# IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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| In re patent of Ullman et al. | § | |
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| U.S. Patent No. 7,409,437 | § | Petition for *Inter Partes* Review |
| | § | |
| Issued: Aug. 5, 2008 | § | Attorney Docket No.: 50796.1 |
| | § | Customer No.: 27683 |
| Title: ENHANCED VIDEO | § | Real Party in Interest: Netflix, Inc. |
| PROGRAMMING SYSTEM | § | |
| AND METHOD FOR | § | |
| INCORPORATING AND | § | |
| DISPLAYING RETRIEVED | § | |
| INTEGRATED INTERNET | § | |
| INFORMATION SEGMENTS | § | |

## Declaration of Richard Kramer
## Under 37 C.F.R. § 1.68

I, Richard Kramer, declare:

1.      I am making this declaration at the request of Netflix, Inc. in the

matter of the Inter Partes Review of U.S. Patent No. 7,409,437 ("the '437 Patent")

to Ullman et al.

2.      I am being compensated for my work in this matter. My compensation

in no way depends upon the outcome of this proceeding.

3.      In the preparation of this declaration, I have studied:

(1)     The '437 Patent, NTFX-1001;

(2)     The prosecution history of the '437 Patent, NTFX-1002;

(3)     U.S. Patent No. 5,933,811 ("Throckmorton"), NTFX-1004;

(4)     U.S. Patent No. 5,113,259 ("Romesburg"), NTFX-1005;

(5)     U.S. Patent No. 5,724,103 ("Batchelor"), NTFX-1006;

(6)     U.S. Patent No. 5,905,865 ("Palmer"), NTFX-1007;

(7)     U.S. Provisional Patent Application Serial No. 60/008,111 ("Palmer Application"), NTFX-1008;

(8)     Webster's New World Dictionary of Computer Terms, pg. 20, NTFX-1009.

**4.**     In forming the opinions expressed below, I have considered:

(1)     The documents listed above,

(2)     The relevant legal standards, including the standard for obviousness provided in *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007), and

(3)     My knowledge and experience based upon my work in this area, as described below.

## Qualifications and Professional Experience

**5.**     My qualifications are set forth in my curriculum vitae, a copy of which is attached as an exhibit to this declaration. As set forth in my curriculum

vitae:

6.      I received a Bachelor's of Science degree in Electrical Engineering from the University of Toledo in 1984. I have over 29 years of experience successfully developing and launching commercially-implemented software and hardware products and systems, including 18 years in the video industry developing commercially successful products related to subscriber television systems, IP networking, cable and satellite TV systems and equipment, cable TV set-top boxes, remote controls, video networking, software, and other technologies relevant to the subject matter of the '437 Patent. The cable TV video, video surveillance and IP network video products and systems that I have developed have been successfully launched under respected brands such as General Electric and Scientific-Atlanta (now Cisco). My experience also included the development of new technologies within pioneering high-tech start-up companies like Ivex Corporation (acquired in 2001 by Axcess, Inc.), where we developed one of the first IP network Video Streaming Appliances (called the "VSA") for the video surveillance industry. I hold two patents.

7.      In the 1990s, I was the engineering/technology leader for cable TV set-top boxes in North America for Scientific-Atlanta, Inc. (prior to being acquired by Cisco Systems, Inc.). I was responsible for all set-top devices for the Advance Video Systems group. My group and the people that reported to me developed and

successfully launched Scientific-Atlanta's first internally designed set-top (also called HCTs which means Home Communication Terminals). The sales volumes of the products we developed exceeded 1 million units per year. The position required me to be astute to each facet of the cable system technology and the overall system. I was later promoted and served as the top technology leader on the Strategic Planning Team for the "Advanced Video Systems" Division. There I worked on the next generation advanced video products. In this role, each of the functional technology areas including firmware, hardware, system software and headend equipment reported to me in a dotted line matrix/cross-functional organizational structure for the development of our next generation of products.

8. In 2001, I joined and served as Vice President of Product Development at Miraxis Corporation (a division of EMS Technologies, Inc., now Honeywell, Inc.) developing IP network and digital video solutions in the satellite industry. At Miraxis, we were focused on the design of an entirely new DBS/DTH (Direct Broadcast Satellite/Direct to Home) television and multimedia solution. Overall, Miraxis was responsible for the design of the satellite payload, the associated ground based systems, and the CPE (Customer Premise Equipment). As the Vice President of Product Development, I was responsible for all aspects of the system solution; I was immersed in the leading-edge state of the industry. In fact, we were one of only a handful of companies that received a newly allowed Ka-

Band satellite license. The new Ka-Band frequency spectrum opened significant new opportunities for providing entertainment content to homes across America.

9.  In summary, I have a deep familiarity with subscriber television systems, including first-hand experience at the relevant time of the '437 Patent invention and before.

10.  I am familiar with the knowledge and capabilities of one of ordinary skill in the software/hardware engineering and, specifically, the interactive television field in the 1990s. Specifically, my extensive experience (1) in the industry and (2) with engineers practicing in the industry allowed me to become personally familiar with the level of skill of individuals and the general state of the art. Unless otherwise stated, my testimony below refers to the knowledge of one of ordinary skill in the interactive television field during the 1996, the year in which the parent application for the '437 patent was filed.

11.  In my opinion, the level of ordinary skill in the art needed to have the capability of understanding the scientific and engineering principles applicable to the '437 Patent is (i) a B.S. degree in Electrical Engineering or equivalent training, and (ii) approximately three years of direct experience in developing subscriber television solutions and technologies. Relevant industry experience would include experience with interactive television system development and deployment, including development of head-end, transport, and customer premise equipment in

order to appreciate what was obvious and/or anticipated in the industry and what a person having ordinary skill in the art would have thought at the time.

**Relevant Legal Standards**

12.     I have been asked to provide my opinions regarding whether the claims 1-4 of the '437 Patent are anticipated or would have been obvious to a person having ordinary skill in the art at the time of the alleged invention, in light of the prior art. It is my understanding that, to anticipate a claim under 35 U.S.C. § 102, a reference must teach every element of the claim. Further, it is my understanding that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. I also understand that the obviousness analysis takes into account factual inquiries including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

13.     It is my understanding that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include the following: combining prior art elements according to known methods to yield predictable results; simple substitution of one known element for another to obtain predictable

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results; use of a known technique to improve a similar device (method, or product) in the same way; applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

14. It is my understanding that some claims can be interpreted as "means plus function" claims under 35 U.S.C. § 112, paragraph 6. I understand that determining the broadest reasonable interpretation of "means plus function" claims requires first, defining the particular function of the limitation and second, identifying the corresponding structure for that function in the specification. I also understand that structure disclosed in the specification is corresponding structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.

## Background Of '437 Patent

15. The '437 Patent describes a system for displaying video programming and online information, where the online information is retrieved via an address embedded in the video programming signal. (NTFX-1001, Abstract).

**16.** Claim 4 provides a basic overview of the teachings of the '437 Patent:

4. A system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal, the system comprising:

a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal;

an address extractor which extracts the address from the programming signal;

a web browser;

a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link; and

a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment;

wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on the display monitor.

**17.** In general, the '437 Patent describes a "receiver station," such as a "standard computer workstation." (NTFX-1001, 5:39-43). The receiver station is "connected to either a cable and/or broadcast television connection." (NTFX-1001,

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5:43-44). In addition, the receiver station has a connection to the Internet. (NTFX-1001, 5:50-53).

18. In one embodiment, as the computer is receiving a television video signal with a vertical blanking interval (VBI), "eight fields of line 21 of the VBI are used to deliver the relevant Internet Web page addresses to the PC." (NTFX-1001, 3:43-45). The Web pages associated with addresses "correspond to the video presentation." (NTFX-1001, 4:58-61).

19. A "local URL decoder 12 receives the cable video television program" and "extracts the URLs, preferably embedded in the vertical blanking interval, with the use of any conventional VBI decoder device." (NTFX-1001, 5:58-62). Once the URLs are extracted from the VBI, client software "directs the JAVA enable browser 98 to retrieve the particular relevant Web pages." (NTFX-1001, 7:34-55). The retrieved information can then be displayed while the viewer is watching the television program. (NTFX-1001, 8:41-56). "[F]or example, while the viewer is watching the music video, biographical information on the band can also be displayed adjacently to the video window." (NTFX-1001, 8:51-53).

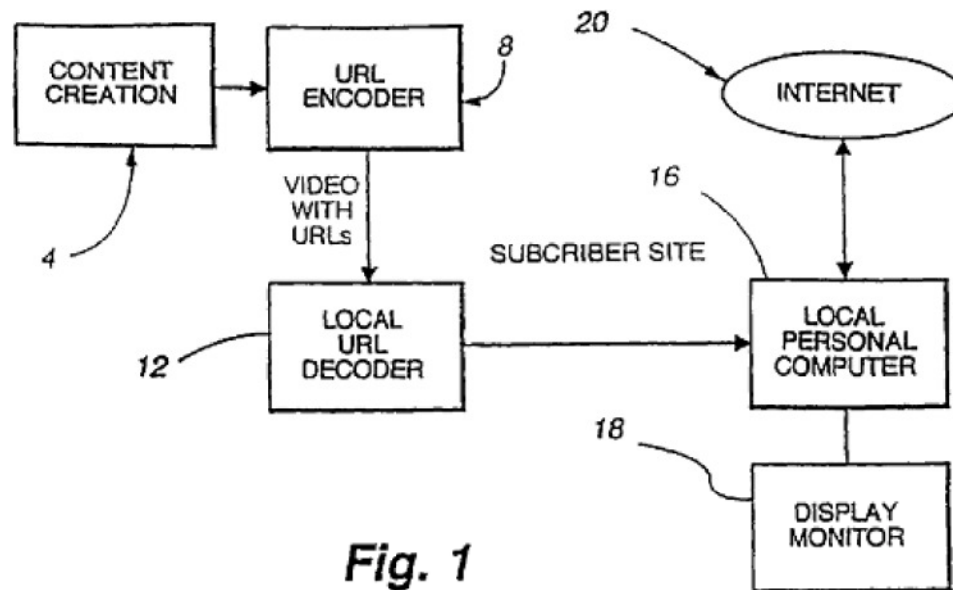20. The general operation of the '437 Patent is shown in Fig. 1:

**Fig. 1**

21.     The '437 Patent issued on August 5, 2008, from U.S. Patent

Application No. 10/299,335 ("the '335 application") filed on November 18, 2002,

by Craig Ullman, Jack D. Hidary, and Nova T. Spivack.  The '437 Patent is

purportedly a continuation of U.S. Application Ser. No. 09/998,590, filed Nov. 16,

2001, now abandoned, which is a continuation of U.S. Application Ser. No.

09/633,351 filed Aug. 4, 2000, now abandoned, which is a continuation of U.S.

Application Ser. No. 09/472,385 filed Dec. 23, 1999, now abandoned, which is a

continuation of U.S. Patent No. 6,018,768, which is a continuation-in-part of U.S.

Patent No. 5,778,181 filed on March 14, 1996, which, in turn, is a continuation-in-

part of U.S. Patent Application No. 08/613,144 filed on March 8, 1996, now

abandoned.

22.     During prosecution, the Examiner rejected the independent claims of

the '437 Patent over U.S. Patent No. 5,905,865 to Palmer, while objecting to four

dependent claims. In response, Patent Owner did not attempt to overcome Palmer

and instead rewrote the four dependent claims to incorporate all of the limitations

of the rejected independent claims. Accordingly, the Patent Office has already

determined that Palmer discloses all of the limitations of each of the claims of the

'437 patent, except for the limitations reciting various display formats previously

found in the dependent claims. For example, the sole alleged novel feature of

claim 4 is the limitation reciting "wherein the programming signal comprises the

video signal and the video signal and the online information segment are presented

on the display monitor." However, as I show below in claim chart elements [1.6],

[2.6], [3.6] and [4.6], the display formats upon which allowance was granted were

previously disclosed in prior art references.

**Claim Construction**

23.     It is my understanding that in order to properly evaluate the '437

Patent, the terms of the claims must first be interpreted. It is my understanding that

the claims are to be given their broadest reasonable interpretation in light of the

specification. It is my further understanding that claim terms are given their

ordinary and accustomed meaning as would be understood by one of ordinary skill

in the art, unless the inventor has set forth a special meaning for a term.

24.     In order to construe the following claim terms, I have reviewed the

entirety of the '437 Patent, as well as its prosecution history. Any claim term not construed below should be given its ordinary and customary meaning.

**"*a processor which automatically directs the web browser to establish a communications link with the online information source*"**

25.     The claim term "a processor which automatically directs the web browser to establish a communications link with the online information source" is found in claims 1-4.

26.     The specification does not provide any specific definition for "a processor which automatically directs the web browser to establish a communications link with the online information source."

27.     The specification does, however, state that the "system then directs the particular Web browser to retrieve the identified Web pages from the Internet." (NTFX-1001, 3:46-47). Further, the specification states that the "client software 106 retrieves URLs from the video program … and directs the JAVA enabled browser 98 to retrieve the particular relevant Web pages 102." (NTFX-1001, 7:48-54).

28.     With respect to "automatically directs," the specification provides no definition or description for automatically directing a web browser. In Webster's New World Dictionary of Computer Terms, "automatic" is defined as "pertaining

to a process or device that, under specified conditions, functions without intervention by a human operator." (NTFX-1009, pg. 20). It my opinion that "automatically directs" in the context of this claim language, means that the specific act of directing the web browser occurs without human intervention. The claim does not place any limits on human intervention before or after the processor directing of the web browser.

29. It is therefore my opinion that a person of ordinary skill in the art would understand the broadest reasonable interpretation of "a processor which automatically directs the web browser to establish a communications link with the online information source" in view of the specification and file history to include at least: *a processor which directs the web browser to establish a communications link with the online information source, where the act of directing occurs without human intervention.*

## Challenge #1: Claim 1 is obvious over Throckmorton in view of Romesburg

30. Throckmorton and Romesburg render obvious each and every element of at least claim 1 of the '437 Patent.

31. Throckmorton teaches two systems: a one-way communication system and a two-way communication system.

32.     In Throckmorton, "broadcasting and entertainment industries" create a "stream of data" containing "live or pre-recorded information." The live or pre-recorded information is delivered to consumers over broadcast television. (NTFX-1004, 3:36-45).

33.     The stream of data contains two data streams: the "primary data stream" and the "associated data stream." In the one-way communication system of Throckmorton, the associated data stream contains "World Wide Web pages, closed captioning, stock quotes, sports scores, [and] control commands." (NTFX-1004, 6:60-63). In the two-way communication system of Throckmorton, the associated data stream could include "references such as uniform resource locations ('URL') which are WWW page references." (NTFX-1004, 9:2-5).

34.     At a consumer's location, Throckmorton's system includes "equipment to receive the primary and associated data streams." (NTFX-1004, 6:4-8). In one embodiment, the equipment includes a personal computer with a "receiver for receiving the primary data stream and a receiver for receiving the associated data," where the receivers "may be the same unit." (NTFX-1004, 2:64-67). The receiver "could be a personal computer add-in adapter board, a television or radio broadcast receiver, a cable television converter box or it could be a satellite receiver for digital broadcast." (NTFX-1004, 6:8-11). Additionally, the receiver "could be part of a standard television." (NTFX-1004, 6:19-20).

35.    The two streams of data are transmitted to the consumer equipment. Throckmorton describes that "the primary data stream could be delivered by broadcast television and the associated data could be delivered over a high speed digital network." (NTFX-1004, 4:1-20).

36.    When the delivered data reaches the receiver, the receiver "decodes the signal, separates the primary data from the associated data and passes the associated data on to the processor." (NTFX-1004, 4:21-25).

37.    The viewer may interact with the received associated data (which could be a WWW page or a URL to a WWW page) with a keyboard and mouse. (NTFX-1004, 4:27-30).  For instance, when a user clicks on a URL, the system "connects to and retrieves the referenced information from the appropriate source," which may be viewed in a "Web Browser."  (NTFX-1004, 9:1-14; 7:42-45).

38.    Additionally, Throckmorton teaches that the delivered data "could be interactively displayed and manipulated by consumers." (NTFX-1004, 1:59-67). Further, the "consumer receives and has access to the relevant data during the process of program reception.  Therefore the data becomes an integral part of the experience desired by the program producers."  (NTFX-1004, 1:59-67).

39.    Even though Throckmorton discloses two communication systems, a one-way communication system and a two-way communication system, it is my

opinion that a person of ordinary skill in the art, when reading Throckmorton would be motivated to combine the features of the two systems for a number of reasons. For example, the combination amounts to simply combining elements contained in the same reference in precisely the manner described in the reference. Combining the retrieving-internet-information-using-a-URL as described in the two-way embodiment, with the known method of displaying a web page simultaneously with a video program as described in the one-way embodiment, yields the predictable result of displaying a web page retrieved with a URL simultaneously with a video program. This result is predictable because Throckmorton specifically teaches such a result.

40.     This implementation of the teachings of Throckmorton would be desirable because it would allow the user to have direct access to relevant online information during the program reception without the need for changing screens. Throckmorton specifically provides a motivation to make this combination, because it was desirable to make an experience for viewers that integrated data with television program reception.

41.     Further, a person of ordinary skill in the art would have modified Throckmorton in view of Romesburg for a number of reasons. For example, the combination amounts to the use of a known technique to improve similar devices in the same way.

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42.     As already discussed, Throckmorton teaches displaying a television signal and online information on a display monitor. (*See supra*, ¶¶ 32-38).

43.     As shown by the teachings of Romesburg, it was known by persons of ordinary skill in the art at the time of the invention of the '437 patent to display a video signal concurrently with information received from remote, networked computers in a picture-in-picture format.  Romesburg further notes that:

> "Many modern television receivers have picture-in-picture (PIP, or PIX-IN-PIX) capability, that is, the capability to receive video signals from two different sources and combine them to produce a signal which when displayed includes a first program in a main viewing area, and a second program in a secondary (inset) viewing area of the same display screen." NTFX-1005, 1:38-44.

44.     From my experience at the time in the industry, picture-in-picture, separate/split screens, overlay displays, and the rendering of windows including video on PCs were common place in the industry.  One of ordinary skill in the art would have therefore modified Throckmorton's display monitor so that it displayed the primary data stream (e.g., a television signal) in a main viewing area and displayed the online information retrieved via the URL/pointer in a secondary (inset) viewing area of the same display screen (i.e., in a picture-in-picture format). This modification would have yielded the predictable and desirable result of the

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users of Throckmorton's system being able to concurrently view online information related to the main video signal without the main video signal being completely obscured.

45.     It is therefore my opinion that a person of ordinary skill in the art would find that Throckmorton in view of Romesburg renders obvious each and every element of at least claim 1.

46.     The following claim chart describes how Throckmorton in view of Romesburg renders obvious each and every element of at least claim 1.

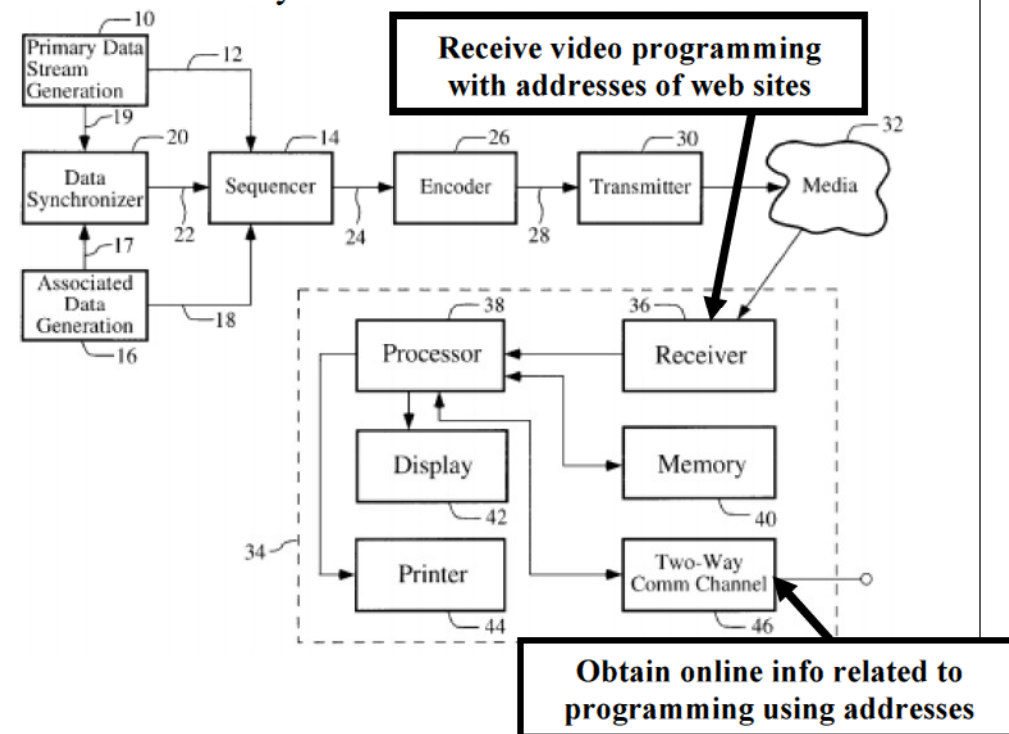| Claim 1 | |
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| [1.0] A system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal, the system comprising | [1.0] *"A system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal"* <br><br> **First**, Throckmorton teaches a system for creating and receiving a programming signal containing associated data such as an embedded address: <br><br> "This system includes a creation unit for creating the primary data stream and the associated data. . . . <u>At the consumer location, the system includes a receiver for receiving the primary data stream and a receiver for receiving the associated data. These may be the same unit</u>. NTFX-1004, 2:60-67 (emphasis added). <br><br> "[T]he system includes a personal computer capable of receiving the television program and storing the associated data locally." NTFX-1004, Abstract. <br><br> "In the case of television, the associated data is encoded in the |

VBI of the television signal." NTFX-1004, 7:63-65 (emphasis added).

"[A]ssociated data may consist of references such as uniform resource locations ('URL') which are WWW page references." NTFX-1004, 9:3-5 (emphasis added).

**Second**, Throckmorton teaches that the addresses received in the associated data identify sources of online information segments related to the programming signal:

"Additional interactivity may be achieved by adding an actual two way communication channel to the personal computer so that online services or the Internet may be accessed. This two way communication channel is made particularly effective if the associated data contains pointers to locations in the online services or the Internet which are particularly relevant to the television program." NTFX-1004, Abstract (emphasis added).

**Fig. 4** of Throckmorton, as annotated below, illustrates Throckmorton's system:



NTFX-1004, Fig. 4 (annotated).

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| | **Thus**, the system for receiving television programming containing an embedded URL that identifies WWW pages relevant to the television programming, as taught by Throckmorton, discloses "a system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal," as recited in the claim. |
| [1.1] a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal; | [1.1] *"a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal"*<br><br>**First**, Throckmorton teaches a receiver for receiving a programming signal and the embedded address:<br><br>"At the consumer location, the system includes a receiver for receiving the primary data stream and a receiver for receiving the associated data. These may be the same unit. NTFX-1004, 2:64-67.<br><br>"Receiver 36 could be a personal computer add-in adapter board, a television or radio broadcast receiver, a cable television converter box or it could be a satellite receiver for digital broadcast. In the preferred embodiment, it is a broadcast television receiver or tuner inside of a personal computer." NTFX-1004, 6:8-13.<br><br>"[R]eceiver 36 receives radio frequency waves from input 50. Receiver 36 demodulates the input signal and supplies the primary data stream signal over data path 52 to primary data rendering sub-system 54 and the associated data signal over data path 56 to associated data decoder 58." NTFX-1004, 6:30-34 (emphasis added).<br><br>"The associated data is generally (but not always) sent by the same delivery medium as the primary data. In the case of |

television, <u>the associated data is encoded in the VBI of the television signal</u>." NTFX-1004, 7:61-65 (emphasis added).

"[A]ssociated data may consist of references such as uniform resource locations ('URL') which are WWW page references. . . . Or, associated data may include pointers to information on an online service such as America Online, Prodigy or Compuserve." NTFX-1004, 9:3-12.
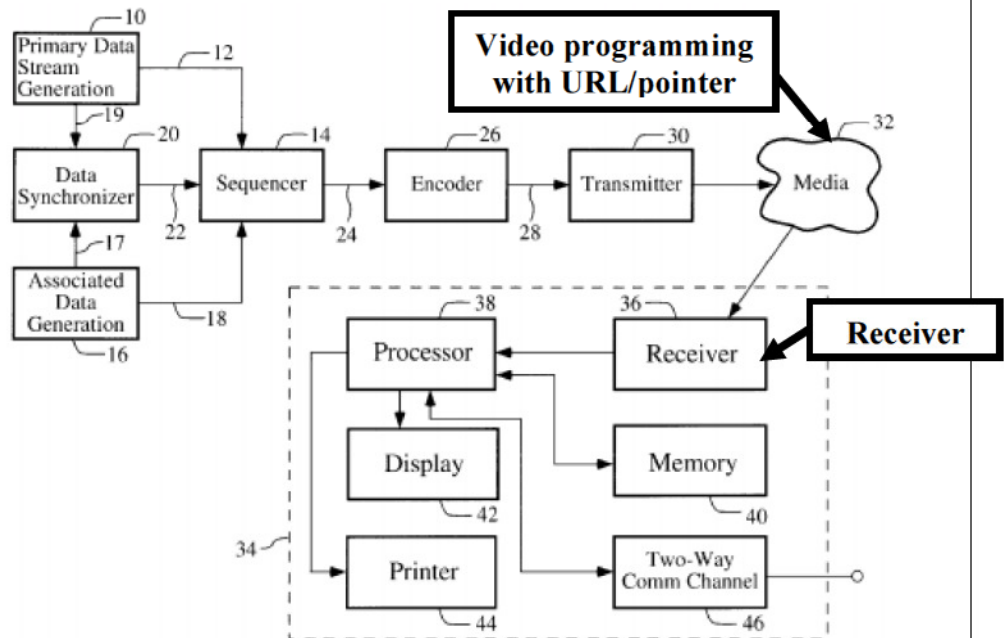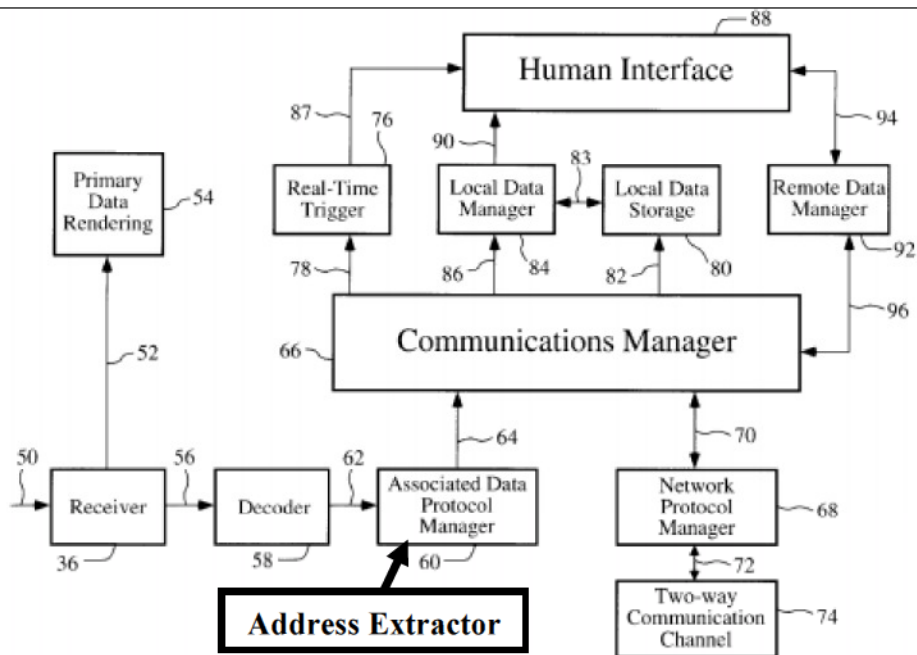


NTFX-1004, Fig. 4 (annotated).

**Second**, Throckmorton teaches that the URL/pointer in the associated data identifies the source of the online information segment which relates to the programming signal:

"Additional interactivity may be achieved by adding an actual two way communication channel to the personal computer so that online services or the Internet may be accessed. This two way communication channel is made particularly effective if the <u>associated data contains pointers to locations in the online services or the Internet which are particularly relevant to the television program</u>." NTFX-1004, Abstract (emphasis added).

**Thus**, a receiver for receiving video programming that contains

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| | an embedded URL/pointer, wherein the URL/pointer specifies online information such as WWW pages that are relevant to the television programming, as taught by Throckmorton, discloses "a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal," as recited in the claim. |
| [1.2] an address extractor which extracts the address from the programming signal; | [1.2] *"an address extractor which extracts the address from the programming signal"*<br><br>**First**, as shown in [1.1], Throckmorton teaches that a URL/pointer may be provided with television programming as associated data.<br><br>**Second**, Throckmorton teaches an address extractor which extracts the associated data (e.g., URLs/pointers) from the programming signal:<br><br>"Associated data protocol manager 60 performs the function of extracting the different forms of associated data from the incoming digital data steam and converting them to a form that can be used by communications manager 66." NTFX-1004, 6:56-60 (emphasis added). |

NTFX-1004, Fig. 5 (annotated).

**Thus**, the associated data protocol manager that extracts associated data (e.g., URLs/pointers) from an incoming digital data stream, as taught by Throckmorton, discloses "an address extractor which extracts the address from the programming signal," as recited in the claim.

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| [1.3] a web browser; | [1.3] *"a web browser"*<br><br>Throckmorton teaches a web browser:<br><br>"[A] 'Web Browser' may be used to display data pages from the World Wide Web (the 'WWW'). Providers of WWW browsers include Netscape Communications Corp., America Online, Spyglass and others." NTFX-1004, 7:42-45 (emphasis added).<br><br>**Thus**, the web browser taught by Throckmorton discloses "a web browser," as recited in the claim. |
| [1.4] a processor which | [1.4] *"a processor which automatically directs the web browser to establish a communications link with the online* |

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| automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link; and | ***information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link"***<br><br>Throckmorton teaches a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link:<br><br>"In general, system 34 is a computer. . . . Connected to receiver 36 is a microprocessor 38. Connected to microprocessor 38 is memory 40 which would typically be semiconductor RAM." NTFX-1004, 6:5-15 (emphasis added).<br><br>"Referring now to FIG. 4, a two-way communication channel 46 is connected to microprocessor 38 and provides interactive access to remote computers over such media as the analog telephone network, the ISDN digital network, a wide area packet switched network such as X25, frame relay or asynchronous transfer mode. NTFX-1004, 8:19-24 (emphasis added).<br><br>"The addition of a two-way communication channel allows a consumer to also access online services. In this case, associated data may consist of references such as uniform resource locations ('URL') which are WWW page references. . . . Or, associated data may include pointers to information on an online service such as America Online, Prodigy or Compuserve. Thus a menu may list several references. And by clicking on a reference, the system actually connects to and retrieves the referenced information from the appropriate source." NTFX-1004, 9:1-14 (emphasis added).<br><br>"Referring now to FIG. 5, remote data manager 92 is connected to human interface 88 by data path 94 and to communications manager by two-way data path 96. Remote data manager 92 receives commands from human interface 88 to retrieve data from remote computers through two-way communications |

channel 74 and to send that data to human interface 88 for presentation to the consumer." NTFX-1004, 8:27-34 (emphasis added).
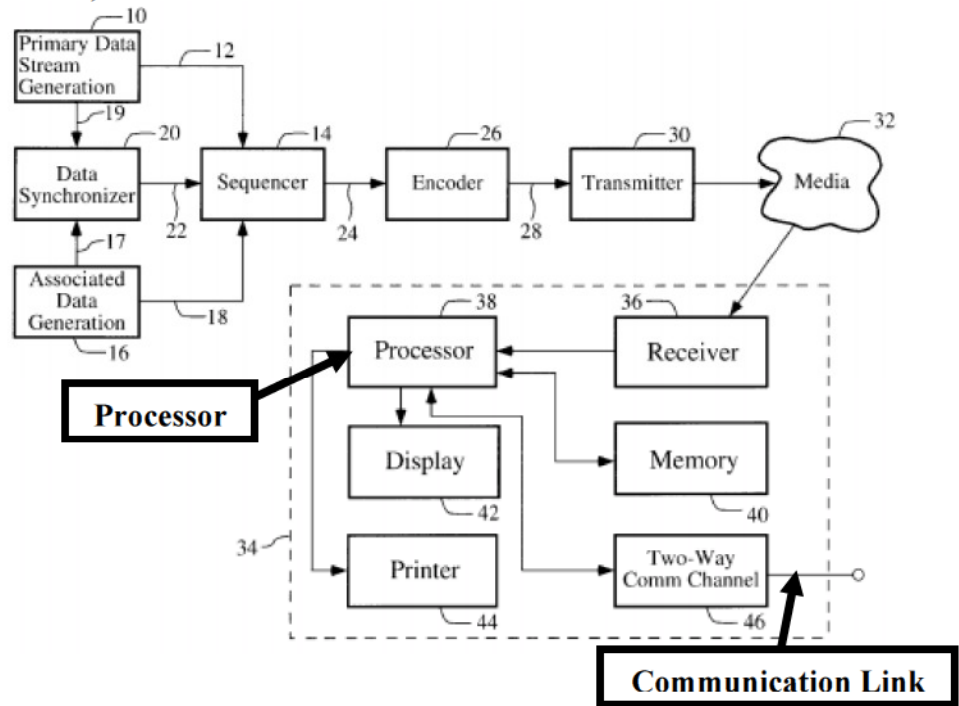


NTFX-1004, Fig. 4 (annotated).

**Accordingly**, in Throckmorton's system after a user clicks a URL/pointer reference, the processor 38 automatically executes software, such as the remote data manager 92, to connect to and retrieve information from remote computers hosting WWW pages and online services via the two-way communication channel.
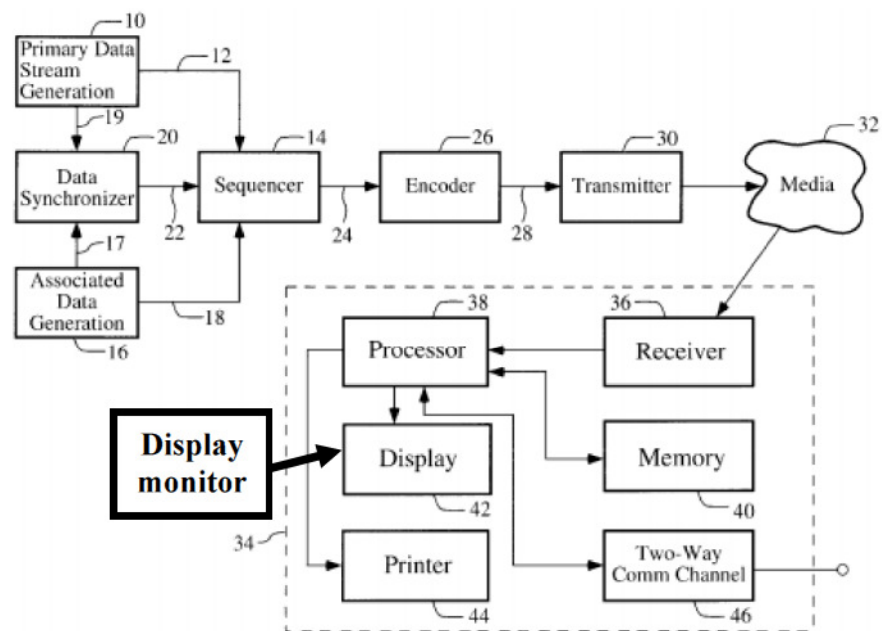
**Thus**, the processor that executes software that establishes a communication link with an online information sources identified by the URL/pointer and retrieves online information via the link, as disclosed by Throckmorton, discloses "a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link," as recited in the claim.

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| [1.5] a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment; | [1.5] *"a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment"*<br><br>**First**, Throckmorton teaches a single display monitor in its system:<br><br>"Microprocessor 38 is connected <u>to human interface 42, which is typically a CRT monitor</u>, and to printer 44. <u>Human interface 42 and receiver 36 could be part of a standard television.</u>" NTFX-1004, 6:17-20 (emphasis added).<br><br><br><br>NTFX-1004, Fig. 4 (annotated).<br><br>**Second**, Throckmorton teaches that its system presents the primary data stream (i.e., the television programming signal):<br><br>"<u>Primary data rendering sub-system 54 performs the function of presenting the primary data stream to the consumer</u> in the manner in which a typical consumer would expect to see the data presented. For example, <u>in the case of television, the primary data rendering takes the form of a video image typically supplied by a cathode ray tube screen, or possibly a</u> |

liquid crystal display screen and audio provided by an audio amplifier and speakers." NTFX-1004, 6:36-43 (emphasis added).

**Third**, Throckmorton's two-way embodiment teaches that its system also presents the online information:

"Remote data manager 92 receives commands from human interface 88 to retrieve data from remote computers through two-way communications channel 74 and to send that data to human interface 88 for presentation to the consumer." NTFX-1004, 8:30-34 (emphasis added).

"[A] 'Web Browser' may be used to display data pages from the World Wide Web (the 'WWW'). Providers of WWW browsers include Netscape Communications Corp., America Online, Spyglass and others." NTFX-1004, 7:42-45 (emphasis added).

"The addition of a two-way communication channel allows a consumer to also access online services. In this case, associated data may consist of references such as uniform resource locations ('URL') which are WWW page references. . . . Thus a menu may list several references. And by clicking on a reference, the system actually connects to and retrieves the referenced information from the appropriate source." NTFX-1004, 9:1-14 (emphasis added).

**Fourth**, Throckmorton's one-way embodiment teaches that that its system concurrently presents the programming with related information:

"[A] broadcaster may want viewers to see a certain page of information as part of a program that is being viewed." NTFX-1004, 7:26-28 (emphasis added).

"For example, data synchronizer 20 creates a script that specifies that a detailed data sheet will be delivered to the consumer prior to a specific television product advertisement,

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| | and that the <u>data sheet will be displayed on the consumer's personal computer display when a certain television advertisement starts</u>." NTFX-1004, 4:60-65 (emphasis added).<br><br>"Up until now, there has been no way for producers of mass market broadcast programming to deliver data associated by its relevancy to its subject matter that could be interactively displayed and manipulated by consumers on a real time basis. <u>What is meant by real time is that the consumer receives and has access to the relevant data during the process of program reception. Therefore the data becomes an integral part of the experience desired by the program producers</u>. NTFX-1004, 1:59-67 (emphasis added).<br><br>**Accordingly**, in Throckmorton's one-way embodiment, the display monitor presents information related to a video program concurrently with the video program so that the information is an integral part of the program.<br><br>**Thus**, the display (e.g., CRT screen, LCD, etc.) that presents online information, such as WWW pages, as taught by Throckmorton's two-way embodiment, in view of the display that presents information related to a video program concurrently with the video program, as taught by Throckmorton's one-way embodiment, renders obvious "a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment," as recited in the claim. |
| [1.6] wherein the programming signal comprises the video signal and the video signal and the online information | [1.6] *"wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on the display monitor in a picture-in-picture format"*<br><br>**First**, as shown above in [1.5], Throckmorton teaches displaying a television signal and online information on a display monitor. |

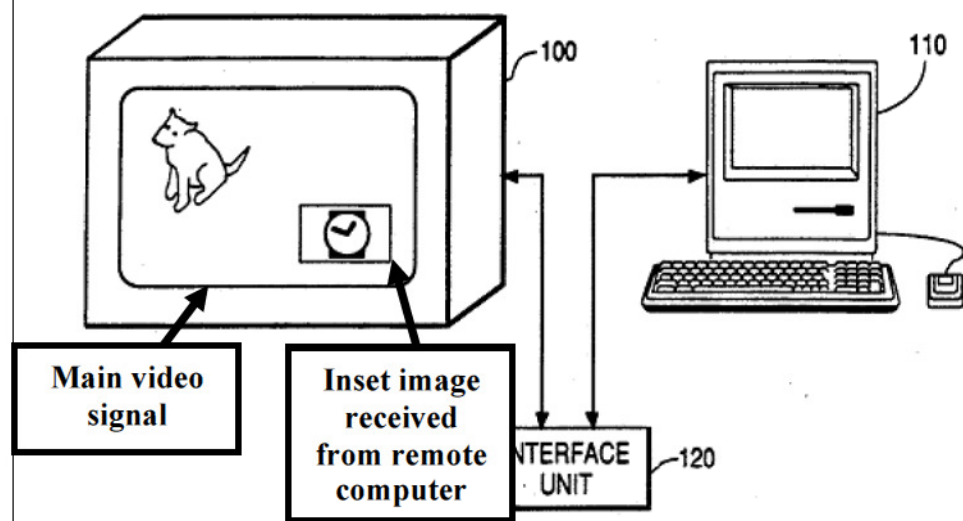| | |
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| segment are presented on the display monitor in a picture-in-picture format | **Second**, Romesburg teaches displaying a video signal and information received from a remote, networked computer in a picture-in-picture format:<br><br>"Referring to FIG. 1, a television receiver having pix-in-pix capability 100 is connected to an external computer 110 with an interface unit 120 for the interchange of digital signals." NTFX-1005, 2:12-15.<br><br>"Serial control bus 418 couples command data from controller 410 which controls <u>PIP unit 450 to produce an image for display having a main (or primary) picture and an inset (or secondary) picture</u>." NTFX-1005, 3:38-42 (emphasis added).<br><br>"The <u>baseband video signal (TV)</u> is coupled to a decoder 440 which produces a luminance Y signal, and U and V color component signals. A video input terminal 442 labelled AUX IN is provided for <u>receiving a baseband video signal from an external source</u>." NTFX-1005, 3:24-28 (emphasis added).<br><br>"A <u>digitized video image may be received from other, distant computers via a standard computer modem coupled to a telephone line, and transferred to the pix-in-pix television receiver for display</u>." NTFX-1005, 5:13-17 (emphasis added).<br><br><br><br>NTFX-1005, Fig. 1 (annotated). |

> **Thus**, the television that displays a main video signal and a video image received from a remote, networked computer, as taught by Romesburg, in view of the teachings of Throckmorton, render obvious "wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on the display monitor in a picture-in-picture format," as recited in the claim.

### Challenge #2: Claims 2 and 3 are obvious over Throckmorton in view of Batchelor

47.    It is my understanding that there are many legal bases under which two prior art references could be combined. It is my opinion that a person of ordinary skill in the art would have found it obvious to combine the system and method of Throckmorton with elements of Batchelor because the combination amounts to the use of a known technique to improve similar devices in the same way.

48.    As previously discussed, Throckmorton teaches displaying a television signal and online information on a display monitor. (*See supra*, ¶¶ 32-38).

49.    As shown by the teachings of Batchelor, it was known by persons of ordinary skill in the art at the time of the invention of the '437 patent to concurrently display a television programming signal concurrently with

information relating to the programming signal on the same display screen. (*See* NTFX-1006, 2:55-62).

50. Additionally, the systems of Throckmorton and Batchelor are similar in that they both extract an address from the VBI of a television signal and use the address to retrieve information related to the television signal so that it may be displayed. Specifically, Batchelor teaches that:

"The present invention is a system that displays text and graphic information with broadcasted television video. The broadcast system includes a vertical blanking interval (VBI) inserter which inserts data into the vertical blanking interval of a broadcasted video signal. The receiving system includes a personal computer that contains a VBI decoder which can separate the data from the video signal. The separated data contains command and address information, which instruct the personal computer to retrieve text/graphic information from a storage device, and display the retrieved text/graphic information on a monitor." NTFX-1006, 1:42-52.

51. As shown by Batchelor, it was also known that it was desirable to show information related to a television program alongside the television program itself:

"It would be desirable to provide a system that would retrieve and

display text/graphic data which corresponds to a television image displayed on a computer monitor. For example, if a user is watching an informational program on elephants, it would be desirable if various facts and graphics on elephants were presented on the screen along with the television image." NTFX-1006, 1:30-36.

52.     From my experience at the time in the industry, picture-in-picture, separate/split screens, overlay displays and the rendering of windows including video on PCs were common place in the industry.  One of ordinary skill in the art would have therefore modified Throckmorton's computer screen so that it displays the television program on one half of the screen and the related online information on the other half of the screen in a split screen format.  This modification would have improved Throckmorton because users would have been able to see information related to a television program immediately adjacent the program.
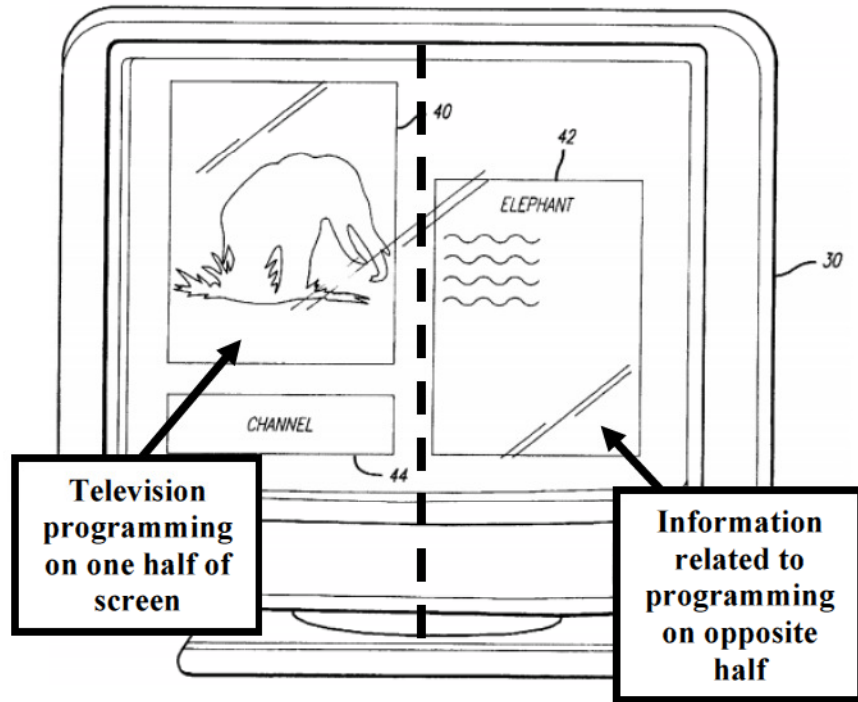
53.     It is therefore my opinion that a person of ordinary skill in the art would find that Throckmorton in view of Batchelor  renders obvious each and every element of at least claims 2 and 3.

54.     The following claim chart describes how Throckmorton in view of Batchelor renders obvious each and every element of at least claims 2-3.

| Claim 2 | |
|---|---|
| [2.0] A system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal, the system comprising | See analysis of Throckmorton in portion [1.0] of Challenge #1. |
| [2.1] a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal; | See analysis of Throckmorton in portion [1.1] of Challenge #1. |
| [2.2] an address extractor which | See analysis of Throckmorton in portion [1.2] of Challenge #1. |

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| extracts the address from the programming signal; | |
| [2.3] a web browser; | See analysis of Throckmorton in portion [1.3] of Challenge #1. |
| [2.4] a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link; and | See analysis of Throckmorton in portion [1.4] of Challenge #1. |

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| [2.5] a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment; | See analysis of Throckmorton in portion [1.5] of Challenge #1. |
| [2.6] wherein the programming signal comprises the video signal and the video signal is presented on one half and the online information segment is presented on the opposite half of a split screen display format. | [2.6] *"wherein the programming signal comprises the video signal and the video signal is presented on one half and the online information segment is presented on the opposite half of a split screen display format."*<br><br>**First**, as shown above in [1.5], Throckmorton teaches displaying a television signal and online information on a display monitor.<br><br>**Second**, Batchelor teaches a computer monitor that concurrently displays a television programming signal on one half of a screen and text and graphical information associated with the programming signal on the other half of the screen:<br><br>"FIG. 2 shows a screen of the computer monitor 30. <u>The screen may include a window 40 that displays the television image and a separate window 42 that shows the text and graphic information</u> retrieved from the optical disk 38. <u>The text/graphic information typically relates to the video image shown in window</u> 40. For example, the video window 40 may display an elephant. The text/graphic window 42 may display particular facts regarding elephants." NTFX-1006, 2:55-62 (emphasis added). |

NTFX-1006, Fig. 2 (annotated)

[In figure: 40, 42, ELEPHANT, 30, CHANNEL, 44]

[Annotation box:] Television programming on one half of screen

[Annotation box:] Information related to programming on opposite half

See ¶¶ 47-53 above for reasons to combine Throckmorton and Batchelor.

**Thus**, the computer monitor that concurrently displays a television programming signal on one half of the monitor and text and graphical information associated with the programming signal on the other half of the monitor, as taught by Batchelor, in view of the teachings of Throckmorton, render obvious "wherein the programming signal comprises the video signal and the video signal is presented on one half and the online information segment is presented on the opposite half of a split screen display format," as recited in the claim.
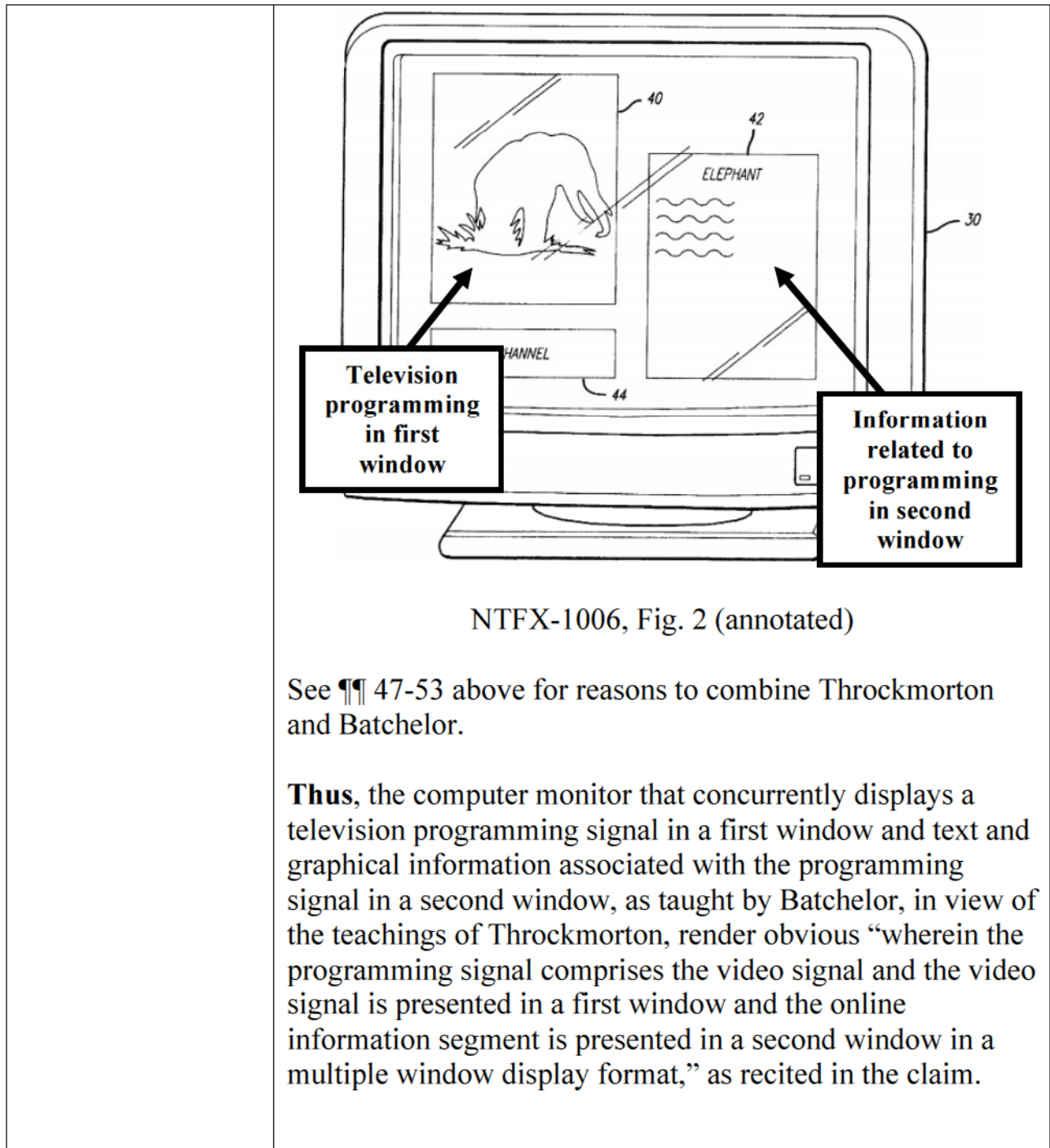
| **Claim 3** | |
|---|---|
| [3.0] A system for receiving a programming signal containing | See analysis of Throckmorton in portion [1.0] of Challenge #1. |

| | |
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| an embedded address, the address identifying a source of at least one online information segment related to the programming signal, the system comprising | |
| [3.1] a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal; | See analysis of Throckmorton in portion [1.1] of Challenge #1. |
| [3.2] an address extractor which extracts the address from the programming signal; | See analysis of Throckmorton in portion [1.2] of Challenge #1. |

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| | |
| [3.3] a web browser; | See analysis of Throckmorton in portion [1.3] of Challenge #1. |
| [3.4] a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link; and | See analysis of Throckmorton in portion [1.4] of Challenge #1. |
| [3.5] a display monitor for presenting the programming signal, comprising | See analysis of Throckmorton in portion [1.5] of Challenge #1. |

| | |
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| a video signal or an audio signal, concurrently with the online information segment; | |
| [3.6] wherein the programming signal comprises the video signal and the video signal is presented in a first window and the online information segment is presented in a second window in a multiple window display format. | [3.6] *"wherein the programming signal comprises the video signal and the video signal is presented in a first window and the online information segment is presented in a second window in a multiple window display format"*<br><br>**First**, as shown above in [1.5], Throckmorton teaches displaying a television signal and online information on a display monitor.<br><br>**Second**, Batchelor teaches a computer monitor that concurrently displays a television programming signal in a first window and text and graphical information associated with the programming signal in second window:<br><br>"FIG. 2 shows a screen of the computer monitor 30. <u>The screen may include a window 40 that displays the television image and a separate window 42 that shows the text and graphic information</u> retrieved from the optical disk 38. <u>The text/graphic information typically relates to the video image shown in window</u> 40. For example, the video window 40 may display an elephant. The text/graphic window 42 may display particular facts regarding elephants." NTFX-1006, 2:55-62 (emphasis added). |

NTFX-1006, Fig. 2 (annotated)

See ¶¶ 47-53 above for reasons to combine Throckmorton and Batchelor.

**Thus**, the computer monitor that concurrently displays a television programming signal in a first window and text and graphical information associated with the programming signal in a second window, as taught by Batchelor, in view of the teachings of Throckmorton, render obvious "wherein the programming signal comprises the video signal and the video signal is presented in a first window and the online information segment is presented in a second window in a multiple window display format," as recited in the claim.

## Challenge #3: Claim 4 is obvious over Throckmorton

55.     Even though Throckmorton discloses two communication systems, a

one-way communication system and a two-way communication system, it is my opinion that a person of ordinary skill in the art, when reading Throckmorton would be motivated to combine the features of the two systems for a number of reasons. For example, the combination amounts to simply combining elements contained in the same reference in precisely the manner described in the reference. Combining the retrieving-internet-information-using-a-URL as described in the two-way embodiment, with the known method of displaying a web page simultaneously with a video program as described in the one-way embodiment, yields the predictable result of displaying a web page retrieved with a URL simultaneously with a video program. This result is predictable because Throckmorton specifically teaches such a result.

56.    This implementation of the teachings of Throckmorton would be desirable because it would allow the user to have direct access to relevant online information during the program reception without the need for changing screens. Throckmorton specifically provides a motivation to make this combination, because it was desirable to make an experience for viewers that integrated data with television program reception.

57.    It is therefore my opinion that a person of ordinary skill in the art would find that Throckmorton renders obvious each and every element of at least claim 4.

58.     The following claim chart describes how Throckmorton renders obvious each and every element of at least claim 4.

| Claim 4 | |
|---|---|
| [4.0] A system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal, the system comprising | See analysis of Throckmorton in portion [1.0] of Challenge #1. |
| [4.1] a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal; | See analysis of Throckmorton in portion [1.1] of Challenge #1. |

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| | |
| [4.2] an address extractor which extracts the address from the programming signal; | See analysis of Throckmorton in portion [1.2] of Challenge #1. |
| [4.3] a web browser; | See analysis of Throckmorton in portion [1.3] of Challenge #1. |
| [4.4] a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information | See analysis of Throckmorton in portion [1.4] of Challenge #1. |

| | |
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| source via the communications link; and | |
| [4.5] a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment; | See analysis of Throckmorton in portion [1.5] of Challenge #1. |
| [4.6] wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on the display monitor. | [4.6] *"wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on the display monitor."*<br><br>As shown above in portion [1.5] of Challenge #1, Throckmorton teaches displaying a television signal and online information on a single display monitor. |

## Challenge #4: Claim 1 is obvious over Palmer in view of Romesburg

59.    Palmer and Romesburg render obvious each and every element of at

least claim 1 of the '437 Patent.

60.     Palmer is U.S. Patent No. 5,905, 865 that was filed On October 30,

1996, which claims priority to provisional application No. 60/008,111, filed

October 30, 1995.  It is my understanding that the Palmer '865 patent is prior art to

the extent that its subject matter is contained in the earlier filed provisional patent

application.  I have reviewed the provisional application, and for each element of

Palmer '865 identified below, there is a corresponding teaching in the provisional

application.  Additionally, the Palmer '865 patent explicitly incorporates the

provisional application by reference. (NTFX-1007, 8:33-34). Since the text and

figure of the provisional application are part of the '865 Patent, I have elected to

cite portions of the provisional application in the below claim charts where

relevant.

61.     Palmer teaches a method and apparatus for "connecting a computer to

electronic addresses in sync with an audio/video broadcast." (NTFX-1007,

Abstract; NTFX-1008, p. 1.)  Fig. 1 of the Palmer provisional application, as

annotated below, shows the system of Palmer that receives broadcast information

and information obtained from the Internet:
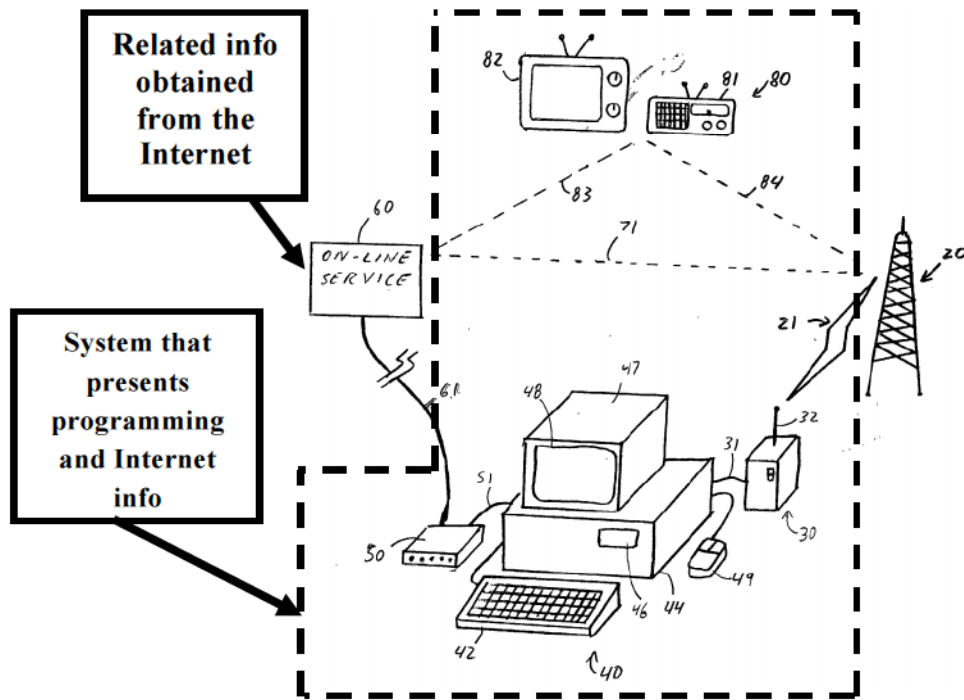
NTFX-1008, Fig. 1 (annotated)

**62.** Palmer's system includes a receiver that receives "traditional television" broadcasts, "digital direct satellite" broadcasts, and "all other forms of digital, analog or hybrid transmission capable of storing or embedding and transmitting alpha-numeric electronic addresses." (NTFX-1007, 8:5-13; NTFX-1008, p. 1.) In one particular example, Palmer teaches that a "URL may be stored in the vertical blanking interval [VBI] of a television broadcast." (NTFX-1007, 8:13-16; NTFX-1008, p. 1, 3.)

**63.** When the receiver receives a video signal containing a URL, the "URL [is] extracted by receiver 30 and provided to the computer." (NTFX-1007, 8:16-19; NTFX-1008, p. 6-7). After the URL has been provided to the computer,

"an Internet browser will automatically contact the broadcaster's desired Internet site. This allows a broadcaster to control the Internet destination of the receiver's computer." (NTFX-1008, p. 3).

64.     After obtaining the Internet information from websites, a computer screen displays the retrieved Internet information "to simultaneously correspond with television [] programming." (NTFX-1007, 5:30-32; NTFX-1008, p. 8, 10.) In particular, Palmer teaches that text, graphics, QuickTime movies and other computer style information can be added to existing programming. (NTFX-1008, p. 4.)

65.     A person of ordinary skill in the art would have modified Palmer in view of Romesburg for a number of reasons.  For example, the combination amounts to the use of a known technique to improve similar devices in the same way.

66.     As shown by the teachings of Romesburg, it was known by persons of ordinary skill in the art at the time of the invention of the '437 patent to display a video signal concurrently with information received from remote, networked computers in a picture-in-picture format.  Romesburg further notes that:

"Many modern television receivers have picture-in-picture (PIP, or PIX-IN-PIX) capability, that is, the capability to receive video signals

from two different sources and combine them to produce a signal which when displayed includes a first program in a main viewing area, and a second program in a secondary (inset) viewing area of the same display screen." NTFX-1005, 1:38-44.

67.    Additionally, the systems of Palmer and Romesburg are similar in that they both receive and display a television video signal and information from remote computers.

68.    From my experience at the time in the industry, picture-in-picture, separate/split screens, overlay displays and the rendering of windows including video on PCs were common place in the industry.  One of ordinary skill in the art would have therefore been motivated to modify Palmer's computer screen so that it displayed not only online information retrieved using the URL/pointer embedded in the programming signal but also the programming signal itself (e.g., a television signal).  Such a modification would have simplified Palmer's system and thus reduced costs.

69.    It is therefore my opinion that a person of ordinary skill in the art would find that Palmer in view of Romesburg renders obvious each and every element of at least claim 1.

70.    The following claim chart describes how Palmer in view of

Romesburg renders obvious each and every element of at least claim 1.

| Claim 1 | |
|---|---|
| [1.0] A system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal, the system comprising | [1.0] *"A system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal"*<br><br>Palmer teaches a system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal:<br><br>"A method and apparatus is provided for <u>connecting a computer to electronic addresses in sync with an audio/video broadcast.</u> Simultaneously with the <u>broadcasting of audio/video programming, an address transmitter transmits an address, such as a URL, identifying an on-line service which contains information about the audio or video programming.</u> This address is received by a computer and used to automatically access the on-line service." NTFX-1007, Abstract (emphasis added). (See NTFX-1008, pp. 1, 3, 6, 9-10, Fig. 1)<br><br>"[T]he URL may be stored in the vertical blanking interval of a television broadcast or sent on the video broadcast's carrier signal much like closed-captioning." NTFX-1007, 8:13-16. (See NTFX-1008, pp. 1, 3) |
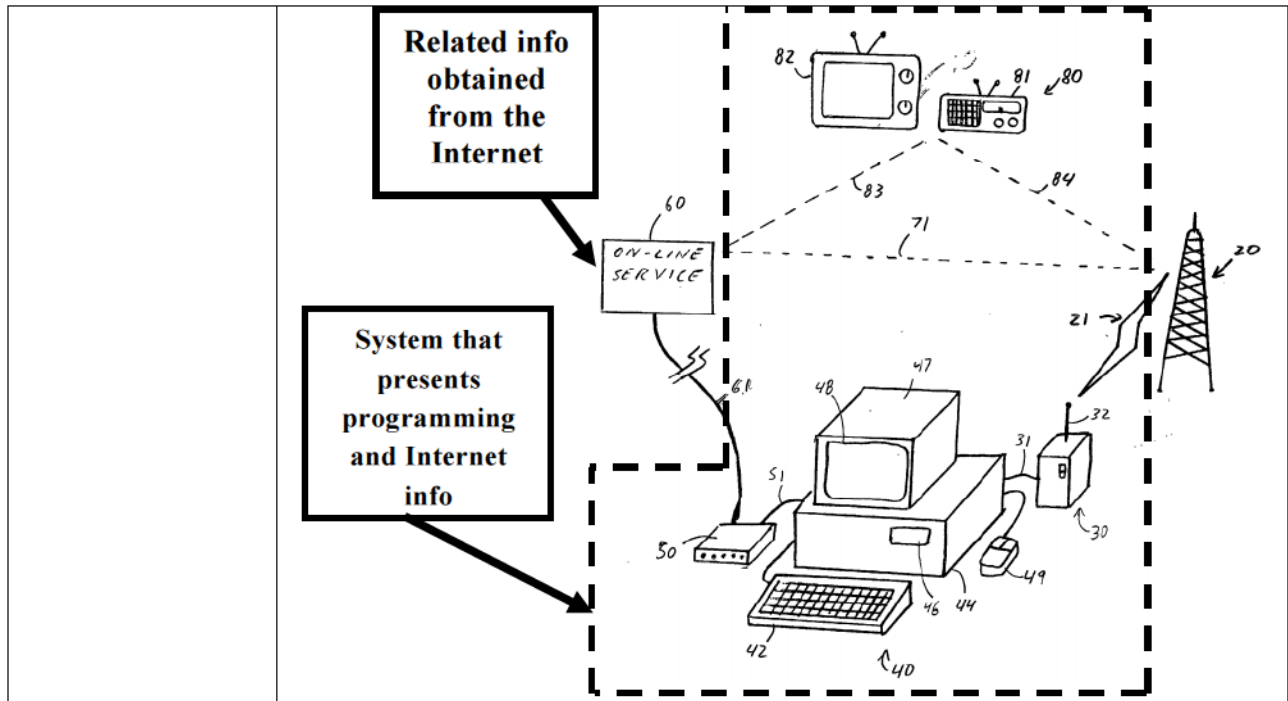
NTFX-1008, Fig. 1 (annotated)

**Thus**, the system for receiving audio/video programming containing an embedded address such as a URL that identifies an online service that contains information relevant to the programming, as taught by Palmer, discloses "a system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal," as recited in the claim.
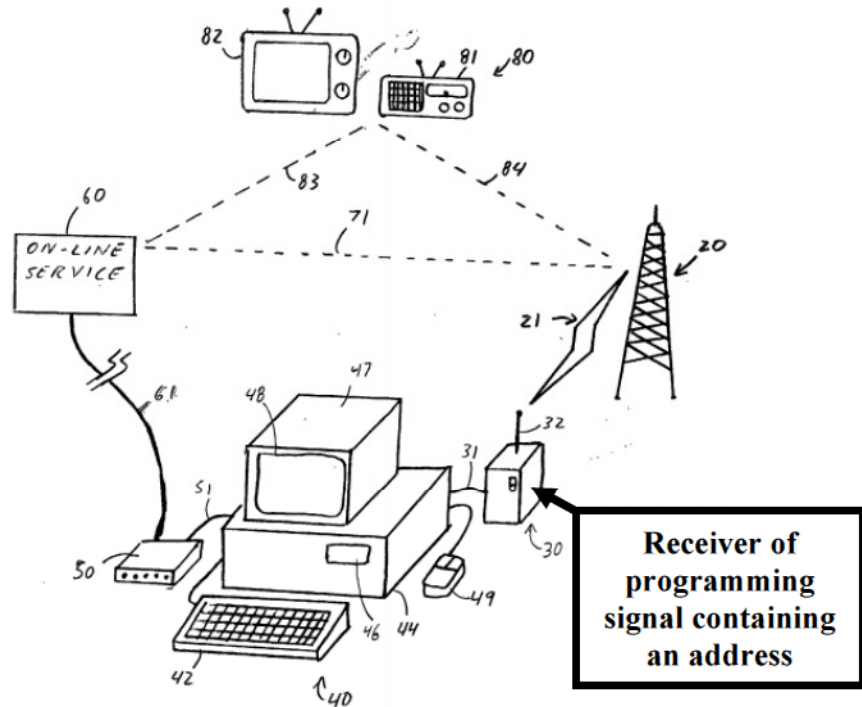
| [1.1] a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which | [1.1] *"a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal"*<br><br>**First**, Palmer teaches a receiver for receiving a programming signal and the embedded address:<br><br>"FIG. 1 shows a system 10 in accordance with one embodiment of the present invention. The system comprises a general computer 40, a receiver 30, an on-line service 60, a central office 70, television/radio broadcaster 90, a radio and/or television 80 |

| | |
|---|---|
| relates to the programming signal; | and a <u>transmitter 20</u>." NTFX-1007, 3:51-55 (emphasis added). (See NTFX-1008, pp. 6, 11, Fig. 1)<br><br>"The <u>transmitter 20</u> is also not limited to paging networks. <u>For example, the transmitter may a traditional television broadcaster,</u> an AM, FM or HAM radio station, a digital direct satellite, video playback systems such as video cassette recorders/players or laser disc players, audio playback systems such as stereos and compact disc players and all other forms of digital, analog, or hybrid transmission capable of storing or embedding and transmitting alpha-numeric electronic addresses. For example, <u>the URL may be stored in the vertical blanking interval of a television broadcast or sent on the video broadcast's carrier signal much like closed-captioning. Just as closed-captioning is extracted from the signal as an alpha-numeric message, so may the URL be extracted by receiver 30</u> and provided to the computer." NTFX-1007, 8:5-19 (emphasis added). (See NTFX-1008, pp. 1, 3, 6, 9-10, Fig.)<br><br>**Accordingly**, in one embodiment of Palmer, the receiver 30 receives a television broadcast from transmitter 20, and the television broadcast contains an address such as a URL in the vertical blanking interval. |

NTFX-1008, Fig. 1 (annotated)

**Second**, Palmer teaches that the address (e.g., URL) identifies the source of the online information segment which relates to the programming signal:

"Simultaneously with the broadcasting of audio/video programming, an address transmitter transmits an address, such as a URL, identifying an on-line service which contains information about the audio or video programming. This address is received by a computer and used to automatically access the on-line service." NTFX-1007, Abstract (emphasis added). (See NTFX-1008, pp. 1, 3, 6, 8-10, Fig. 1)

**Thus**, the receiver that receives the television broadcast having an embedded address such as a URL, where the URL specifies an online service having information about the programming, as taught by Palmer, discloses "a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal," as recited in the claim.

| | |
|---|---|
| [1.2] an address extractor which extracts the address from the programming signal; | [1.2] *"an address extractor which extracts the address from the programming signal"*<br><br>Palmer teaches an address extractor which extracts the URLs from the programming signal:<br><br>"For example, the URL may be stored in the vertical blanking interval of a television broadcast or sent on the video broadcast's carrier signal much like closed-captioning. Just as closed-captioning is extracted from the signal as an alpha-numeric message, so may the URL be extracted by receiver 30 and provided to the computer." NTFX-1007, 8:13-19 (emphasis added). ). (See NTFX-1008, pp. 1, 3)<br><br>**Thus**, the receiver that extracts the URL out of the VBI of the video broadcast, as taught by Palmer, discloses "an address extractor which extracts the address from the programming signal," as recited in the claim. |
| [1.3] a web browser; | [1.3] *"a web browser"*<br><br>Palmer teaches a web browser:<br><br>"The processor 44 next causes modem 50 to connect computer 40 with the Internet Service Provider 60 (if not already connected) via telephone line 61. Using functions typically present in a web browser, the program then sends the stored URL to the Internet Service Provider 60 which in turn allows the computer 40 to receive information from and interact with the website associated with the URL. The information received from website 61 will be displayed on screen 48. The program repeats the process each time a new and different URL is received by receiver 30, such as when the URL for website 62 is transmitted. Alternatively, the next URL may be another webpage of the current website 61. Accordingly, it is preferable for the program to be a World Wide Web compatible browser (Mosaic, Netscape or Microsoft Internet Explorer) . . ." NTFX-1007, 5:3-17 (emphasis added). (See NTFX-1008, pp. 3, 6-7) |

| | |
|---|---|
| | **Thus**, the web browser taught by Palmer discloses "a web browser," as recited in the claim. |
| [1.4] a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link; and | [1.4] *"a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link"*<br><br>Palmer teaches a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link:<br><br>"General computer 40 includes a processor unit 44 containing a microprocessor (not shown) and a memory storage device such as hard-drive 46." NTFX-1007, 3:56-58 (emphasis added). (See NTFX-1008, p. 1, Fig. 1)<br><br>"Simultaneously with the broadcasting of audio/video programming, an address transmitter transmits an address, such as a URL, identifying an on-line service which contains information about the audio or video programming. This address is received by a computer and used to automatically access the on-line service." NTFX-1007, Abstract (emphasis added). (See NTFX-1008, pp. 1, 3, 6, 8-10, Fig. 1)<br><br>"The processor 44 next causes modem 50 to connect computer 40 with the Internet Service Provider 60 (if not already connected) via telephone line 61. Using functions typically present in a web browser, the program then sends the stored URL to the Internet Service Provider 60 which in turn allows the computer 40 to receive information from and interact with the website associated with the URL. The information received from website 61 will be displayed on screen 48. The program repeats the process each time a new and different URL is received by receiver 30, such as when the URL for website 62 is transmitted. Alternatively, the next URL may be another webpage of the |

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| | current website 61. <u>Accordingly, it is preferable for the program to be a World Wide Web compatible browser (Mosaic, Netscape or Microsoft Internet Explorer)</u> . . ." NTFX-1007, 5:3-17 (emphasis added). (See NTFX-1008, pp. 1, 3, 6, 9-10, Fig. 1).<br><br>"<u>When a receiver receives an AutoURL transmission</u>, the alpha-numeric data (usually a Web URL address) is stored in computer memory and <u>an Internet browser will automatically contact the broadcasters desired Internet site. This allows a broadcaster to control the Internet destination of the receiver's computer.</u>" NTFX-1008, pg. 3 (emphasis added).<br><br>**Thus**, the processor that causes the web browser program to automatically send a URL to an Internet Service Provider and receive information from the website associated with the URL, as disclosed by Palmer, discloses "a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link," as recited in the claim. |
| [1.5] a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment; | [1.5] *"a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment"*<br><br>**First**, Palmer teaches a display monitor for presenting a programming signal concurrently with online information, where the online information is presented on a separate display monitor:<br><br>"In the preferred embodiment, the URL's are broadcast over the paging system to correspond with the programming broadcasted for radio or televisions. <u>For example, every time a commercial is shown on television 82, a URL associated with that advertiser's website is simultaneously sent from tower 20 to receiver 30.</u> That website may be the advertiser's home page. The tower 20 then sends out the address of a different website when the next commercial begins. <u>Thus, computer screen 48 displays different</u> |

information from different websites to simultaneously correspond with television or radio programming." NTFX-1007, 7:7-11 (emphasis added). (See NTFX-1008, pp. 1, 3, 6, 9-10, Fig. 1)

**Accordingly**, in Palmer's system, the television displays a television program while the computer screen concurrently displays information from a website that corresponds to the program.
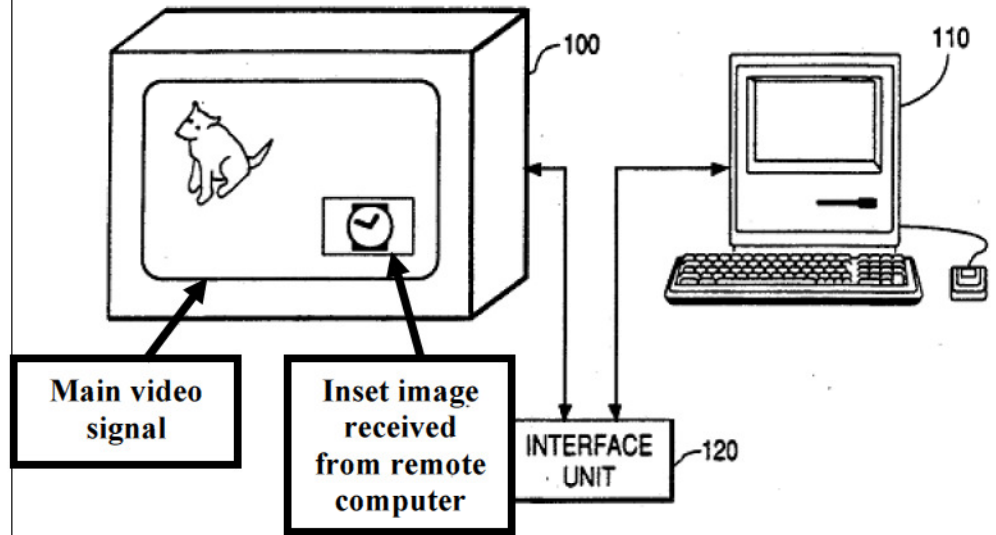
**Second**, Romesburg teaches displaying a video signal and an information received from a remote, networked computer on the same television:

"Referring to FIG. 1, a television receiver having pix-in-pix capability 100 is connected to an external computer 110 with an interface unit 120 for the interchange of digital signals." NTFX-1005, 2:12-15.

"Serial control bus 418 couples command data from controller 410 which controls PIP unit 450 to produce an image for display having a main (or primary) picture and an inset (or secondary) picture." NTFX-1005, 3:38-42 (emphasis added).

"The baseband video signal (TV) is coupled to a decoder 440 which produces a luminance Y signal, and U and V color component signals. A video input terminal 442 labelled AUX IN is provided for receiving a baseband video signal from an external source." NTFX-1005, 3:24-28 (emphasis added).

"A digitized video image may be received from other, distant computers via a standard computer modem coupled to a telephone line, and transferred to the pix-in-pix television receiver for display." NTFX-1005, 5:13-17 (emphasis added).

NTFX-1005, Fig. 1 (annotated).

**Thus**, the television that displays television programming, concurrently with associated information from websites that is displayed on a separate monitor, as disclosed by Palmer, in view of the television that concurrently displays both a video signal and information from remote computers, as taught by Romesburg, renders obvious "a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment," as recited in the claim.

| [1.6] wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on the display | [1.6] *"wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on the display monitor in a picture-in-picture format"*<br><br>As shown in [1.5], Romesburg teaches displaying a video signal and an information segment received from a remote, networked computer in where the inset image is displayed (i.e., in a picture-in-picture format). |
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| monitor in a picture-in-picture format | |
| --- | --- |
| | |

**Challenge #5: Claims 2-4 are obvious over Palmer in view of Batchelor**

71.     Palmer and Batchelor render obvious each and every element of at least claims 2-4 of the '437 Patent.

72.     Palmer is U.S. Patent No. 5,905, 865 that was filed On October 30, 1996, which claims priority to provisional application No. 60/008,111, filed October 30, 1995.  It is my understanding that the Palmer '865 patent is prior art to the extent that its subject matter is contained in the earlier filed provisional patent application.  I have reviewed the provisional application, and for each element of Palmer '865 identified below, there is a corresponding teaching in the provisional application.

73.     Further, a person of ordinary skill in the art would have modified Palmer in view of Batchelor for a number of reasons.  For example, the

combination amounts to the use of a known technique to improve similar devices in the same way.

74.     As shown by the teachings of Batchelor, it was known by persons of ordinary skill in the art at the time of the invention of the '437 patent to concurrently display a television programming signal concurrently with information relating to the programming signal on the same display screen.

75.     The systems of Palmer and Batchelor are similar in that they both extract an address from the VBI of a television signal and use the address to retrieve information related to the television signal so that it may be displayed. Specifically, Batchelor teaches that:

> "The present invention is a system that displays text and graphic information with broadcasted television video. The broadcast system includes a vertical blanking interval (VBI) inserter which inserts data into the vertical blanking interval of a broadcasted video signal. The receiving system includes a personal computer that contains a VBI decoder which can separate the data from the video signal. The separated data contains command and address information, which instruct the personal computer to retrieve text/graphic information from a storage device, and display the retrieved text/graphic information on a monitor." NTFX-1006, 1:42-52.

**76.** As shown by Batchelor, it was known that it was desirable to show information related to a television program alongside the television program itself:

"It would be desirable to provide a system that would retrieve and display text/graphic data which corresponds to a television image displayed on a computer monitor. For example, if a user is watching an informational program on elephants, it would be desirable if various facts and graphics on elephants were presented on the screen along with the television image." NTFX-1006, 1:30-38.

**77.** From my experience at the time in the industry, picture-in-picture, separate/split screens, overlay displays and the rendering of windows including video on PCs were common place in the industry. One of ordinary skill in the art would have modified Palmer's computer screen so that it displays the television program on one half of the screen and the related online information on the other half of the screen in a split screen format. This modification would have improved Palmer because users would have been able to see information related to a television program immediately adjacent the program on the same screen.

**78.** It is therefore my opinion that a person of ordinary skill in the art would find that Palmer in view of Batchelor renders obvious each and every element of at least claims 2-4.

79. The following claim chart describes how Palmer in view of Batchelor renders obvious each and every element of at least claims 2-4:

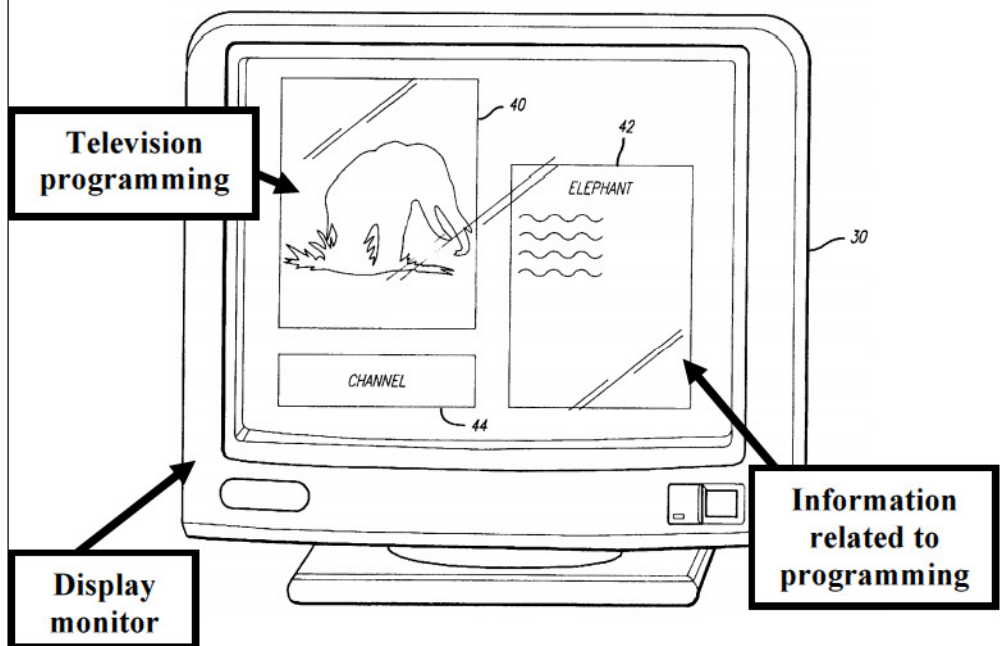| Claim 2 | |
|---|---|
| [2.0] A system for receiving a programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal, the system comprising | See analysis of Palmer in portion [1.0] of Challenge #4. |
| [2.1] a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming | See analysis of Palmer in portion [1.1] of Challenge #4. |

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| signal; | |
| [2.2] an address extractor which extracts the address from the programming signal; | See analysis of Palmer in portion [1.2] of Challenge #4. |
| [2.3] a web browser; | See analysis of Palmer in portion [1.3] of Challenge #4. |
| [2.4] a processor which automatically directs the web browser to establish a | See analysis of Palmer in portion [1.4] of Challenge #4. |

| | |
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| communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online information source via the communications link; and | |
| [2.5] a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment; | **[2.5]** *"a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment;"*<br><br>**First**, Palmer teaches a display monitor for presenting a programming signal concurrently with online information, where the online information is presented on a separate display monitor:<br><br>"In the preferred embodiment, the URL's are broadcast over the paging system to correspond with the programming broadcasted for radio or televisions. <u>For example, every time a commercial is shown on television 82, a URL associated with that advertiser's website is simultaneously sent from tower 20 to receiver 30.</u> That website may be the advertiser's home page. The tower 20 then sends out the address of a different website when the next commercial begins. <u>Thus, computer screen 48 displays different information from different websites to simultaneously correspond with television or radio programming.</u>" NTFX-1007, 7:7-11 (emphasis added). (See NTFX-1008, pp. 1, 3, 6, 9-10, Fig. 1) |

**Accordingly**, in Palmer's system, the television displays a television program while the computer screen concurrently displays information from a website that corresponds to the program.
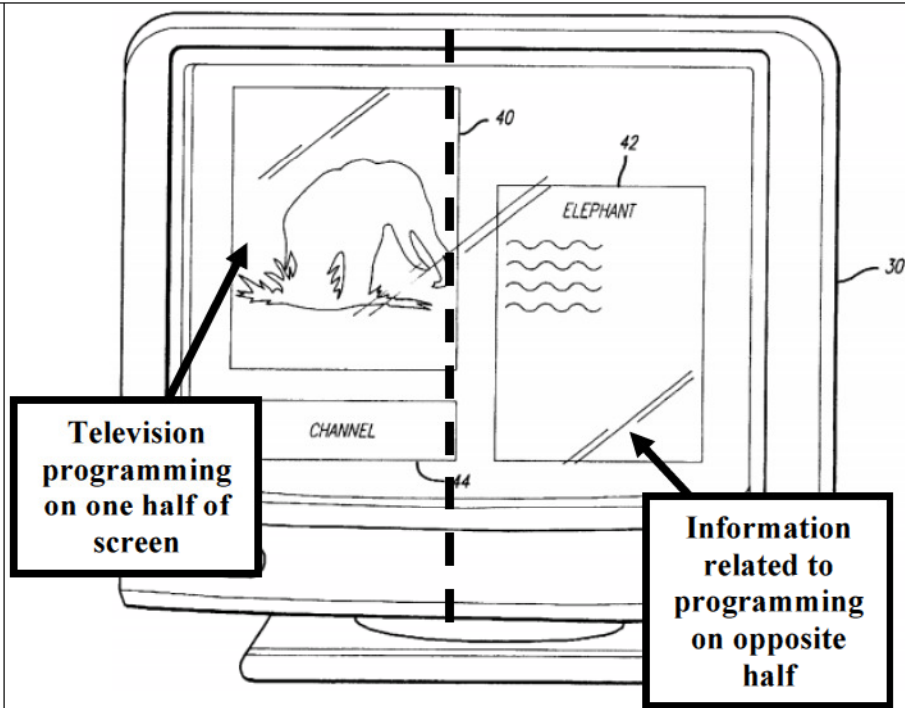
**Second**, Batchelor teaches a computer monitor that concurrently displays a television programming signal and text and graphical information associated with the programming signal on a single screen:

"FIG. 2 shows a screen of the computer monitor 30. <u>The screen may include a window 40 that displays the television image and a separate window 42 that shows the text and graphic information</u> retrieved from the optical disk 38. <u>The text/graphic information typically relates to the video image shown in window</u> 40. For example, the video window 40 may display an elephant. The text/graphic window 42 may display particular facts regarding elephants." NTFX-1006, 2:55-62 (emphasis added).



NTFX-1006, Fig. 2 (annotated)

| | |
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| | **Thus**, the computer display that presents Internet information from websites to simultaneously correspond with television programming, as taught by Palmer, in view of the computer monitor that concurrently displays a television programming signal and text and graphical information associated with the programming signal on a single screen, as taught by Batchelor, renders obvious "a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment." |
| [2.6] wherein the programming signal comprises the video signal and the video signal is presented on one half and the online information segment is presented on the opposite half of a split screen display format. | [2.6] *"wherein the programming signal comprises the video signal and the video signal is presented on one half and the online information segment is presented on the opposite half of a split screen display format."* <br><br> **First**, as shown above in [1.5], Palmer teaches concurrently displaying a television program and online information related to the program. <br><br> **Second**, Batchelor teaches a computer monitor that concurrently displays a television programming signal on one half of a screen and text and graphical information associated with the programming signal on the other half of the screen: <br><br> "FIG. 2 shows a screen of the computer monitor 30. <u>The screen may include a window 40 that displays the television image and a separate window 42 that shows the text and graphic information</u> retrieved from the optical disk 38. <u>The text/graphic information typically relates to the video image shown in window</u> 40. For example, the video window 40 may display an elephant. The text/graphic window 42 may display particular facts regarding elephants." NTFX-1006, 2:55-62 (emphasis added). |

NTFX-1006, Fig. 2 (annotated)

**Thus**, the computer monitor that concurrently displays a television programming signal on one half of the monitor and text and graphical information associated with the programming signal on the other half of the monitor, as taught by Batchelor, in view of the teachings of Palmer, render obvious "wherein the programming signal comprises the video signal and the video signal is presented on one half and the online information segment is presented on the opposite half of a split screen display format," as recited in the claim.

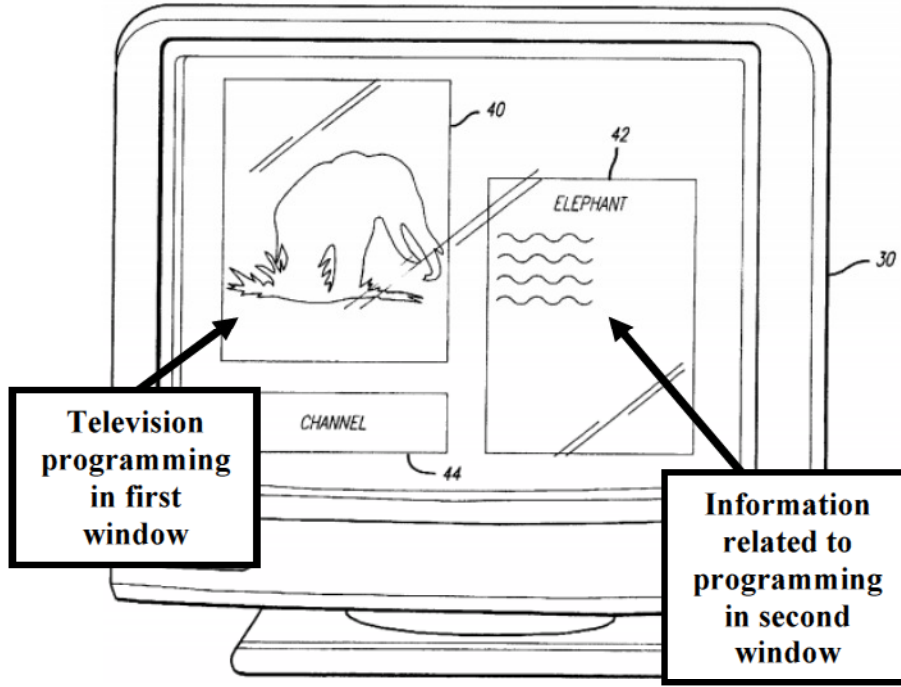| Claim 3 | |
|---|---|
| [3.0] A system for receiving a programming signal containing an embedded address, the address | See analysis of Palmer in portion [1.0] of Challenge #4. |

| | |
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| identifying a source of at least one online information segment related to the programming signal, the system comprising | |
| [3.1] a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal; | See analysis of Palmer in portion [1.1] of Challenge #4. |
| [3.2] an address extractor | See analysis of Palmer in portion [1.2] of Challenge #4. |

| | |
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| which extracts the address from the programming signal; | |
| [3.3] a web browser; | See analysis of Palmer in portion [1.3] of Challenge #4. |
| [3.4] a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, whereby the processor retrieves the online information segment from the online | See analysis of Palmer in portion [1.4] of Challenge #4. |

| | |
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| information source via the communications link; and | |
| [3.5] a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment; | See analysis of Palmer and Batchelor in portion [2.5] of Challenge #5. |
| [3.6] wherein the programming signal comprises the video signal and the video signal is presented in a first window and the online information segment is presented in a second window in a multiple window display format. | [3.6] *"wherein the programming signal comprises the video signal and the video signal is presented in a first window and the online information segment is presented in a second window in a multiple window display format"*<br><br>**First**, as shown above in [1.5], Palmer teaches concurrently displaying a television program and online information related to the program.<br><br>**Second**, Batchelor teaches a computer monitor that concurrently displays a television programming signal in a first window and text and graphical information associated with the programming signal in second window:<br><br>"FIG. 2 shows a screen of the computer monitor 30. The screen may include a window 40 that displays the television image and a separate window 42 that shows the text and graphic information retrieved from the optical disk 38. The text/graphic information typically relates to the video image shown in window 40. For |

example, the video window 40 may display an elephant. The text/graphic window 42 may display particular facts regarding elephants." NTFX-1006, 2:55-62 (emphasis added).



NTFX-1006, Fig. 2 (annotated)

See [2.6] for reasons to combine Palmer and Batchelor.

**Thus**, the computer monitor that concurrently displays a television programming signal in a first window and text and graphical information associated with the programming signal in a second window, as taught by Batchelor, in view of the teachings of Palmer, render obvious "wherein the programming signal comprises the video signal and the video signal is presented in a first window and the online information segment is presented in a second window in a multiple window display format," as recited in the claim.

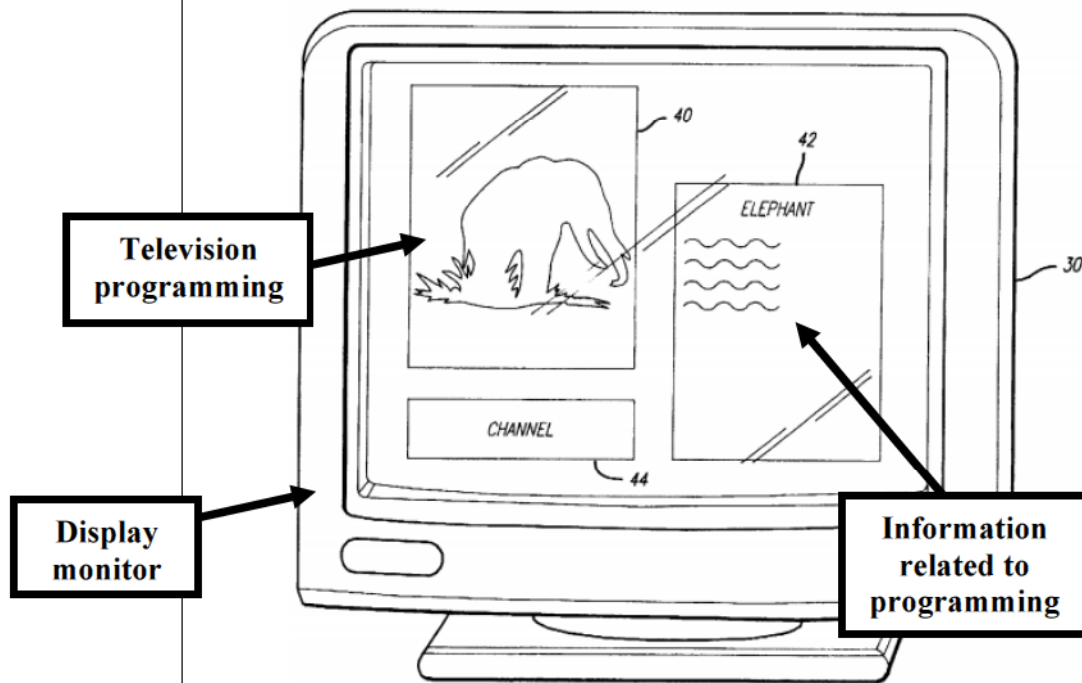| Claim 4 | |
|---|---|
| [4.0] A system for receiving a | See analysis of Palmer in portion [1.0] of Challenge #4. |

| | |
|---|---|
| programming signal containing an embedded address, the address identifying a source of at least one online information segment related to the programming signal, the system comprising | |
| [4.1] a receiver for receiving a programming signal and the embedded address, the address identifying the source of the online information segment which relates to the programming signal; | See analysis of Palmer in portion [1.1] of Challenge #4. |

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| | |
| [4.2] an address extractor which extracts the address from the programming signal; | See analysis of Palmer in portion [1.2] of Challenge #4. |
| [4.3] a web browser; | See analysis of Palmer in portion [1.3] of Challenge #4. |
| [4.4] a processor which automatically directs the web browser to establish a communications link with the online information source identified by the address, | See analysis of Palmer in portion [1.4] of Challenge #4. |

| | |
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| whereby the processor retrieves the online information segment from the online information source via the communications link; and | |
| [4.5] a display monitor for presenting the programming signal, comprising a video signal or an audio signal, concurrently with the online information segment; | See analysis of Palmer and Batchelor in portion [2.5] of Challenge #5. |
| [4.6] wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on | [4.6] *"wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on the display monitor."*<br><br>**First**, as shown above in [1.5], Palmer teaches concurrently displaying a television program and online information related to the program.<br><br>**Second**, Batchelor teaches a computer monitor that concurrently displays a television programming signal and text and graphical information associated with the programming signal: |

| the display monitor. | "FIG. 2 shows a screen of the computer monitor 30. <u>The screen may include a window 40 that displays the television image and a separate window 42 that shows the text and graphic information</u> retrieved from the optical disk 38. <u>The text/graphic information typically relates to the video image shown in window</u> 40. For example, the video window 40 may display an elephant. The text/graphic window 42 may display particular facts regarding elephants." NTFX-1006, 2:55-62 (emphasis added). |
|---|---|



NTFX-1006, Fig. 2 (annotated)

**Thus**, the computer monitor that concurrently displays a television programming signal and text and graphical information associated with the programming signal, as taught by Batchelor, in view of the teachings of Palmer, render obvious "wherein the programming signal comprises the video signal and the video signal and the online information segment are presented on the display monitor," as recited in the claim.

## Declaration

80.     I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed:

By:          Richard A. Kramer

NTFX-1003

# RICHARD A. KRAMER

Phone: (541) 602-2271
email: Richard.Kramer@SISDevelopment.com

## EXECUTIVE SUMMARY

Results oriented technologist and engineering leader with 20+ years of demonstrated achievements.

## PROFESSIONAL EXPERIENCE

**SIS DEVELOPMENT INC.**                                                 **2006-PRESENT**

**President**

SIS Development, Inc. ("SIS") is a full-service technical organization focused on enabling OEMs and Technology Companies to win in a tough competitive environment. We specialize in product development, intellectual property matters, and R&D (research and development).

Intellectual property expertise and patent litigation experience includes (* denotes client):

- E-Watch Inc. v. * Lorex Technology, Inc. / FLIR Systems Inc. – IPR Declaration
- E-Watch Inc. v. * Avigilon, Inc. – Consultant on Invalidity and Claim Construction
- * Cisco Systems, Inc. vs. OpenTV – Expert Witness/Consultant
- OpenTV vs. * NDS (a division of Cisco Systems, Inc.) – Expert Witness/Consultant
- * J2 Global Communications v. Ring Central - Expert for Patent Reexamination
- * Rovi Corporation et. al. v. Hulu LLC - Expert Witness
- * Rovi Corporation et. al. v. Amazon.Com Inc. et. al. - Expert Witness
- Object Video Inc. v. *Sony Corporation – Consultant on Prior-Art
- Object Video Inc. v. * Bosch GMBH – Consultant on Prior-Art
- * Honeywell International Inc., v. 2GIG Technologies – Expert Witness
- * Elbex Video, Ltd. v. Axis Communications, Inc. – Expert Witness
- Gemstar TV Guide v. * Scientific-Atlanta, Inc. (now Cisco) – Advisor
- ABB Automation Incorporated v. * Schlumberger, Inc. – Advisor and Deposed
- IP matters relating to advanced technologies including: video, IP networking, security, protocols, wireless, and software including source code.

**GENERAL ELECTRIC, GE-SECURITY**                                        **2003 - 2006**

**General Manager – Technology / Vice President, Engineering**

Leader of progressive 300+ person technology and engineering organization: 16 orgs in 11 geographically dispersed locations. Responsible for technology development for $500M+/year in products worldwide for General Electric's Video Systems Group (VSG) and other advanced Enterprise/Commercial/Residential solutions: video surveillance (IP network video products and software, DVRs, cameras), burglar alarm systems (ITI, Caddx and other lines), burglar alarm monitoring software (MAS), and life-safety markets (access control systems, real-estate mobile keys, smoke detectors, etc.).

- Execution & Innovation - Developed leading-edge new customer solutions, successfully launching 20+ major new products/platforms per year, resulting in double-digit organic market growth
- Held leading industry market share (90 %+) position in key vertical and unique markets with technically innovative products and software in a wide variety of security applications.
- Strategy Leader of GE FY2005 "Session 2" strategy creation and multiple technical M&A due-diligence teams for numerous acquisition targets. Leader of negotiations: closed numerous key strategic partnerships/agreements. 2005 OM +50% above plan
- High-Performance - Advanced with increasing levels of responsibilities from $120M to $500M+ in revenue/year accountability; rated as "Top-20%" talent and nominate/attended executive leadership training at GE's legendary Jack Welch Executive Training Center

**GM/VP/C-LEVEL ROLES, NEW VENTURES AND DIVESTITURES**                    **1998-2003**
Norcross, GA

**VP Engineering /GM/Officer for start-ups and corporate sponsored diversification ventures**

- Ivex Corporation – Launched/Pioneered first IP network video surveillance solution for the security industry (partnered with Loronix, now Verint): Developed an online video monitoring software service and the revolutionary IP network video appliance.  Successfully acquired by a public entity.  Stock went from $3.60 to $8.60 within 30 days

- Home Wireless Networks - Built team/leader of R&D for world's first combined voice plus data wireless home gateway. Products "Bell" approved.  Launched under BellSouth and MCI brands.  Launched first low-cost 802.11 access point by Telnor in Europe.  Acquired

- Miraxis; parent EMS TECHNOLOGIES, $309M, NASDAQ: ELMG; corporate technology diversification new business based on new network and wireless Ka-band combined 2-way wireless WAN/Internet/video connectivity and DTH/DBS video distribution satellite technology

**SCIENTIFIC-ATLANTA, BROADBAND COMM. DIV. ($2.5B, NYSE: SFA)**        **1995 – 1998**
Acquired by CISCO SYSTEMS
Norcross, GA

**Project Director, Advanced Video Systems (AVS)**                    **1997-1998**
**Engineering Manager, Home Communications Terminals**                **1996-1997**
**Engineering Manager, 8600x**                                        **1995-1996**

Led director-level cross-functional team developing next generation interactive TV (iTV) 2-way video cable set-top boxes to replace $400M/year Advanced Video Systems (AVS) broadband products.   Built engineering department and provided daily direction to multi-disciplined engineering department responsible for S-A's highest revenue earning product, the 8600x cable set-top.  Direct engineering management responsibility for AVS high-volume domestic set-tops, remote controls and third-party partnerships.

- Reversed 10-year legacy of re-branding Panasonic set-tops by successfully building new engineering organization and launching the company's first successful internally designed high-volume, low-cost product.  Volumes reached 80K/month.  Reduced COGS by 40%, from $154 to $78

- Engineering manager for consumer iTV video products – the company's highest revenue-earning product lines ($200M/year) with volumes over 1M+/year (8600x, 8600, etc.)

- Spearheaded launch of company's first high-volume product into a brand new S-A international plant located in Mexico.  Proactively developed processes and infrastructure

- Led introduction of new development process and successfully completed business plan, product definitions, ROI analysis, forecasts, and resource plans for next-generation set-top products to replace existing $400M/year broadband AVS products

- Managed daily design engineering activities and contract manufacturing support with international third-party partners: Panasonic, WKK and others

**SCHLUMBERGER INDUSTRIES, EMNA ($14B, NYSE: SLB)**                    **1987 – 1995**
Norcross, GA

| | |
|---|---|
| **Engineering Manager, Residential and Commercial Metering** | **1994-1995** |
| **Hardware Manager, Recorders and Translation Systems** | **1990-1994** |
| **Senior Electronic Design Engineer** | **1989-1990** |
| **Electronic Design Engineer** | **1987-1989** |

Engineering manager for Schlumberger's Electricity Management, North America (EMNA) division. Managed supervisors, multi-disciplined developers and QA/SQA personnel developing high-volume electronic communication products, meter reading, modems and power monitoring equipment used by the electric utility industry to monitor and control power on the power grid.

- Managed R&D organization for residential and commercial product lines, obtaining over $60M/year in revenue with product line volumes ranging from 10Ks/year to 100Ks/year

- Promoted, dynamically improved and launched division's highest revenue product (the "Vectron") after a two-year delay within another R&D organization

- As hardware manager, launched new product lines that spawned new services business

- Annually selected to participate in the "Best Program" for high potential managers

- As a hands-on developer, primary designer for division's top two highest ASP products (GM 55%, ASP $2,000). Designed working ASIC on first pass. Granted two patents


**BABCOCK & WILCOX, NUCLEAR POWER DIVISION**                    **1984 - 1987**
ELECTRONIC DESIGN ENGINEER / SR. ELECTRONICS DESIGN ENGINEER

As part of the "Special Products and Integrated Field Services" team, I was a designer and developer of electronic inspection systems and robotic repair systems for nuclear power plant components inside the nuclear containment building.

- Provided system, circuit and software design for advanced video/CCTV, ultrasound, and other imaging solutions to inspect internal radioactive components inside the nuclear containment building.

- Board level designer of electronic hardware using a multitude of CPU/MPUs, high-speed communication interfaces, control circuits, and complex test/measurement ADC circuits.

- Software programmer using high-level software programming languages and assembly code firmware for robotic/automation repair and inspection equipment

## EDUCATION & AFFILIATIONS

**BSEE, Magna cum laude**                                                      **1984**
The University of Toledo                                               Toledo, Ohio

**Executive MBA, 16 Credit Hours**                                  **Attended 2003**
Emory University, Goizueta Business School                        Atlanta, Georgia

Executive business program ranked in the top 10 globally by Business Week and The Financial Times.

GE Six Sigma, Black Belt Training Certified

Additional post-graduate studies and certificates: finance, project management, leadership, Java 2, DSP, computer architecture and PACE product development process.

Java 2, Sun Certified Programmer.

Member, IEEE.

## PATENTS

**U.S. Patent No. 5,701,253** - Isolated Current Shunt Transducer; December 23, 1997

**U.S. Patent No. 5,422,939** - Parallel Off-Hook Detection for Both Line Available and Phone Pick-up Detection, June 6, 1995

**U.S. Patent 7,956,735** (78% ownership stake – rights sold) – Automated remotely-verified alarm system with intrusion and video surveillance and digital video recording, June 7, 2011