012.

Conference Chair

- CHI 2002: ACM Conference on Human Factors in Computing Systems
- IUI 1998: ACM Conference on Intelligent User Interfaces.

Program Committee Chair

- CSCW 2004: ACM Conference on Computer-Supported Cooperative Work.
- CSCW 2013: ACM Conference on Computer-Supported Cooperative Work.

Computer Supported Cooperative Work (CSCW) Steering Committee

- Chair, 2012-2014 (First elected Chair of the committee that oversees the CSCW Conference and the general CSCW and Social Computing research community.)

Awards Committee Chair

- CSCW 2008: ACM Conference on Computer-Supported Cooperative Work.

Journals Edited

- Special Issue of *Knowledge-Based Systems* on Human-Computer Collaboration, Vol. 8, No. 2-3, 1995.

Proceedings Edited

- Proceedings of the 2002 ACM Conference on Human Factors in Computing Systems (CHI 2002).
- Proceedings of the 1998 ACM Conference on Intelligent User Interfaces (IUI 1998).

Editorial Boards

- Communications of the ACM, 2009-present.
- ACM Transactions on CHI, 2000-2006.
- Knowledge-Based Systems, 1993-2009.
- ACM *intelligence*, 1998-2001.

Program Committees

- ACM Conference on Human Factors in Computing Systems (CHI): 1999-2004, 2006, 2016.
- ACM Conference on Computer-Supported Cooperative Work (CSCW): 2000, 2006, 2008, 2010, 2011, 2012, 2015.
- ACM Conference on Intelligent User Interfaces (IUI): 1997-2000, 2004.
- ACM Recommender Systems Conference: 2007, 2008, 2009, 2010, 2013.
- ACM GROUP Conference: 2007, 2009, 2010.
- ACM SIGIR Conference: 2008.
- AAAI Conference on the Web and Social Media: 2011, 2012, 2016.
- User Modeling, Adaptation, and Personalization: 2011, 2016.
- NordiCHI 2008, 2010.
- Communities and Technology: 2009.

- Computer-Supported Cooperative Learning 2002.
- User Modeling: 2001.
- International Conference on Knowledge Capture 2001.
- Knowledge-Based Software Engineering (KBSE): 1994-1999.
- Intelligent Data Analysis: 1997.
- National Conference on Artificial Intelligence (AAAI): 1996-1997.
- IEEE Conference on Artificial Intelligence for Applications (CAIA): 1994.
- International Workshop on Privacy-Aware Location-based Mobile Services: 2007.
- SIGIR Workshop on Future Challenges in Expertise Retrieval: 2008.

Other conference leadership positions

- ACM Conference on Computer-Supported Cooperative Work Doctoral Consortium Co-Chair, 2016 and 2011.
- The 2nd AAAI Conference on Human Computation and Crowdsourcing (HCOMP 2014) Doctoral Consortium Co-Chair.
- International Symposium on Wikis and Open Collaboration Doctoral Symposium Chair, 2011.
- ACM Conference on Recommender Systems Doctoral Consortium, Co-Chair, 2007.
- International Joint Conference for Artificial Intelligence Doctoral Consortium, Co-Chair, 1997.
- American Association for Artificial Intelligence Doctoral Consortium, Co-Chair, 1997.
- American Association for Artificial Intelligence Doctoral Consortium, Co-Chair, 1996.

Reviewer

Journals

- ACM Computing Surveys.
- IEEE Transactions on Data and Knowledge Engineering.
- IEEE Expert.
- Information Systems.
- International Journal of Human-Computer Studies.
- Journal of Computer-Supported Cooperative Work.

Conferences

- Ninth IFIP International Conference on Human-Computer Interaction (INTERACT): 2003.
- ACM Conference on Human Factors in Computing Systems (CHI): 1995-1998.
- ACM Conference on Computer-Supported Cooperative Work (CSCW):1998.
- ACM Symposium on User Interface Software and Technology (UIST): 1996.

- ISSM Conference on Information and Knowledge Management: 1993.

National Science Foundations Panels

Served on panels in 1996, 1998, 2001, 2003, 2005, 2010, 2012, 2013.

Workshops Organized

- ACM Wikis and Open Collaboration Doctoral Symposium, 2011.
- Social Computational Systems Community Workshop, 2011.
- ACM Computer Supported Cooperative Work Doctoral Consortium, 2011.
- International Conference on Ubiquitous Computing (UbiComp): "Multi-device Interfaces for Ubiquitous Peripheral Interaction", 2003.
- ACM Conference on Human Factors in Computer Systems (CHI): "Interacting with Recommender Systems", 1999.
- International Joint Conference for Artificial Intelligence Doctoral Consortium, 1997.
- American Association for Artificial Intelligence Doctoral Consortium, 1997.
- American Association for Artificial Intelligence Doctoral Consortium, 1996.
- ACM Conference on Human Factors in Computer Systems (CHI): "'Model World' to 'Magic World': Making Visual Objects the Medium for Intelligent Design Assistance", 1995.
- ACM Conference on Human Factors in Computer Systems (CHI): "New Uses and Abuses of Interaction History", 1994.
- AAAI Fall Symposium: "Human-Computer Collaboration: Reconciling Theory, Synthesizing Practice", 1993.
- World Conference on Artificial Intelligence and Education: "Collaborative Problem Solving: Theoretical Frameworks and Innovative Systems", 1993.
- Conference on AI for Applications: "Applying AI To Software Problems: Assessing Promises and Pitfalls", 1992.

Other Professional Service

- Member of SIGCHI Publications Board and Conference Management Committee, 2002-2004.
- ACM Special Interest Group on Artificial Intelligence Conference Chair (1995-1999); originated and co-organized Doctoral Consortia held in conjunction with AAAI and IJCAI.

Internal Service

- Associate Department Head, 2019-
- Chair, Department Head Search Committee, 2015.
- Chair, Strategic Planning Committee, 2013-2014.
- Chair, Social Computing Faculty Search Committee, 2013-2014.
- Curriculum Committee, 2012-2013.

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- Chair, Strategic Planning Committee / Faculty Recruiting Committee, 2011-2012.
- Director of Graduate Studies: 2007-2010.
- Communications Committee: 2007
- Newsletter/Brochure Committee (chair): 2006-2007
- Research Opportunities Committee: 2005-2007
- Curriculum Committee: 2003-2005.
- Hosted Robert Kraut, Cray Colloquium speaker: October 2003.
- Participated in recruiting and admission activities.
- Information, Technology, and Everyday Life Initiative: Committee Member.

TEACHING AND ADVISING

Ph.D. Students Advised

- Dan Cosley (co-advised with John Riedl): completed PhD July 2006, currently an Associate Professor at Cornell University; on leave as Program Director at NSF.
- Pamela Ludford: completed PhD September 2007, currently an independent consultant.
- Reid Priedhorksy: completed PhD August 2010, currently employed at Los Alamos National Laboratories.
- Colin Delong: completed PhD October 2013 (co-advised with Jaideep Srivastava)
- Mikhil Masli: completed PhD July 2013, currently employed at IBM.
- Aaron Halfaker (co-advised with John Riedl): completed PhD September 2013, currently employed at Microsoft.
- Katie Panciera: completed PhD August 2014; currently Assistant Professor at Milwaukee School of Engineering.
- Fernando Torre: completed PhD September 2014; founder of a startup.
- Shuo (Steven) Chang: completed PhD August 2016; currently employed at Facebook.
- Tien Nguyen (co-advised with Joe Konstan): completed PhD August 2016; currently employed at Facebook.
- Morten Warncke-Wang (co-advised with Brent Hecht): completed PhD December 2016, currently employed at the Wikimedia Foundation.
- Andrew Sheppard: completed PhD December 2017, currently employed at Houston Engineering.
- Jacob Thebault-Spieker (co-advised with Brent Hecht): completed PhD December 2017; currently Assistant Professor at The University of Wisconsin.
- Hannah Miller (co-advised with Brent Hecht): completed PhD August 2018; currently Assistant Professor at University of Wisconsin Oshkosh.
- Vikas Kumar (co-advised with Joe Konstan), completed PhD August 2018, currently employed at KenSci.

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- Andrew Hall: completed PhD August 2019; currently employed at 3M.
- Bowen Yu (co-advised with Haiyi Zhu), completed PhD December 20918, currently employed at Facebook.
- C. Estelle Smith: completed PhD December 2020; currently Assistant Professor at the Colorado School of Mines.
- Zach Levonian (co-advised with Lana Yarosh): completed PhD July 2022.
- Charles Chuankai Zhang (entered program Fall 2019).
- Mohammed (Mo) Houtti (entered program Fall 2019)
- Moyan Zhou (entered program Fall 2021)
- Ava Bartolome (entered program Fall 2022; co-advised with Stevie Chancellor)

M.S. Students Advised

- Tyler Danielsen – received degree in 2016
- Jie Kang – received degree in 2016
- Zahra Eslami – received degree in 2015
- Yanjie Liu – received degree in 2013
- Renji Yu – received degree in 2012
- Carol Drysdale – received degree in 2011
- Jingwen Zhang – received degree in 2011
- Jisu Oh – received degree in 2010
- Sara Drenner – received degree in 2008
- Anna Rouben – received degree in 2006
- Arjun Sundararajan – received degree in 2006
- Pamela Ludford – received degree in 2005
- Rahul Akolkar – graduated May 2004

Undergraduate Honors / Senior Thesis Students Advised

- Moyan Zhou 2021
- Avleen Kaur 2020
- Harmanprett Kaur, 2016
- Arlo Siemsen, 2014
- Johnathan Frenz, 2013
- David Pitchford - 2012
- Michael Ludwig - 2010
- Jordan Focht – 2010

- Kurt Wilms - 2005
- John Murphy – 2004

Other Committees

- Hanlin Li, PhD: Member of final examination committee (Northwestern University).
- Matheus Araújo, PhD: Member of preliminary and final examination committees
- Hao-Fei Cheng, PhD: Member of preliminary and final examination committees
- Catherine Grevet, PhD: member of preliminary and final examination committees (Gerogia Tech).
- Loxley Wang, PhD: member of preliminary and final examination committees.
- Abigail Bakke, PhD: member of preliminary and final examination committees
- Tahir Sousa, MS: member of final examination committee
- Tony Lam, PhD: member of preliminary examination committee.
- Michael Janseen, PhD: member of preliminary examination committee.
- Haleh Hagh Shenas, PhD: member of preliminary & final examination committees.
- Julie Beilfuss, MS: member of final examination committee.
- Liv Knatterud, MS: member of final examination committee.
- Sean McNee, MS: member of final examination committee.
- Shankar Subrahmanian, MS: member of final examination committee.
- Vamsee Venuturumilli, MS: member of final examination committee.
- Eric Gilbert, Ph.D. Preliminary and Final Examination Committees (UIUC, 2009/2010): member of thesis committee.
- Yi (Jenny) Zhang, Ph.D. (New Jersey Institute of Technology, 2004): member of thesis committee.
- Brian Amento, Ph.D. (Virginia Tech, 2001): member of thesis committee.
- David McDonald, Ph.D. (UC Irvine, 2000): member of thesis committee.

Courses taught

A list of all the classes I have taught, in most cases multiple times.

- CSCI 8115: Human-Computer Interaction and UI Technology
- CSCI 5125: Collaborative and Social Computing
- CSCI 5116: GUI Toolkits and Their Implementation
- CSCI 5115: User Interface Design, Implementation, and Evaluation
- HSEM 2519H: Honors Seminar on Crowdsourcing
- CSCI 1902: Structure of Computer Programming II

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- CSCI 1901H: Introduction to Computer Science (Honors)

Tutorials

"Intelligent User Interfaces: Issues, Approaches, Evaluation", offered at 1993 Conference on Artificial Intelligence for Applications.

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