

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**SAMSUNG ELECTRONICS CO., LTD. AND
SAMSUNG ELECTRONICS AMERICA, INC.,**
Petitioners

v.

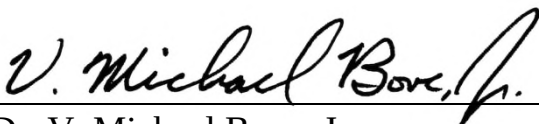
TVNGO LTD.,
Patent Owner

Inter Partes Review No.: IPR2026-00214

**DECLARATION OF DR. V. MICHAEL BOVE, JR.
REGARDING U.S. PATENT NO. RE50,399**

I hereby declare under penalty of perjury under the laws of the United States of America that the following is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code.

Date: February 13, 2026



Dr. V. Michael Bove, Jr.

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1018	U.S. Patent Application Publication No. 2005/0138668A1 ("Gray")
1019	U.S. Patent No. 6,338,094 ("Scott")
1020	"Where Television and Internet Meet...: New experiences for rich media," December 2001 ("Vliet")
1021	U.S. Patent Application Publication No. 2004/0172661 ("Yagawa")
1022	WIPO Publication No. WO2001010118A1 ("Cooper")
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1025	U.S. Patent No. 5,818,438 ("Howe")
1026	DCT5100 Installation Manual ("DCT5100")
1027	U.S. Patent No. 8,281,339 ("Walker")
1028	OpenTV Core 1.1, Technical White Paper, 2002 ("OpenTV Whitepaper")
1029	"Panasonic TVs to Include OpenTV Software," TVTechnology Newsletter, February 4, 2004 ("Panasonic")

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Exhibit No.	Description
1030	TVnGO's Opening Claim Construction Brief from LG Litigation
1031	U.S. Patent No. RE50,328 reissue file history
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1034	U.S. Patent No. 9,407,969

CHART OF CLAIMS	
[1pre]	A method for generating at a user's premises an overlay using video signals constituting a first data and overlay-enabling digital data constituting a second data, the method comprising:
[1a]	(a) providing a combiner unit at the user's premises, wherein;
[1b]	the combiner unit is coupled to a TV set and connected to a separate TV tuner box or TV tuner in the TV set, at the user's premises, and
[1c]	the combiner unit is also connected through distinct networks to each of a video signal source providing video signals through the separate TV tuner box or the TV tuner in the TV set, and an Internet data source providing overlay-enabling digital data over the Internet, wherein
[1d]	said video signals and said overlay-enabling digital data originate from unrelated sources and are transmitted to the user's premises by different resources as mutually distinct and independent inputs, and wherein
[1e]	said overlay-enabling digital data includes at least:
[1f]	a Web link indicating a website where content that is associated with said overlay-enabling digital data is stored,
[1g]	an image indicative of the content associated with said overlay-enabling digital data, and
[1h]	an overlay activation criterion; and
[1i]	(b) processing at the user's premises said overlay-enabling digital data and generating at the user's premises a corresponding overlay only if said overlay activation criterion is met, wherein generating the overlay includes:
[1j]	generating at the user's premises a first display screen including at least a first portion corresponding to said video signals and a second portion overlaid over said first portion and corresponding at least to said image, and
[1k]	associating the Web link with said second portion of the first display screen thereby allowing a user to cause the combiner unit to retrieve said content, generate a second video display screen including at least a portion which corresponds to said content, and
[1l]	input the second display screen to said TV set.
[2]	The method according to claim 1, wherein said overlay enabling digital data is received at the user premises according to a pre-stored user profile.
[3 pre]	The method according to claim 1, further including:
[3a]	receiving a command from the user at said user premises; and
[3b]	responsive to said command, resizing said first portion and/or said second portion of said first display screen.

CHART OF CLAIMS	
[4 pre]	The method according to claim 1, wherein the content stored at said website enables streaming of digital data over the Internet; and
[4a]	said method further including: pre-fetching and buffering said digital data stream from said website, thereby allowing said digital data stream to be displayed substantially without delay upon redirection by the user.
[5]	The method according to claim 1, wherein the overlay enabling digital data comprises data representative of one or more second images, and for each of said one or more second images said overlay-enabling data comprises respective web site addresses where IP content associated with the respective second image is stored, and wherein said generating the overlay further includes within said first display said one or more second images.
[6]	The method according to claim 1, wherein the overlay enabling digital data is supplementary or complementary to the video signals.
[7]	The method according to claim 1, wherein the image includes an icon that indicates to the user that digital data from Internet content is currently being displayed and which provides an indication of a nature of said Internet content.
[8]	The method according to claim 1, wherein the image contains textual information advising the user to press a particular button on a remote control unit.
[10 pre]	The method according to claim 5, further including:
[10a]	periodically accessing a web server for downloading said overlay-enabling digital data;
[10b]	extracting from the overlay-enabling digital data said one or more second images and the respective web sites corresponding to each of said second images;
[10c]	retrieving and storing digital content from said web sites; and
[10d]	if the overlay activation criterion is met and a user command that is associated with an image from amongst said one or more second images is identified, displaying the respective image from amongst the second images, accessing the respective web site associated with the displayed image and extracting and buffering content from the website.
[11]	The method according to claim 5, further comprising displaying a respective IP content when a corresponding one of said one or more second images is selected.
[12]	The method according to claim 7, including selecting specific Internet content by pressing a color-coded button on a remote control in accordance with a color of said icon.

CHART OF CLAIMS	
[13 pre]	A TV-Internet Integration Box for generating at a user's premises an overlay using video signals constituting a first data and overlay-enabling digital data constituting a second data, the TV-Internet Integration Box comprising:
[13a]	a combiner unit at the user's premises coupled to a separate TV tuner box or TV tuner, wherein
[13b]	the combiner unit is also connected through distinct networks to each of a video signal source providing video signals through the separate TV tuner box or the TV tuner, and an Internet data source providing overlay-enabling digital data over the Internet, wherein
[13c]	said video signals and said overlay-enabling digital data originate from unrelated sources and are transmitted to the user's premises by different resources as mutually distinct and independent inputs, and
[13d]	wherein said overlay-enabling digital data includes at least:
[13e]	a Web link indicating a website where content that is associated with said overlay-enabling digital data is stored;
[13f]	an image indicative of the content associated with said overlay-enabling digital data; and
[13g]	an overlay activation criterion, wherein
[13h]	the combiner unit is responsive to the overlay activation criterion being met for generating a corresponding overlay, including:
[13i]	generating at the user's premises a first display screen including at least a first portion corresponding to said video signals and a second portion overlaid over said first portion and corresponding at least to said image, and
[13j]	associating the Web link with said second portion of the first display screen thereby allowing a user to cause the combiner unit to retrieve said content, and generate a second video display screen including at least a portion which corresponds to said content; and
[13k]	a video output interface, coupled to or integrated within the combiner unit and configured to be coupled to a video input of said TV set and to display said first display screen or said second video display screen.
[14]	The TV-Internet Integration Box according to claim 13, wherein said overlay-enabling digital data is received at the user premises according to a pre-stored user-profile.
[15 pre]	The TV-Internet Integration Box according to claim 13, further including:
[15a]	a command input for receiving a command from the user at said user premises; and

CHART OF CLAIMS	
[15b]	a frame adjuster for resizing said first portion and/or said second portion of said first display screen in response to said command.
[16 pre]	The TV-Internet Integration Box according to claim 13, further including:
[16a]	a receiver for receiving a digital data stream, wherein the stream of the digital data is enabled by the content stored at said website; and
[16b]	a processing unit for pre-fetching and buffering said digital data stream from said website, thereby allowing said digital data stream to be displayed substantially without delay upon redirection by the user.
[17 pre]	The TV-Internet Integration Box according to claim 13, wherein the overlay-enabling digital data comprises data representative of one or more second images, and for each of said one or more second images said overlay-enabling data comprises respective web site addresses where IP content associated with the respective second image is stored,
[17a]	and wherein the combiner unit is configured to:
[17b]	periodically access a web server for downloading said overlay-enabling digital data;
[17c]	extract from the overlay-enabling digital data said one or more second images and the respective web sites corresponding to each of said second images;
[17d]	retrieve and store digital content from said web sites; and
[17e]	if the overlay activation criterion is met, and a user command that is associated with an image from amongst said one or more second images is identified, display the respective image from amongst the second images, access the respective web site associated with the displayed image and extract and buffer content from the website.
[18]	The TV-Internet Integration Box according to claim 13, wherein the image includes an icon that indicates to the user that digital data from Internet content is currently being displayed and which provides an indication of a nature of said Internet content.
[19]	The TV-Internet Integration Box according to claim 13, wherein the image contains textual information advising the user to press a particular button on a remote control unit.
[21]	The TV-Internet Integration Box according to claim 18, wherein the icon is colored so as to allow user selection of a specific Internet content by pressing a color-coded button on a remote control in accordance with a color of said icon.

I. INTRODUCTION

1. I have been retained by counsel for Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. ("Petitioner") to analyze U.S. Patent No. RE50,399 ("399 patent", EX1004) and to provide my expert opinions in support of the above-identified petition for *inter partes* review of the '399 patent.

2. I currently hold the opinions set forth in this declaration.

3. In summary, it is my opinion that the references cited below anticipate and/or render obvious the Challenged Claims. My detailed opinions on the claims are set forth below.

4. I am being compensated for my time at the rate of \$750 per hour. My compensation is not contingent upon my performance, the outcome of this matter, or any issues involved in or related to this matter.

II. BACKGROUND AND QUALIFICATIONS

A. Background and Qualifications

5. This section contains a summary of my educational background, career history, and other relevant qualifications. My full *curriculum vitae* is attached hereto as Appendix A.

6. Since 1995, I have been a technology consultant in a number of fields, including interactive television.

7. Until the end of September 2019, I was Principal Research Scientist and head of the Object-Based Media Group at the MIT Media Lab. I served as Assistant and Associate Professor of Media Technology at MIT from 1989 to 1997.

8. I hold an S.B.E.E., an M.S in Visual Studies, and a Ph.D. in Media Technology, all from the Massachusetts Institute of Technology.

9. I am the author or co-author of over 120 journal or conference papers on digital television systems, video-processing hardware/software design, multimedia, scene modeling, visual display technologies, user interface, and optics. I am a named inventor on 32 United States patents and 8 pending applications. I am Technical Advisor of The Modern Mirror, Inc., a 3D modeling and visualization technology company focusing on the fashion industry and was co-founder of WatchPoint Media, an interactive-television products and services company with offices in Boston and London. I am the co-author with the late Stephen A. Benton of the book *Holographic Imaging* (Wiley, 2008).

10. I am on the Board of Editors of the Journal of the Society of Motion Picture and Television Engineers, and also served as SMPTE's Education Director for four years. I am a Fellow of the SPIE and of the Institute for Innovation, Creativity, and Capital, and a member of a number of other professional organizations including Optica (formerly Optical Society of America), the Association for Computing Machinery, and the Institute of Electrical and

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Electronic Engineers. I have chaired a number of conferences including the 1996
ACM Multimedia Conference and the 2006 IEEE Consumer Communications and
Networking Conference.

11. From 1999-2003, I was a founder of and technical advisor to
WatchPoint Media, Inc., an interactive television E-commerce company, which
developed interactive television authoring tools, set-top box interactive
applications, and interactive television head-end systems. During that time I was
closely involved in the development of a variety of software systems. Some of my
work during that period is reflected in some of the patents listed in Appendix A.
The company is now part of MediaKind (formerly Ericsson Television).

B. Materials Considered

12. In preparing this declaration, I have reviewed and/or considered at
least the documents cited in the List of Exhibits, and the documents referenced in
this declaration. I have also reviewed the original and reissue prosecution histories
of the '399 patent.

III. LEGAL STANDARDS

A. Legal Standards for Anticipation

13. I have been informed that documents and materials that qualify as
prior art can be used to invalidate a patent claim via anticipation or obviousness.

14. I have been informed that, once the claims of a patent have been
properly construed, the second step in determining anticipation of a patent claim

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent requires a comparison of the properly construed claim language to the prior art on a limitation-by-limitation basis.

15. I have been informed that a prior art reference “anticipates” an asserted claim, and thus renders the claim invalid, if all elements of the claim are disclosed in that prior art reference, either explicitly or inherently (*i.e.*, necessarily present).

16. I have been informed that anticipation in an *inter partes* review must be shown by a preponderance of the evidence.

B. Legal Standards for Obviousness

17. I have been informed that even if a patent is not anticipated, it is still invalid if the differences between the claimed subject matter 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 of ordinary skill in the pertinent art.

18. I have been informed that a person of ordinary skill in the art provides a reference point from which the prior art and claimed invention should be viewed. This reference point prevents one from using his or her own insight or hindsight in deciding whether a claim is obvious.

19. I have also been informed that an obviousness determination includes the consideration of various factors such as (1) the scope and content of the prior art, (2) the differences between the prior art and the asserted claims, (3) the level of

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ordinary skill in the pertinent art, and (4) the existence of secondary considerations
such as commercial success, long-felt but unresolved needs, failure of others, etc.

20. I have been informed that an obviousness evaluation can be based on a combination of multiple prior art references. I have been informed that the prior art references themselves may provide a suggestion, motivation, or reason to combine, but other times the nexus linking two or more prior art references is simple common sense. I further understand that obviousness analysis recognizes that market demand, rather than scientific literature, often drives innovation, and that a motivation to combine references may be supplied by the direction of the marketplace.

21. I have been informed that if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

22. I also have been informed that practical and common-sense considerations should guide a proper obviousness analysis, because familiar items may have obvious uses beyond their primary purposes. I further have been informed that a person of ordinary skill in the art looking to overcome a problem will often be able to fit together the teachings of multiple publications. I have been informed that obviousness analysis therefore takes into account the inferences and

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creative steps that a person of ordinary skill in the art would employ under the
circumstances.

23. I have been informed that a particular combination may be proven obvious merely by showing that it was obvious to try the combination. For example, when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp because the result is likely the product not of innovation but of ordinary skill and common sense.

24. I have been informed that the combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, the patent claim is likely obvious.

25. I have further been informed that a proper obviousness analysis focuses on what was known or obvious to a person of ordinary skill in the art, not just the patentee. Accordingly, I have been informed that any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed.

26. I have been informed that a proposed obviousness combination does not need to be the preferred, or most desirable, combination available, in order to render a claim obvious. Instead, there must be something that suggests the desirability of the proposed combination, not necessarily something that suggests that the proposed combination is the most desirable combination available.

27. Similarly, I have been informed that for purposes of obviousness, when a motivating benefit comes at the expense of another benefit, that does not nullify the proposed obviousness combination or modification. Likewise, a proposed obviousness combination does not fail merely because it may be inferior to other systems used for the same use.

28. I also understand that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements between the multiple references. Likewise, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference. Instead, the test is whether a claim is rendered obvious by the teachings of prior art as a whole.

29. I have been informed that a claim can be obvious in light of a single reference, without the need to combine references, if the elements of the claim that are not found explicitly or inherently in the reference can be supplied by the common sense of one of skill in the art.

30. I have been informed that secondary indicia of non-obviousness may include: (1) a long felt but unmet need in the field that was satisfied by the invention of the patent; (2) commercial success of processes covered by the patent; (3) unexpected results achieved by the invention; (4) praise of the invention by others skilled in the art; (5) taking of licenses under the patent by others; (6) deliberate copying of the invention; (7) failure of others to find a solution to the long felt need; and (8) skepticism by experts.

31. I have been informed that there must be a relationship between any such secondary considerations and the invention. I have been informed that contemporaneous and independent invention by others is a secondary consideration supporting an obviousness determination.

32. In sum, I have been informed that prior art teachings are properly combined where a person of ordinary skill in the art having the understanding and knowledge reflected in the prior art and motivated by the general problem facing the inventor, would have been led to make the combination of elements recited in the claims. Under this analysis, I have been informed that the prior art references themselves, or any need or problem known in the field of endeavor at the time of the invention, can provide a reason for combining the elements of multiple prior art references in the claimed manner.

33. I have been informed that obviousness in an *inter partes* review must be shown by a preponderance of the evidence.

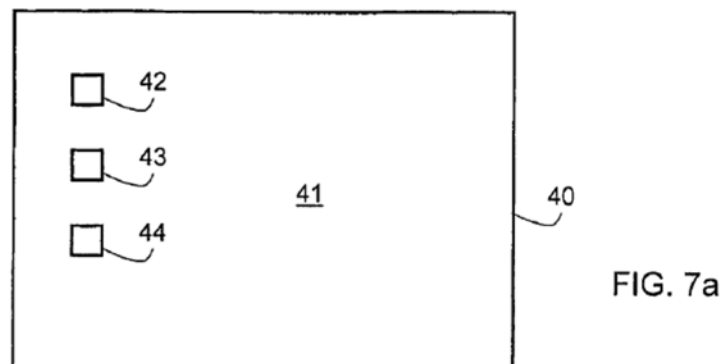
IV. THE '399 PATENT

A. Overview of the '399 Patent

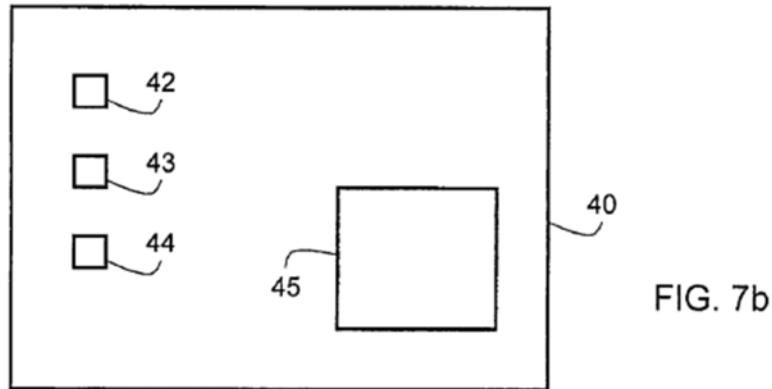
34. The '399 patent relates to “a TV-Internet Integration Box having the ability to merge broadcast TV signals with IP packet data at a customer site.”

EX1001, 2:31-22. The TV-Internet Integration Box permits a TV set connected thereto to display Internet content selection data while viewing a TV broadcast program and to use the selection data to select Internet content for display.

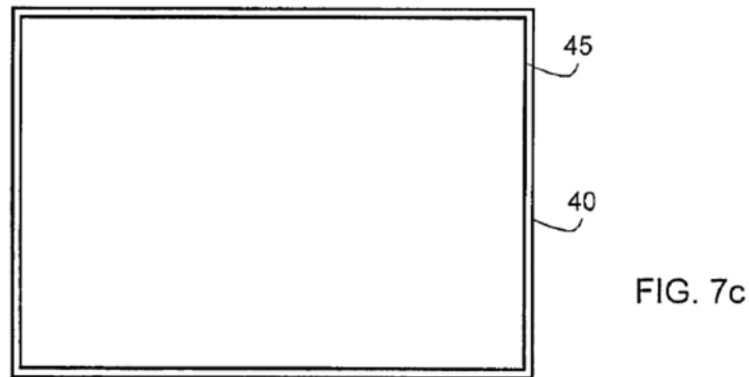
EX1001, 2:32-36. In some embodiments, Internet selection data appears as icons 42-44 overlaid on program 41 on screen 40 (Fig. 7a). EX1001, 7:42-63.



35. The '399 patent further discloses that selecting icon 42-44 via the remote displays window 45 with related Internet content (Fig. 7b). EX1001, 7:48-53.



36. A second press of the icon's key on the remote expands window 45's Internet content to full screen 40 (Fig. 7c). EX1001, 7:55-58.



37. Table 1 shows an example of data pertaining to the display of the icons 42-44, referred to in the claims as "overlay-enabling digital data," that includes an icon image, channel and start-time information, and the website address for the Internet content. EX1001, 7:64-8:19.

TABLE I

Second data - definition			
Icon image	Channel	Time	Website of IP content
ICON.GIF	2; 23	19:30; 21:30	www.AB.com/adverts/123.htm

B. Overview of the '399 Patent's Original File History Regarding the '200 Patent

38. The '399 patent is a reissue of U.S. Patent No. 8,132,220 (the "'220 patent," EX1004), which issued based on U.S. Application No. 11/794,825 (the "'220 application") and which is a U.S. National Stage application corresponding to PCT Application No. PCT/IL2005/075313 filed on 1/11/2005. EX1004, 1. The '220 application was filed on 7/6/2007 with 18 claims, which were cancelled and replaced with claims 19-36, which lacked the multiple dependent claims found in the PCT application, in a preliminary amendment filed on that same day. EX1006 (Preliminary Amendment (July 6, 2007)), 1-7.

39. The examiner rejected the '220 application in the 3/17/2010 Non-Final Rejection. EX1006, 81. Of relevance for this IPR, the examiner rejected claims 19, 21-23, 25-26, 28-29, 31-32, 34, and 36 as being anticipated by U.S. Patent Application No. 2004/0107437 ("Reichardt", EX1011). EX1006, 82.

40. In the 9/20/2010 Amendment, the applicants amended the claims, most relevantly adding to claim 19 the limitation, "the combiner unit is also connected through distinct networks to each of a video signal source providing video signals, and an Internet data source providing overlay-enabling digital data over the Internet, wherein said video signals and said overlay-enabling digital data originate from unrelated sources and are transmitted to the user's premises by

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different resources as mutually distinct and independent inputs[.]” EX1006
(9/16/2010 Amendment at 2), 99.

41. The applicants then tried to overcome the rejection of claim 19 (which would later become claim 1 of the '399 patent) by arguing Reichardt discloses a “screen generator 117” as part of a “distribution facility 16” as shown in Fig. 2 for generating display screens, whereas the claims that eventually issued as claims 1 and 13 were amended to require that the overlay-enabling digital data and the video signals “originate from unrelated sources.” EX1006 (9/16/2010 Amendment at 15-17), 112-114. They then noted that the term “distribution facility” is known in the art to mean “a facility at a local TV network’s office that originates and communicates TV services and other services to the (plurality of) subscribers connected to the infrastructure of this TV network.” EX1006 (9/16/2010 Amendment at 16), 113. They identified no specification support for the “unrelated sources” limitation, and addressed the dependent claims only by noting their dependency on claims 19 and 29. EX1006, (9/16/2010 Amendment at 21), 118.

42. The examiner rejected the '220 application in the 10/26/2010 Final Rejection. EX1006, 135. Of relevance to this IPR, the examiner determined that WO02/19689 anticipated claims 19-20, 22-25, 29-30, 32-33, and 37-39 of the '220 application. EX1006, 137.

43. In the 12/1/2010 Amendment, the applicants responded that purportedly “better defined the display screen” in claim 19 and clarified that their invention involved “overlaid” information on the screens. EX1006 (12/1/2010 Response at 2-3, 12-13), 155-156 and 165-166.

44. After the examiner issued an Advisory Action refusing to enter the amendments in the Response because they raised new issues, the applicants submitted a Request for Continued Examination together with the 12/20/2010 Response on 1/19/2011. EX1006, 203.

45. In the 7/14/2011 Non-Final Rejection, the examiner again rejected the '220 application. Of relevance to this IPR, the examiner rejected claims 19-20, 22-25, 29-30, 32-33, and 37-39 as obvious over Akiyama in view of U.S. Patent Application No. 2002/0007493 (“Butler”). EX1006, 222.

46. In their 8/23/2011 response, the applicants made no amendments to the '220 application, arguing that “neither Akiyama or Butler teaches receiving the overlay activation criterion and the video TV signal from two separate sources[.]” EX1006, 258-259.

47. On 9/23/2011, the examiner allowed the '220 application. EX1006, at 270. The '220 application was issued as U.S. Patent No. 8,132,220 on 3/6/2012. EX1004, front cover.

C. Overview of the '399 Patent's Reissue File History

48. I understand that the '220 patent was asserted by Patent Owner against LG Electronics in Civil Action No. 1:18-cv-10238 in the District of New Jersey (the "LG Litigation"). I further understand that the New Jersey District Court found the "overlay activation criterion" limitation indefinite, rendering independent claims 1 and 13 and related dependent claims of the '399 patent invalid, and that the Court of Appeals for the Federal Circuit ("CAFC") affirmed that ruling on 06/28/2021. EX1010, 1. I also understand that Patent Owner filed a reissue application after the CAFC decision on 4/6/2022. EX1001, 1.

49. On 4/6/2022, the Patent Owner filed a preliminary amendment in which it explained that claims 1, 3, 5, 13, and 15 were "amended to address any apparent defects as to antecedent basis" and claims 1, 9, 10, 13, 17, and 20 were amended to address the indefiniteness issues found by the New Jersey District Court and affirmed by the CAFC. EX1005 (4/6/2022 preliminary amendment at 7), 19.

50. On 9/28/2022, the examiner rejected claims 1-21 under 35 U.S.C. §251 as being improperly broadened in a reissue application and for indefiniteness. EX1005 (9/28/2022 rejection at 4-5 and 11-12), 46-47 and 53-54. The examiner maintained those rejections in the 3/6/2023 Final Rejection. EX1006, 89-94. Subsequently, the applicants filed a response where claims 9 and 20 were canceled,

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent and argued that the cancelation of those claims cured the indefiniteness issue concerning “overlay activation criterion” affirmed by the CAFC. EX1005 (6/2/2023 Response After Final Action at 3, 6 and 9-14), 105, 108, 111-116.

51. After an advisory action indicating that the Response did not cure the indefiniteness issue (EX1005 (7/26/23 advisory action at 3-4), 122-123), the applicants filed an Appeal Brief, and the examiner responded with an Examiner’s Answer. EX1005, 140-180. Applicants then withdrew the appeal and filed a Request for Continued Examination on 4/15/2024 that largely mirrored the prior arguments. EX1005, 196-209. A Notice of Allowance was issued on February 24, 2025. The Notice of Allowance noted the PTAB’s decision in an appeal in the related RE50,328 reissue application that involved substantially the same issues as the reason for allowance. EX1005 (2/24/2025 Notice of Allowance at 4-5), 217-218.

D. Priority Date of the '399 Patent

52. I was asked to assume for my opinion herein that the '399 patent is entitled to its earliest claimed priority date of 1/11/2005, and I have done so.

E. Technology Background

53. The 399 patent identifies in its “Summary of the Invention” section two purportedly inventive concepts: (1) a “TV-Internet Integration Box” that has the ability to “merge broadcast TV signals with IP packet data at a customer site,”

and (2) output the merged signals and data to a TV set connected to the TV-Internet Integration Box “to display Internet program selection data while viewing a TV broadcast program and to use the selected data to select an Internet movie for display instead of the TV broadcast program.” EX1001, 2:27-36. The “Internet program selection data” can be an icon (referred to as an “overlay”) that is superimposed on the TV program and that can be selected by the user to obtain a movie or other content. EX1001, 2:37-3:4; 7:42-63 and Fig. 7.

54. TV-internet integration boxes that received independent video signals from a TV video signal source and a separate internet data source through separate inputs, and provided a video output to display video were well known in the prior art, including but not limited to the prior art discussed in the Grounds below.

55. One example of such a TV-internet integration box is disclosed in Howe¹, which was filed a decade earlier on April 25, 1995. EX1025, 1. Howe discloses a system and method in the “field of interactive TV” which supports not only traditional broadcast and cable television programming but also (1) video services such as pay-per-view, (2) video on demand, (3) near video on demand, and (4) cable delivered PC-based services and interactive services including game channels and on-line services of various types delivered from an interactive server

¹ U.S. Patent No. 5,818,438 (“Howe”) issued on 10/6/1998. EX1025, 1. I was informed that Howe is prior art under 35 U.S.C. §102(b).

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent via a two-way communication path that can be the same or different from the path over which the traditional broadcast and cable television programming is provided. EX1025, 1:4-47. Howe further discloses a “set top box” (“STB”) that can receive traditional over-the-air terrestrial broadcasts or cable broadcasts and that is also connected over a network using Internet Protocol to an interactive server that can deliver additional content such as a video program (e.g., movie) or a video game to the STB and/or host an interactive video game with the STB. EX1025, 1:37-2:18. Howe’s STB also receives user input from an input device. *Id.* When interactive content from the server is available as indicated by an “interactive callback address” which can be included in the broadcast TV program or delivered by an out-of-band transmission, the STB will display a button or icon on the viewing screen over the TV program broadcast channel” and, “[i]f the subscriber selects the displayed button, the STB establishes a session with the interactive server and receives the interactive program or application associated with the broadcast.” EX1025, 8:19-27; 12:25-51; 29:7-63.

56. Another example of a TV-internet box is the Motorola DCT5100 set top box from 2002: “The DCT5100 is adaptable to various software platforms. It supports existing entertainment, analog, on-demand, and digital broadcast interactive services. The DCT5100 provides high definition video output. The DCT5100 includes two 6 MHz tuners with analog AMS-VSB, digital MPEG-2,

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent and digital DOCSIS data-receive capability for services such as Web enhanced TV.” EX1026, 17. DOCSIS was a standard to provide Internet access through cable television system connections. Typically interactive applications were authored using middleware packages like OpenTV, so that the same application could run across a variety of hardware devices. OpenTV supported development of applications that used both broadcast and internet sources of data. EX1028, 5. OpenTV functionality was also incorporated into television sets with internet connections as early as 2004. EX1029, 1.

57. Software applications for such TV-internet integration boxes that provided overlay content that includes (1) a web link indicating where associated content is located, (2) an image indicative of the associated content, and (3) an overlay activation criterion was well known in the art. As an example, Shoff discloses “When the viewer tunes to a particular channel, the viewer computing unit consults the EPG to determine if the present program is interactive. If it is, the viewer computing unit launches an interactive support module, such as an Internet browser. This browser is kept in memory and is dynamically loadable for execution on the processor when the viewer tunes to a channel carrying a video content program that the EPG identifies as interactive. The viewer computing unit also depicts a small icon or other indicia to alert the viewer that the program is interactive.” EX1023, 3:14-23). Gray teaches that “hot key” signal information—

i.e., overlay information—includes a website URL to redirect to additional content, graphical and textual information related to the icon overlaid on the video program, and overlay activation criteria specifying the start/stop times for displaying the overlay. EX1016, ¶¶ [0028], [0087]-[0088], [0090]- [0092], [0129]-[0130]. Similarly, Escobar² teaches that triggers (which enable overlay information) include a URL to locate content that is displayed on the TV, image information including the graphic display overlaid on video content, and overlay activation criteria including when the trigger should be displayed. EX1016, Fig. 9, 10:03-11:17.

58. Generating and displaying a user-selectable overlay image on video data to retrieve supplemental content associated with the overlay image was well known. As an example, Walker discloses, “In some embodiments of the present invention, at least one condition related to the display of an interactive television overlay on top of video for a given television channel may be defined for each of a plurality of television channels. For example, a condition related to the length of time that the overlay is displayed (e.g., 0 seconds), a size of the overlay, a location of the overlay, a color of the overlay, or a font of the overlay may be defined for each of the plurality of television channels. As another example, a condition related

² WIPO Publication No. WO2001078381A2 (“Escobar”) published on 10/18/2001. EX1016, 1. I was informed that Escobar is prior art under 35 U.S.C. §102(b).

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent to whether the interactive television overlay includes program schedule information, a logo for a service provider, or an advertisement may be defined for each of the plurality of television channels.” EX1027, 3:16-27. Escobar teaches that triggers cause graphic icons to appear on the screen over video content, which can be selected by a user to access supplemental content. EX1016, Figs. 7A-7C, 12:23-13:10, 14:04-14:16. A practical example is described in Vliet, where in 1998 *Jeopardy! Interactive* displayed graphics and text over a broadcasted Jeopardy episode to allow users to interact with the overlaid graphics and content. EX1020, 8-9. Gray teaches a TV displaying a picture over a broadcast video containing an icon indicating alternative content can be accessed and then redirecting a user to that alternative content when selected. EX1018, Figs. 1A-1D, ¶¶ [0026], [0028]-[0031],

59. Allowing a user to select the overlay image to retrieve supplemental content associated with the overlay image was well known in the art. Shoff discloses, “At this point, there are several ways to initiate viewing the supplemental content. One approach is to permit the viewer to selectively activate the interactive mode (i.e., the “viewer activate” branch from step 160). The viewer may know that the program is interactive compatible by checking a newspaper listing or other program guide. Another way is to have the viewer computing unit display an icon or other indicia on the screen to visually inform the viewer that the

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent program is interactive compatible (step 162 in FIG. 6). The icon can be overlaid on the playing video program in a non-conspicuous manner, like the closed caption or Stereo labels.” EX1023, 9:30-40).

60. Receiving overlay-enabling digital data that is supplementary or complementary to video signals was well known. Cooper teaches while a user is watching content such as The Weather Channel, a “link to internet content related to the current TV program” is shown by a graphic symbol displayed to a user. EX1022, Figs. 5A-5B, 4:19-32. Similarly, other references teach specific content including “questions about the program, games, trivia information, facts about the actors and producers, information on other episodes, advertisements, a listing of products or memorabilia about the program” EX1023, 3:31-35).

61. Receiving content and data according to a pre-stored user profile was well known. For example, Vliet teaches that based on a user profile, an agent or content service provider personalize a viewer’s experience in multiple ways including suggestions for certain types of content, or filtering “pushed content like advertisements and trailers” based on a user profile that includes information such as user preferences, interests, and viewing behavior. EX1020, 7-8. Escobar discloses that a viewer can create or download “rules” that determine what additional content should be displayed to a user. EX1016, 11:11-17; *see also*

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EX1018, ¶ [0129] (Gray determines if supplemental hot key content is relevant
based on types and genres have been selected).

62. Resizing portions of primary or supplemental content on a display screen was well known. Zigmond teaches video processing circuitry that allows for shrinking the size of displayed television signals which is notes are “known in the art.” EX1008, 6:24-37, 11:12-19. Further, Zigmond specifically describes resizing the initial content to display concurrently with supplemental content in a window within the display or vice versa. *Id.* Similarly, Yagawa teaches a data editing unit that allows resizing of overlaid icons and data, which is more fully illustrated in Figs 7A-7C. EX1021, Fig. 7A-7C, [0068]-[0071].

63. Pre-fetching and buffering supplemental content was well known too, especially to ensure seamless content delivery. For example, Marler discloses that supplemental “enhancement” content can be downloaded and stored locally for quick viewing, which is pre-fetching and buffering. EX1007, ¶¶[0022], [0032], [0035], [0037]; *see also* EX1016, 9:09-22, 21:19-22:02 (Escobar disclosing content pages being downloaded and cached so that content can be triggered or viewed offline); EX1018, ¶¶ 88, 90, 126 (Gray disclosing alternative content being downloaded and cached for later viewing by the user, pre-fetching and buffering).

64. Variations in the number, style, and content of images and icons informing users about supplemental content and how to access supplemental

content was well known too. It was well known to download and display more than one type of icon or image related to supplemental content. Redling discloses that multiple different icons can be changed and downloaded to resemble different product trademarks or company names. EX1013, 2:46-55, 4:44-67. Likewise, Zigmond teaches that multiple types of icons can be used to distinguish between different types of content, *i.e.*, programming rather than advertising content. EX1008, 12:41-55; *see also* EX1015, Fig. 2, ¶¶[0024]-[0026] (disclosing multiple “hot spots” that are overlayed on content and available for a user to select to redirect to supplemental content); EX1016, Fig. 7C-7D, 14:17-22 (Rasmussen disclosing displaying multiple icons at the same time where a user can select to access different supplemental content).

65. It was well known to include textual information along with an icon advising a user to press a particular button on a remote control. Vliet discusses digital satellite TV content where viewers are prompted to press a specific button on their handset to access the interactive content overlayed on the TV signal. EX1020, 7; *see also* EX1008, 3:9-41, 10:37-46 (user prompted to press a “Go” button to view supplemental content).

66. It was well known to select “content by pressing a color-coded button on a remote control in accordance with a color of said icon.” For example,

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Townsend³ teaches a toolbar that contains “three active coloured icons” which
“correspond to the colors of coloured keys” on the remote control. EX1017, Figs.
7-8, 23:15-25. When a user manipulates the colored key on the remote, it activates
the icon with the corresponding color. *Id.* Similarly, Rasmussen teaches hot spot
borders (and related visual cues) may be different colors, and that “the colors of
each border may correspond with a button on an input device, such as a remote
control or keyboard,” *i.e.*, the user selects content associated with a color-coded
border by pressing the corresponding color-coded button. EX1015, ¶[0030].

F. Person of Ordinary Skill in the Art

67. A person of ordinary skill in the art at the time of the alleged invention
of the '399 patent (1/11/2005) (“POSITA”) would have had a B.S. degree in
electrical engineering, computer engineering, computer science, or an equivalent
and would have had two years of relevant industry experience working on
interactive television systems or other systems that combined broadcast television
signals and digital content available via the Internet. I was at least a POSITA under
this definition at the time of alleged inventions claimed in the '399 patent.

68. I note that Patent Owner’s expert in the LG litigation opined that a
POSITA “would have had at least a B.S. degree in electrical engineering, computer
engineering, computer science, or equivalent and/or would have had at least two to

³ WIPO Publication No. WO1997997A1 (“Townsend”) was published on 7/3/1997. EX1017, 1. I was informed that Townsend is prior art under 35 U.S.C. §§102(a)-(b).

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent three years of relevant industry experience.” EX1009, 12. In my opinion, that definition is too broad, as it would treat a person with only such a B.S. and no industry experience as a POSITA. In my opinion, such a person was not one of ordinary skill in the art to which the '399 patent pertains. Further, because “relevant industry experience” is undefined and would encompass individuals experienced only with non-interactive televisions, only with typical website design unrelated to broadcast signals, or only with content distribution infrastructure but not development of user-facing Internet TV applications, such individuals likewise would not qualify as persons of ordinary skill in the art.

V. SUMMARY OF CHALLENGE

A. Statutory Bases for Challenge

69. In this declaration, I offer opinions on the following grounds that are the basis for this IPR proceeding:

Ground(s)	Claims	Basis	Reference(s)
1	1, 5-7, 10-11, 13, 17-18	§102, §103	Marler
2	2, 12, 14, 21	§103	Marler and Rasmussen
3	3, 15	§103	Marler and Zigmond
4	8, 19	§103	Marler and Gray
5	4, 16	§103	Marler and Scott
6	1, 3, 6, 13, 15	§103	Zigmond
7	1, 5, 7, 10-13, 17-18, 21	§103	Zigmond and Redling
8	2, 14	§103	Zigmond/Zigmond and Redling and Rasmussen
9	8, 19	§103	Zigmond/Zigmond and Redling, and Gray
10	4, 16	§103	Zigmond/Zigmond and Redling, and Scott

VI. CLAIM CONSTRUCTION

70. I have been informed that in an *inter partes* review, challenged claims are interpreted using the same claim construction standard that is used to construe the claim in a civil action in federal district court. I have been informed that this means that claim terms of a patent are given the ordinary and customary meaning the terms would have to a POSITA, in view of the description provided in the patent itself and the patent's file history. I have been informed that to determine how a POSITA would understand a claim term, one should look to those sources available that show what a POSITA would have understood the disputed claim language to mean. I have been informed that, in construing a claim term, one looks primarily to the intrinsic patent evidence, including the words of the claims themselves, the remainder of the patent, and the patent's prosecution history. I have been informed that extrinsic evidence, which is evidence external to the patent and the prosecution history, may also be useful in interpreting patent claims but that extrinsic evidence cannot be used to vary or contradict the meaning indicated by the intrinsic patent evidence, which I have been informed is the claims, specification and prosecution history of the '399 patent. I have been informed that words or terms should be given their ordinary and accepted meaning unless it appears that the inventors were using them to mean something else. In making this determination, the claims, the remainder of the patent, and the prosecution history

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent are of paramount importance. Additionally, the patent and its prosecution history must be consulted to confirm whether the patentee has acted as its own lexicographer (*i.e.*, provided its own special meaning to any disputed terms), or intentionally disclaimed, disavowed, or surrendered any claim scope.

71. I have been informed that any litigation involving the patent should also be consulted to determine if a court or other tribunal has construed any claim terms. I have reviewed Patent Owner's proposed constructions from the LG Litigation (EX1030).

72. I provide my opinion below as to how certain terms of the Challenged Claims should be construed. Any claim terms not listed below should be construed according to their plain and ordinary meaning to a POSITA at the time of the alleged inventions of the '399 patent.

A. "Overlay activation criterion" (claims 1, 13)

73. I understand that the CAFC, in Section II of its opinion, affirmed the district court's determination that this term in the original '220 patent was indefinite because it was not clear "whether the 'overlay activation criterion' comes from the internet or from a user's premises." EX1010, 7. However, during reissue prosecution of related U.S. Patent No. RE50,328 (EX1002), the PTAB found on appeal of the reissue examiner's final rejection that this term was not indefinite in view of Patent Owner's "disavowal of the 'overlay activation

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent criterion' coming from the user's premises, as recited in dependent claims 9 and 20" and its statement that the cancellation of those claims was "to remove any possible interpretation of the 'overlay activation criterion' as coming from the user's premises (*i.e.*, not from the internet)." EX1031 (PTAB Decision at 8), 497 (citing EX1031 (appeal brief, 12), 361)) (emphasis is original).

74. Given the PTAB's decision and the reissue prosecution history discussed above, and for this IPR, I was instructed to assume and have assumed (1) that the term's scope has since changed and is no longer indefinite despite the CAFC's indefiniteness affirmation, and (2) that it excludes any "overlay activation criterion" originating from the user's premises or otherwise not coming from the Internet.

B. "Unrelated sources" (claims 1, 13)

75. In a 9/16/2010 amendment during prosecution of the original '220 patent, claim 19 (corresponding to claim 1 in the '399 patent), the applicants attempted to overcome the rejection based on Reichardt (EX1011). They argued that Reichardt discloses a "screen generator 117" as part of a "distribution facility 16," as shown in Fig. 2, for generating display screens, whereas the claims that later issued as claims 1 and 13 were amended to require that the overlay-enabling digital data and the video signals "originate from unrelated sources." EX1006 (9/16/2010 Amendment at 15-17), 112-114. The applicants then noted that the

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent term “distribution facility” is known in the art to mean “a facility at a local TV network’s office that originates and communicates TV services and other services to the (plurality of) subscribers connected to the infrastructure of this TV network.” EX1006, 113. They identified no specification support for the “unrelated sources” limitation, and the specification does not explain what “unrelated sources” means.

76. Considering this prosecution history, a POSITA would understand “unrelated sources” to mean that the data and signals come from different facilities. Nothing in the prosecution history, the specification, or the term’s plain meaning suggests any further restriction.

C. “Image indicative of the content associated with said overlay-enabling digital data” (claims 1, 13)

77. The originally-filed claims of U.S. Application No. 11/794,825 (which had been amended on 4/11/2006) recited “a program details image to be displayed indicative of the IP content.” EX1006, (Amended Claims received by IB/WIPO 4/11/2006 at 16), 36. The 9/16/2010 Amendment removed “program details” and “IP” from the limitation as shown below. EX1006, 100.

an program details image to be displayed indicative of the IP content
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78. The Amendment gave no explanation for the deletion. A POSITA would understand deleting “program details” and “IP” as broadening the term and removing any “program-details” or “IP” requirements from the image indicative of

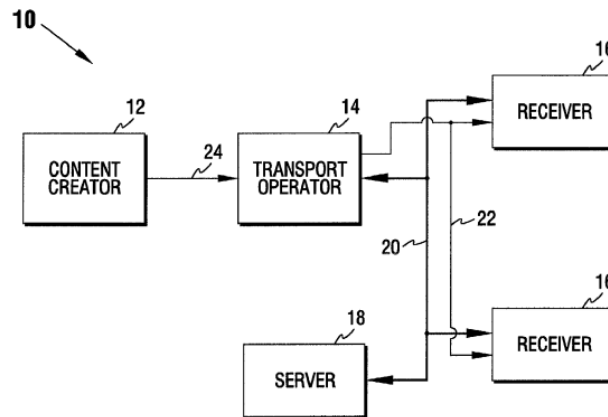
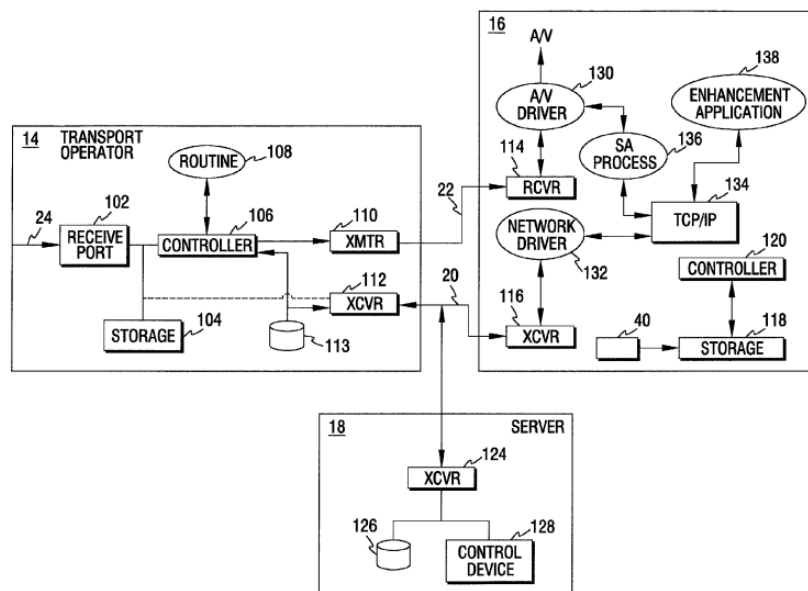
the content. Accordingly, this term should be construed according to its plain meaning of an image that indicates anything about the content without such restriction, including without limitation an image that indicates the presence or subject matter of the content.

VII. GROUND 1: MARLER ANTICIPATES AND RENDERS OBVIOUS CLAIMS 1, 5-7, 10-11, 13, 17-18

A. Summary of Marler (EX1007)

79. Marler is a U.S. Patent Application Publication published on 6/7/2001 based on an application filed on 10/29/1999. I was informed that Marler is therefore prior art to the '399 patent under 35 U.S.C. §102(b).

80. Marler discloses an information-delivery system in which, in some embodiments, a broadcast A/V stream and enhancement/ancillary data are delivered to a user's premises over distinct, independent paths. In Marler's system, a transport operator system transmits the television A/V content over a network ("transport medium 22") while enhancement data (or ancillary information) is delivered over a different, Internet-capable channel ("secondary link 20") which may be the Internet. EX1007, ¶¶[0014]-[0016], [0023], [0029]; Figs. 1-2.



81. Marler provides, with reference to an ATVEF Specification, an example of enhancement data that can include three components: announcements (including but not limited to special announcements), triggers, and resource streams delivered using IP multicast. EX1007, ¶¶[0020]- [0022], [0026], [0038]- [0040]. Marler discloses that this enhancement data may be sent over the link 20,

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent which is separate from the link 22 over which the television program A/V content is sent, “to provide for greater flexibility and/or to alleviate bandwidth concerns of the transport medium 22.” EX1007, ¶[0023]. The Internet-delivered enhancement data allows Marler’s system to associate specific digital resources, including web pages, URLs, icon locators, and content-identifying icon images and hyperlinks, with the underlying A/V program. At the user’s premises, receiver 16 (*e.g.*, a television, set-top box, or computer) processes the incoming A/V content received via the broadcast medium coupled to receiver 114 together with the enhancement data received via the Internet connection coupled to the transceiver 116 to generate overlays, including graphical icons that identify the nature or subject matter of the Internet-delivered content. EX1007, ¶¶[0031]-[0033], [0040]; Fig. 3.

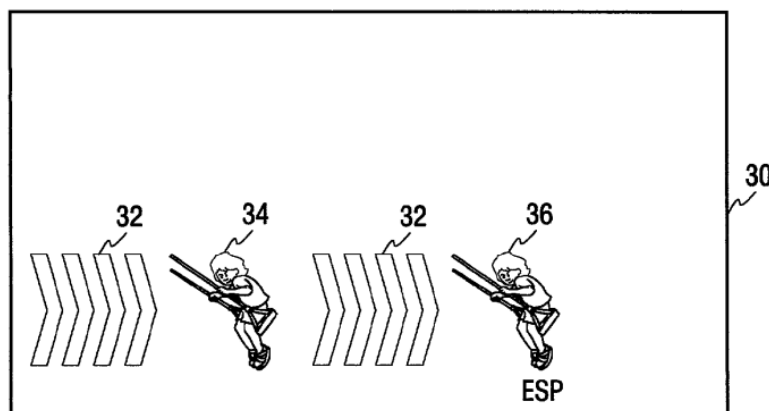


FIG. 3

82. While Marler’s disclosure of sending the enhancement data over link 20 may not fall within the example of the ATVEF standard (under which either all the enhancement data would be sent as part of the television program, or the

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triggers would be sent as part of the television program and the announcements and enhancements transmitted over link 20), it is my opinion that a POSITA would have understood that paragraph [0023] of Marler discloses a non-ATVEF-compliant embodiment under which all enhancement data is transmitted over link 20. To the extent that Patent Owner argues that Marler does not explicitly disclose transmitting the trigger component over link 20, a POSITA would have found it obvious when reading paragraph [0023]. I note that it was well-known at the time of the alleged invention of the '399 patent to implement interactive television systems in which the enhancement data was structured similarly to that in the ATVEF standard but where all components including the triggers were transmitted over an Internet link separate from the video content. An example of the latter is disclosed in Sahota⁴, which discloses an ATVEF-compliant implementation but also discloses, "In one embodiment, a trigger can come through an IP pathway such as direct IP or through a multicast to trigger the channel bug." EX1024, ¶¶[0045], [0066]; see also EX1025, 3:55-60 5:39-42, 12:6-8, 28:11-14; 29:7-63 (discussing transmission of identifying code or ICA (interactive callback address) which functions as a trigger via out-of-band channel or transmission system). A POSITA would have been motivated to make this change to enable the provision of

⁴ U.S. Patent App. Pub. No. 2001/0047518 ("Sahota") was published on 11/29/2001. EX1024, 1. I was informed that Sahota is prior art under 35 U.S.C. §102(b).

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent enhancement data without participation of the entity that transmits the broadcast TV programs to the receiver. A POSITA would have had a reasonable expectation of success because this modification involved the application of known techniques in a known manner to achieve a known result and involved only routine skill in the art.

83. Marler emphasizes that these icons may be provided via URLs or local identifiers and may be displayed transparently over the TV image to signal that related Internet content is available and to permit user navigation to that content. EX1007, ¶¶[0035]-[0038]. Marler further discloses that the overlay appears only when defined timing or triggering conditions (overlay-activation criterion) are satisfied, such as expiration information. EX1007, ¶¶[0038], [0041]; Fig. 5.

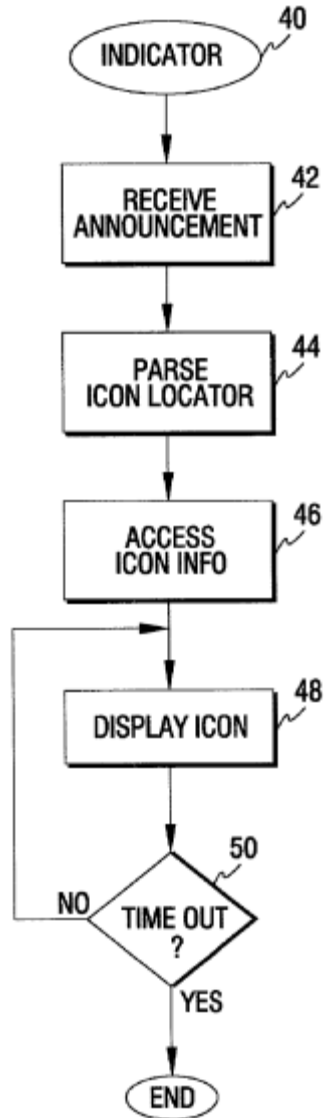


FIG. 5

84. Marler thus discloses, or at least renders obvious, a system and method in which broadcast video is received from a first source and overlay-enabling digital data is received from an Internet-based second source, with the receiver combining these independent inputs at the user's premises to generate an overlaid display. Marler's disclosure of Internet-delivered

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent enhancement data makes it directly relevant to the challenged claims and to how a POSITA would combine Marler with other references. EX1007, ¶¶[0013]-[0038].

B. Claims 1 and 13

1. **[1pre] A method for generating at a user's premises an overlay using video signals constituting a first data and overlay-enabling digital data constituting a second data, the method comprising:**

[13pre] A TV-Internet Integration Box for generating at a user's premises an overlay using video signals constituting a first data and overlay-enabling digital data constituting a second data, the TV-Internet Integration Box comprising:

85. To the extent that the preambles of claims 1 and 13 are limiting, Marler discloses them. Marler discloses a "TV-Internet Integration Box" in the form of a receiver 16 and a method performed by the receiver 16 to receive and display enhancement data as discussed in further detail below for limitations [1a]-[1l]/[13a]-[13k]. The receiver 16 may be a television or a set-top box. EX1007, ¶[0014].

86. **"At a user's premises":** Marler discloses that the receiver 16 may operate "at various receiving sites, including homes." EX1007, ¶[0013].

87. **"An overlay":** Marler discloses that the receiver may receive an "announcement stream" for the enhancement data and that the "the announcement stream may include script that causes a transparent overlay to be produced over the display image on the display 30 of a receiver 16" (EX1007, ¶¶[0034], [0040])

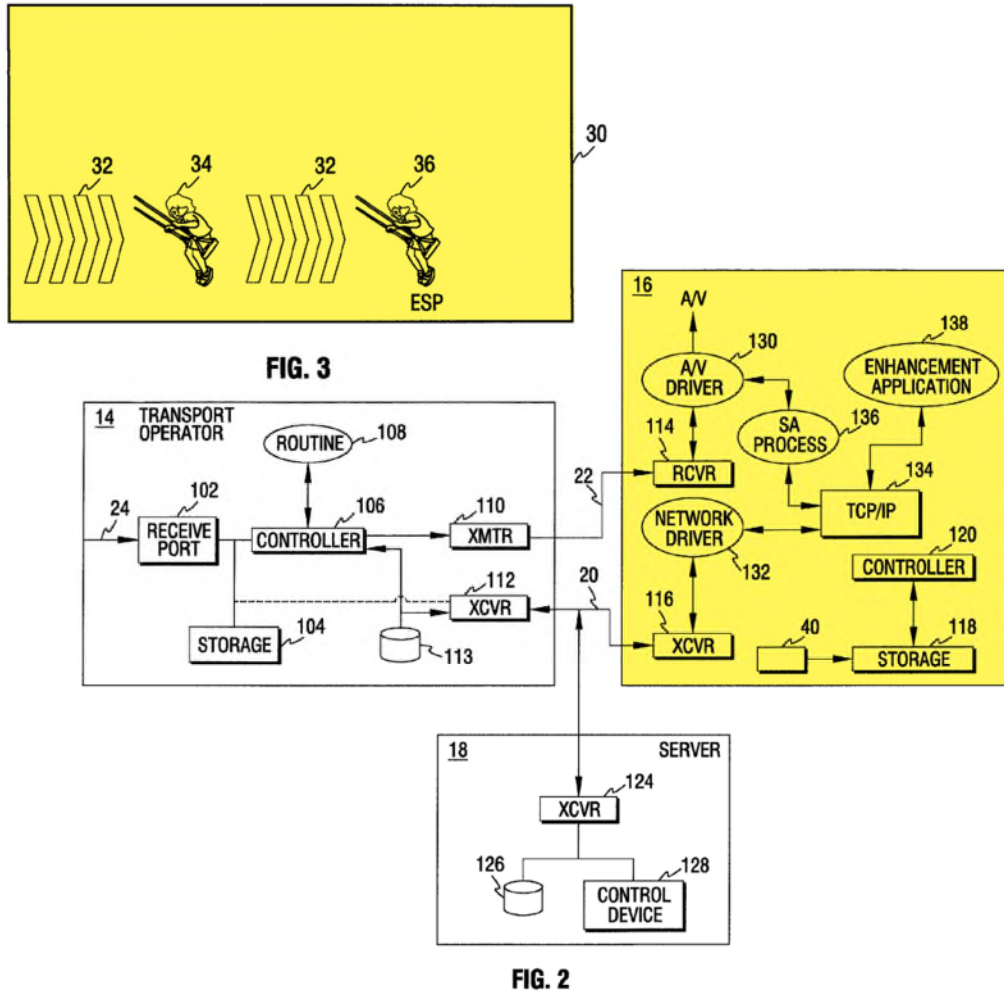
Declaration of Dr. V. Michael Bove, Jr. for the '399 patent (emphasis added). Marler describes a specific embodiment of “providing information that causes an icon to be displayed as an overlay.” EX1007, cl. 6.

88. **“Video signals constituting a first data”:** Marler’s system transmits television content that includes video data for delivery to receivers 16. EX1007, ¶[0006]. In Marler, the content creator provides television content (*i.e.*, audio/video data) to the transport operator system for transmission. EX1007, ¶[0013]. Marler defines A/V content as any audio and/or video data distributed for presentation to viewers. EX1007, ¶[0015]. Marler also states that “tuning to an A/V program” involves selecting A/V channels or MPEG transport stream programs, confirming that video signals are conveyed as identifiable A/V content. EX1007, ¶[0025].

89. **“Overlay-enabling digital data constituting a second data”:** Marler discloses that the receiver 16 obtains “ancillary information” and “enhancement data” transmitted with (or alongside) the video and used to generate the overlay. For example, Marler explains that “the content creator receives the ancillary information” “transmitted in association with the content previously received” (EX1007, ¶[0033]), and that this “ancillary information” includes content-identifying data such as URLs or local identifiers (LID) (EX1007, ¶¶[0035]-[0036]) (cl. 4 (“transmitting information indicative of the content included in the ancillary information includes transmitting a local identifier in said ancillary information that points to a location storing a content-identifying icon.”)).

According to Marler, “the announcement stream may include script that causes a transparent overlay to be produced over the display image on the display 30 of a receiver 16.” EX1007, ¶[0040].)

90. **“TV-Internet Integration Box” in claim 13’s preamble:** Marler discloses a user-premise device that generates overlays and merges broadcast A/V with Internet-sourced enhancement data: receiver 16, which includes “a receiver circuit 114 (e.g., a TV tuner card)” “adapted to receive content over the transport medium 22 and a transceiver 116” “adapted to communicate over the secondary link 20.” EX1007, ¶[0029]. Within receiver 16, the SA process 136, working with the A/V device driver 130 under controller 120, combines these sources and produces a transparent overlay over the television image. *See, e.g.*, EX1007, ¶¶[0030], [0040]; Figs. 2-3. The A/V device driver 130 then outputs the combined video to display 30 (the TV set) “to process and present the A/V content in the receiving system”. EX1007, ¶[0029].



91. Regarding claim 1's preamble, Marler also discloses a method performed by the receiver 16 for generating the overlay using the first and second data as discussed in further detail below in connection with limitations [1a]-[1l].

2. **[1a] (a) providing a combiner unit at the user's premises, wherein;**

[13a] a combiner unit at the user's premises coupled to a separate TV tuner box or TV tuner, wherein

92. Marler discloses these limitations. Marler's receiver 16 is the "TV-Internet Integration Box" as discussed above, and the recited "combiner unit"

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent within receiver 16 is implemented in Marler by the SA process 136 working with the A/V device driver 130, network device driver 132, and TCP/IP stack 134 under the control of the controller 120. EX1007, ¶[0030]; Fig. 2. Additionally, in Marler, the SA process 136 “may be part of the enhancement application 138,” and the “application routines, device drivers, and other routines or programs may be executable on a controller 120,” with code “stored in a storage medium 118 and loaded by the controller 120 for execution.” *Id.* The SA process 136 “is capable of associating enhancement data received over the secondary link 20 to the currently tuned A/V channel” and “may then combine the associated enhancement data with the A/V content of the currently-tuned TV channel for presentation.” *Id.*

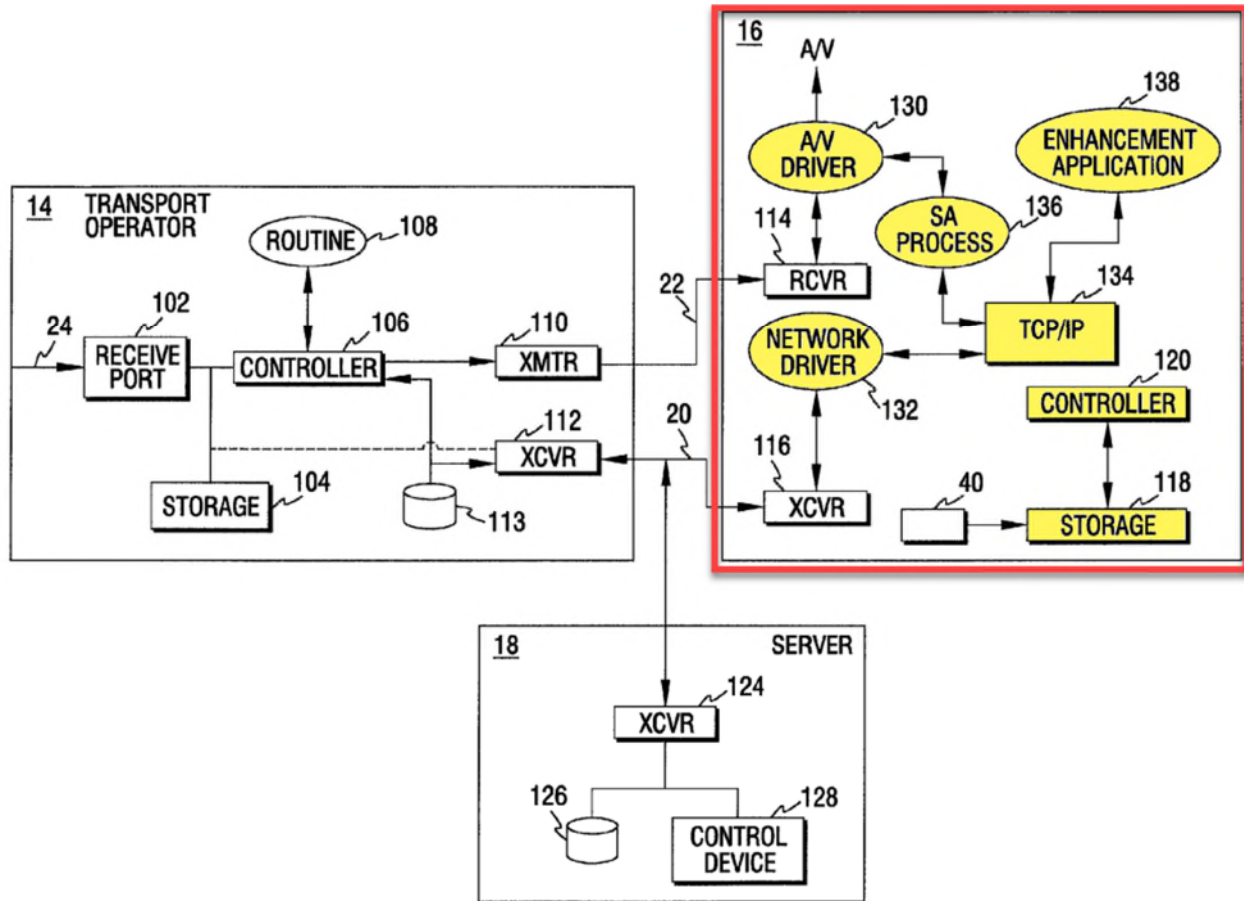


FIG. 2

93. I address the requirement in limitation [13a] for the combiner unit to be “coupled to a separate TV tuner box or TV tuner” in connection with limitation [1b] below.

3. **[1b] the combiner unit is coupled to a TV set and connected to a separate TV tuner box or TV tuner in the TV set, at the user's premises, and**

94. Marler discloses or renders obvious this limitation. The SA process 136 working with the A/V device driver 130, network device driver 132, and TCP/IP stack 134 under the control of the controller 120 (*i.e.*, “combiner unit”) is

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent coupled to the user's display (*i.e.*, "TV set") because Marler discloses the combined/overlaid video being presented on display 30 of receiver 16, and the A/V device driver 130 "forwards the received A/V content to application software adapted to process and present the A/V content in the receiving system." EX1007, ¶¶[0029], [0031], [0040]. Marler further explains that the network device driver 132 receives enhancement data from the secondary link 20 (via transceiver 116) and passes that data to the TCP/IP stack 134, after which the SA process 136 "associat[es] enhancement data received over the secondary link 20 to the currently tuned A/V channel" and "combine[s] the associated enhancement data with the A/V content ... for presentation," EX1007, ¶[0030]. Thus, these components—130, 132, 134, and 136 under controller 120—operate together to perform the combining function. Marler discloses that the combiner unit is connected to "a separate TV tuner box or a TV tuner in the TV set" because "the receiving circuit 114 (*e.g.*, a TV tuner card) is adapted to receive content over the transport medium 22," *Id.* The receiving circuit 114 is a TV tuner in a TV set to which the combiner is connected in embodiments in which the receiver 16 is a TV.

95. Alternatively, it would have been obvious to a POSITA that Marler's receiver 16 could connect to receive television content via a cable system or satellite system, in which case it would have been obvious to a POSITA that Marler's RCVR 114 would be connected to a proprietary set-top box provided by

the cable or satellite system operator because those systems were typically pay television systems with encrypted or scrambled broadcasts that required customers to have proprietary set-top boxes including a tuner and a decrypter/descrambler at the customer's premises to decrypt and/or descramble the received broadcast transmissions.

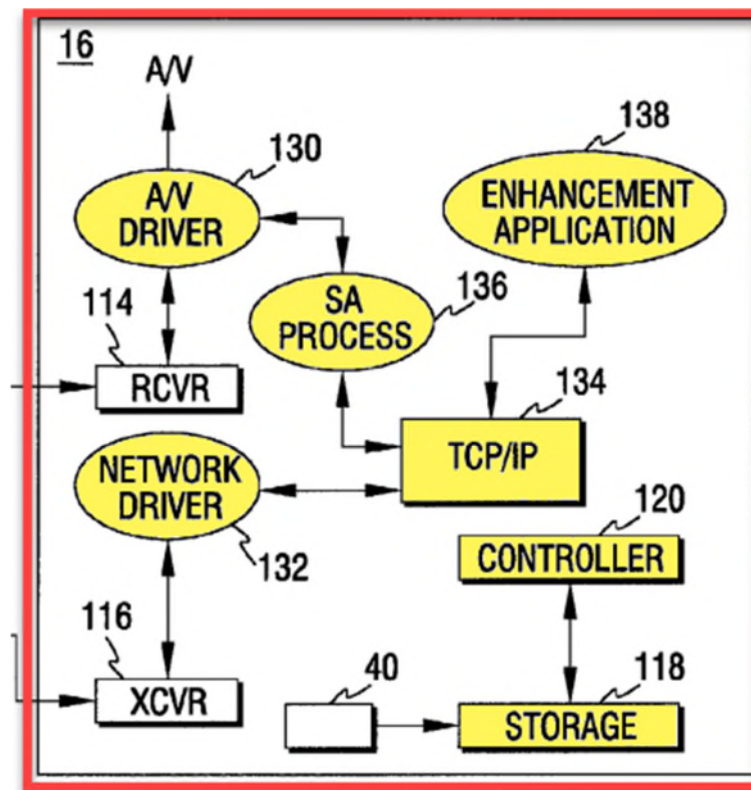


FIG. 2

4. [1c], [13b] the combiner unit is also connected through distinct networks to each of a video signal source providing video signals through the separate TV tuner box or the TV tuner in the TV set, and an Internet data source providing overlay-enabling digital data over the Internet, wherein

96. Marler discloses these limitations. Marler discloses that the receiver 16 (including the combiner unit as discussed in limitations [1a]-[1b]/[13a])

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent receives video signals through a first network identified as the “transport medium 22,” which includes “terrestrial, cable, satellite, or other type of link.” EX1007, ¶[0014] (“The television content and enhancement data may be transmitted over a transport medium 22...”); EX1007, ¶[0029] (“receiver circuit 114 (e.g., a TV tuner card) is adapted to receive content over the transport medium 22”).

97. Marler separately discloses that the receiver 16 is connected to a distinct second network used for Internet or digital data, identified as the “secondary link 20,” which may be “the Internet.” EX1007, ¶[0016]; ¶[0029] (“transceiver 116 is adapted to communicate over the secondary link 20.”).

98. Marler explicitly distinguishes these two networks as separate and independent. It states that enhancement data is transmitted “over a link that is separate from the transport medium used to transmit A/V content,” and explains that that that A/V content is transmitted over the transport medium 22 while enhancement data is transmitted over the secondary link 20. EX1007, ¶[0023].

99. Marler also expressly identifies the secondary link 20 as an Internet connection, explaining that the secondary link 20 “may be a data delivery communications channel such as the Internet.” EX1007, ¶[0016].

100. The combiner in the receiver 16 is connected to both the transport medium 22 via the receiver/tuner 114 and to the secondary link 20 via the

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transceiver 116, network driver 132, and TCP/IP stack 134 as shown in the excerpt
of Fig. 2 below.

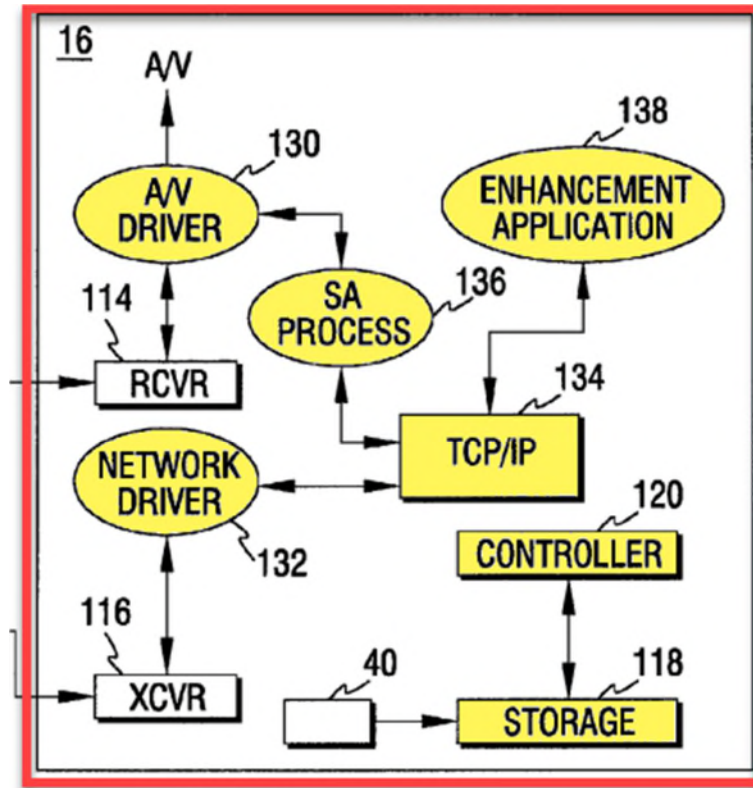


FIG. 2

101. As further relevant to limitations below, Marler makes clear that the enhancement data delivered over the secondary link 20 includes the announcement, resource, and trigger components according to the ATVEF Specification, all of which are transmitted using IP multicast, that is, via the Internet-based data path. EX1007, ¶¶[0016], [0020]-[0022].

5. [1d], [13c] said video signals and said overlay-enabling digital data originate from unrelated sources and are

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**transmitted to the user's premises by different resources as
mutually distinct and independent inputs, and wherein**

102. Marler discloses or renders obvious these limitations. Marler explains that the video signals originate from a broadcast content source and are delivered to the user's premises through the transport operator system using the transport medium 22. EX1007, ¶[0013] ("The content creator 12 originates" "television content (or other type of content including audio and/or video data) to be transmitted by the transport operator system 14."); ¶[0014] ("The television content and enhancement data may be transmitted over a transport medium 22").

103. Marler separately discloses that the overlay-enabling digital data originates from servers or other data sources and is delivered by a different resource, namely the secondary link 20, which may be the Internet or another data network. EX1007, ¶[0016] ("The receivers 16" "coupled to a secondary link 20 that may be" "the Internet"); ¶[0023] ("enhancement data is separated from the A/V data at the transport operator system 14 (or alternatively, at another source), with the A/V content transmitted over the transport medium 22 and the enhancement data transmitted over the secondary link 20 (or a separate transport stream)"). Marler further clarifies that these inputs are mutually distinct and independent because the A/V content is transmitted through the broadcast transport medium while the enhancement data is transmitted through the Internet-based secondary link.

104. As explained in §VI.B, a POSITA would interpret “unrelated sources” to require only that the video signals and overlay-enabling digital data originate from different facilities. Applying that construction here, Marler meets the limitation: the broadcast A/V content originates from the transport operator system and is delivered over transport medium 22, while the enhancement data originates from Internet-based servers (*i.e.*, “more than one server 18” (EX1007, ¶[0023])) and is delivered over secondary link 20. Because each originates from a different facility and reaches the user’s premises through a different resource, Marler discloses this limitation under that construction. To the extent that Patent Owner argues that Marler does not disclose them as separate facilities, it would have been obvious to a POSITA that the “more than one server 18” generating the overlay-enabling digital data would be independent of and separate from the broadcast A/V content originating from the transport operator system. It was well-known for the entity that generates the overlay-enabling digital data (the enhanced content) to be separate and independent of the broadcast. For example, Reisman⁵ and/or Redling disclose unrelated sources. EX1014, ¶[0860] (discussing an independent enhanced content creator) and EX1013, 3:34-4:6 (discussing an advertising icon generated using information from an AD Server 70 which is

⁵ U.S. Patent Application Publication No. 2003/0229900 (“Reisman”) was published on 12/11/2003. EX1014, 1. I was informed that Reisman is prior art under 35 U.S.C. §102(b).

separate from a cable company that supplies TV signals). First, Reisman teaches systems and methods for “navigating hypermedia using multiple coordinated input/output device sets,” in which “a user and/or an author” may “control what resources are presented on which device sets (whether they are integrated or not),” and in which browsing activities are coordinated “across multiple independent systems.” EX1014, Abstract. Consistent with that framework, Reisman explains that enhancement content (“ECs”) may be selected from different providers in connection with a base television program, including where “a portal might be set to present ECs sourced from the programming provider of the base program” while permitting selection of “an alternate EC, such as from an independent EC provider.” EX1014 ¶[0860]. Second, Redling teaches an interactive television advertising system in which advertising content is provided “from a central database server connected to a global computer network” and delivered “to distributed sites via interactive television,” with a “representative icon” displayed on the television screen. EX1013, Abstract. Redling further explains that “an advertising icon 50 generated by the set top box 30 is presented to the subscriber” and “indicates an interactive link” selectable to retrieve advertising information. EX1013, 4:1-4. The system allows advertising information to be “retrieved from storage in a local memory, or from the central database server,” confirming that selectable overlay icons are associated with network-accessible advertising

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent content. EX1013, Abstract; 3:34-4:6. Therefore, a POSITA would have been motivated to make this modification to enable independently sourced enhancement content to be delivered without requiring cooperation or participation by the broadcast provider. A POSITA would have had a reasonable expectation of success because this modification involves using known techniques in a known manner to achieve a known result and requires only routine skill in the art.

6. [1e], [13d] said overlay-enabling digital data includes at least:

105. Marler discloses “overlay-enabling digital data” as discussed above and below for limitations [1f]/[13e], [1g]/[13f] and [1h]/[13g].

7. [1f], [13e] a Web link indicating a website where content that is associated with said overlay-enabling digital data is stored,

106. Marler discloses or renders obvious these limitations. Marler discloses that the enhancement data may include a web page. EX1007, ¶[0002]. Marler further discloses that the enhancement data may include three components: (1) an announcement, (2) a resource, and (3) a trigger. EX1007, ¶[0020]. Marler discloses that in some embodiments the enhancement data may be transmitted over a separate link such as the general-purpose data link 20 to the Internet using IP (Internet Protocol) multi-cast. EX1007, ¶¶[0023]-[0024], [0029].

107. Marler discloses that the announcement stream includes an icon locator that may be a Web link used to retrieve an icon image retrievable via the

Internet, and that the icon image can be/include a hyperlink that includes a URL (uniform resource locator), *i.e.*, a Web link, that identifies a website where the associated enhancement content is stored. EX1007, ¶[0035] (“the icon locator may be a [URL, which] may point to an Internet web address containing information about a suitable icon.”); EX1007, ¶[0032] (“In some cases, the icons 32, 34, and 36 may be hyperlinks that allow the user to mouse click on the icon (or use another pointing device) and to jump immediately to the ancillary information.”). Marler’s receiver then retrieves the icon information, which again can be/include an image and a hyperlink, and displays it for the user as shown in steps 46 and 48 of Fig. 5 shown below. EX1007, ¶¶[0040] (discussing a script that causes a transparent overlay to be produced over the display image on the display 30 of receiver 16) and [0041] (discussing accessing the icon information using the icon locator at step 46 and displaying the retrieved icon at step 48). In this embodiment, the hyperlink that is retrieved along with the icon image via the Internet on link 20 is the claimed “Weblink” of limitations [1f] and [13e]. The enhancement data including the announcement, the resource and the trigger together with information about an icon retrieved using the icon locator all constitute IP data that is “overlay-enabling digital data” that is downloaded via the Internet.

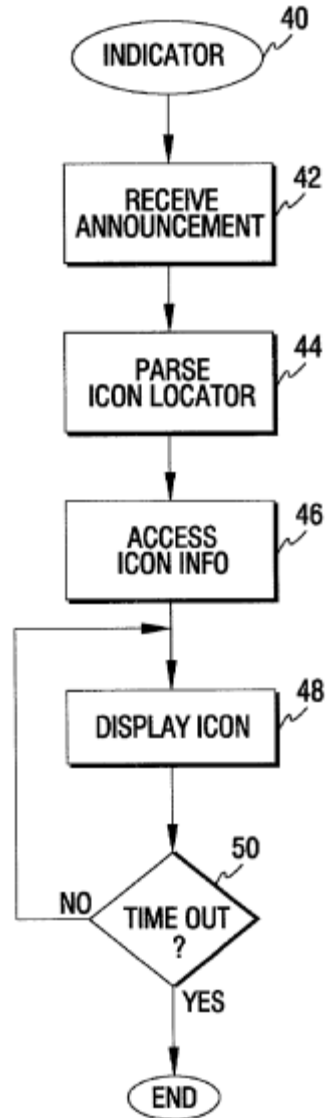


FIG. 5

108. Alternatively, it would have been obvious to a POSITA that the Weblink is included in the announcement stream itself along with the icon locator rather than being retrieved together with the icon image information. As discussed above, Marler discloses that enhancement data can include a resource, and “a resource includes one or more files that contain the enhancement data.” EX1007,

¶¶[0020]-[0011]. Marler also identifies that the enhancement data includes web pages and other digital resources accessible via the URL. EX1007, ¶[0013]. Thus, a POSITA would have found it obvious to include filenames in the form of URLs that point to web pages (a form of enhancement data) in the announcement stream together with the icon locator information. Because this information is transmitted over link 20 via the Internet, it is IP data; alternatively, a POSITA would have found it obvious to use the IP protocol to transmit the data (e.g., using TCP/IP).

109. Because the ATVEF enhancement data comprising the announcement–resource–trigger components are transmitted using IP multicast (i.e., over the secondary link 20, the Internet path), they are IP content that is Internet-delivered. EX1007 ¶¶[0016], [0020]-[0021], [0023], [0038]-[0041].

8. [1g], [13f] an image indicative of the content associated with said overlay-enabling digital data, and

110. Marler discloses these limitations. Marler explains that the overlay-enabling digital data includes an image in the form of an icon that is indicative of the ancillary or enhancement content. Marler describes multiple icons (“chevron-shaped indicator 32,” “additional indicator 34,” “additional indicator 36”) that provide information about the associated ancillary information. EX1007, Fig. 3; ¶[0031]. The chevron-shaped icons 32 are indicative of the presence of ancillary information/enhancement content, and the indicators 34 indicate the type of content (e.g., that is children’s content and available in Spanish, respectively).

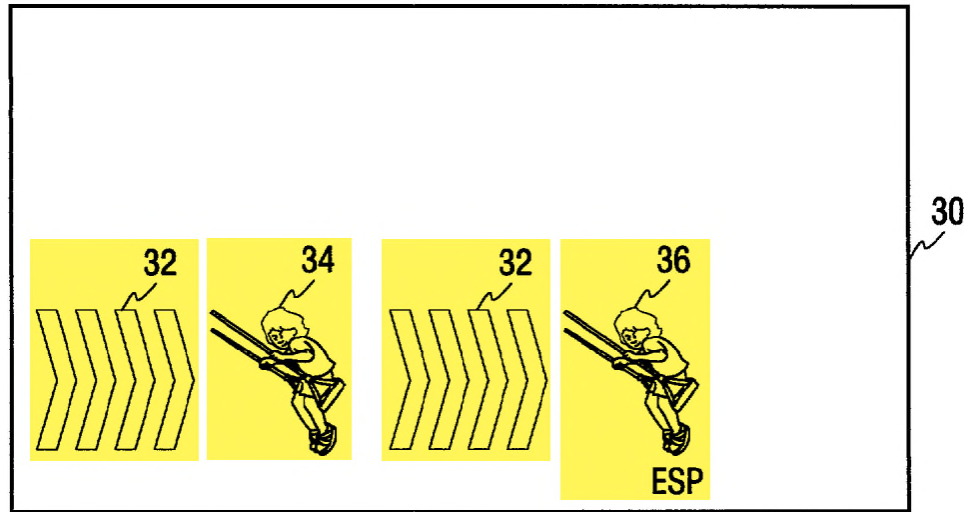


FIG. 3

111. Consistent with my analysis for limitation [1c]/[13b] and [1f]/[13e], Marler discloses that the “enhancement data and special announcements may be” “transmitted over the secondary link 20” which “may be a data delivery communications channel such as the Internet,” and that this Internet-delivered enhancement data includes a trigger that can include an “icon locator” such as a “uniform resource locator (URL)” where the URL “may point to an Internet web address containing information about a suitable icon that may be displayed.” EX1007, ¶¶[0016], [0026], [0035]; see also limitation [1h]. A POSITA would understand that, in embodiments in which the icon locator points to an Internet web address containing information about a suitable icon, the suitable icon is retrieved from that Internet web address.

9. [1h] an overlay activation criterion; and**[13g] an overlay activation criterion, wherein**

112. Consistent with § VI.A, Marler discloses or renders obvious these limitations. Marler discloses or renders obvious an “overlay activation criterion” in the form of a “trigger” and that the trigger can be a component of the enhancement data that is delivered in some embodiments to the receiver over the Internet path (secondary link 20) using IP multicast. EX1007 ¶¶[0020] (defining enhancement data as including announcements, resources and triggers), [0021] (explaining that announcements describe the locations of both resource streams and trigger streams), and [0023] (discussing transmission of enhancement data over secondary/Internet link 20); see also [0038]-[0041]. Marler explains that the triggers are “real time events delivered for enhanced television programs” and are “utilized as a signal to notify users of enhanced content availability.” EX1007, ¶[0038]. Specifically, Marler discloses or renders obvious that the trigger governs when the icon/overlay appears and how long it persists, because the receipt of the trigger causes the receiver 16 to display the icon independent of any user command, and an expiration date included with the trigger causes the receiver 16 to stop displaying the trigger. EX1007 ¶[0041]. “The expiration date in connection with triggers utilized to announce the arrival of a particular type of content may

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provide for a limited duration of display of the icon. For example, the expiration
date may also cause the icon to disappear and reappear periodically.” *Id.*

113. Marler further discloses a check step that evaluates whether an
expiration time has occurred before continuing or discontinuing overlay display.
EX1007, Fig. 5 (50); ¶[0041] (“If an expiration time was transmitted with the
trigger data, a check at diamond 50 determines whether the expiration time has
occurred. If so, the flow ends. Otherwise, the icon persists.”). These trigger-based
and timing-based conditions constitute an overlay activation criterion that
originates from the Internet and governs when the overlay is generated.

**10. [1i] (b) processing at the user's premises said overlay-
enabling digital data and generating at the user's premises a
corresponding overlay only if said overlay activation
criterion is met, wherein generating [an] the overlay
includes:**

**[13h] the combiner unit is responsive to the overlay
activation criterion being met to for generating a
corresponding overlay, including:**

114. Marler discloses these limitations. The phrase “at the user’s premises”
was addressed above in limitation [1pre], where receiver 16 is expressly described
as operating at “receiving sites, including homes” which a POSITA would
understand are a user’s premises. (EX1007, ¶13). Marler discloses receiving the
ancillary/enhancement data at the receiver and using that processed information to
determine whether an overlay should be generated. As shown in Fig. 5 (reproduced

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below; illustrating “software 40, resident on a receiver 16”), the receiver

“receiv[es] an announcement stream” (42), parses it to locate the icon locator (44),
and then accesses icon information (46). EX1007, ¶[0034]. This is the processing
of the overlay-enabling digital data.

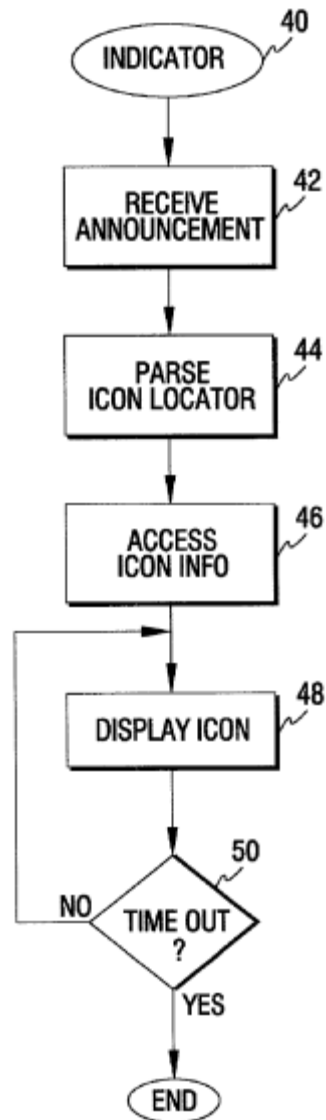


FIG. 5

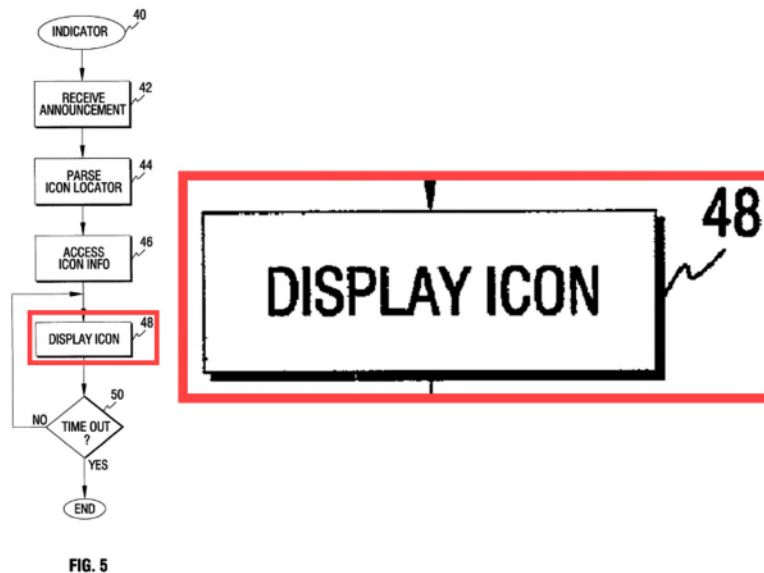
115. Marler further discloses generating the overlay only if the overlay activation criterion is met. As described for limitation [1h], Marler uses trigger-based conditions contained within the ancillary/enhancement data, including expiration-time checks, to determine whether the icon/overlay should appear. Marler states that a trigger “may optionally also include” “an expiration date” EX1007, ¶[0038]. Marler discloses that the receiver performs a conditional check: “If an expiration time was transmitted with the trigger data, a check at diamond 50 determines whether the expiration time has occurred. If so, the flow ends. Otherwise, the icon persists.” EX1007, ¶[0041]; Fig 5. These trigger-based conditions (provided in the ancillary data itself and applied automatically by the receiver) constitute an overlay activation criterion.

11. [1j], [13i] generating at the user's premises a first display screen including at least a first portion corresponding to said video signals and a second portion overlaid over said first portion and corresponding at least to said image, and

116. Marler discloses these limitations. As previously addressed for limitation [1pre], Marler's receiver 16 operates “at various receiving sites, including homes,” confirming that display-generation occurs at the user's premises. EX1007, ¶[0013].

117. Marler discloses a display composed of (1) the underlying A/V program and (2) an overlaid image (icon) corresponding to the enhancement data. FIG. 5 shows the block “DISPLAY ICON” (48), which results in a graphical icon

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent being rendered over the television image. Marler's system "may include script that causes a transparent overlay to be produced over the display image on the display 30 of a receiver 16." EX1007, ¶[0040].



118. Marler explains that the icon represents the content of the ancillary information and is presented visually on top of the existing video. For example, icons "may be displayed to provide the user with information about the content contained within the ancillary information", and that these indicators are "displayed on the display 30" along with the television content (EX1007, ¶[0031], [0035]). This necessarily requires the creation of a first portion (the underlying video) and a second portion (the overlaid icon image) on a single display screen.

12. [1k], [13j] associating the Web link with said second portion of the first display screen thereby allowing a user to cause the combiner unit to retrieve said content, generate a second

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**video display screen including at least a portion which
corresponds to said content, and.**

119. Marler discloses these limitations. Marler discloses the association between the displayed icon and a corresponding Web link (URL). Marler explains that the icon locator may be a URL, which “point[s] to an Internet web address containing information about a suitable icon” or content accessible through that icon. EX1007, ¶[0035]. Marler further discloses that the icon “may be [a] hyperlink[s] that allows the user to mouse click on the icon (or use another pointing device) and to jump immediately to the ancillary information.” EX1007, ¶[0032]. In this embodiment, the hyperlink is the claimed “Weblink.”

Alternatively, it would have been obvious to a POSITA that the Weblink is included in the announcement stream itself along with the icon locator rather than being retrieved together with the icon image information as discussed above for limitation [1f]. It would have been obvious to a POSITA to associate the Weblink with the icon so that when the icon is clicked the content at the Weblink is retrieved to mirror the hyperlink functionality.

120. Once activated, the system retrieves the Web-addressed content and presents it. Marler explains that the enhancement data including web pages and digital files is accessed and displayed after the icon is selected as discussed above. This leads to a presentation of enhancement information, which corresponds to the

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recited “second video display screen” that includes at least a portion which
corresponds to the content at the hyperlink/Weblink.

13. [1l] input the second display screen to said TV set.

**[13k] a video output interface, coupled to or integrated
within the combiner unit and configured to be coupled to a
video input of said TV set and to display said first display
screen or said second video display screen.**

121. Marler at least inherently discloses or renders obvious these
limitations in view of Zigmond.

122. Regarding limitation [1l], Marler’s receiver 16 generates and presents
user-selected content on the television display, the system retrieves the linked
content and renders a second video display screen. Marler explains that receivers
may include set-top boxes or televisions operating “at various receiving sites,
including homes,” and it depicts the on-screen rendering on the “display 30 of a
receiver 16” EX1007, ¶¶[0013]- [0014], [0031]. A POSITA would understand that,
in the set-top box embodiment, the rendered second screen is provided as video to
the TV’s input (and in the integrated-TV embodiment the same occurs internally);
thus, the second video display screen is input to the TV set.

123. Regarding limitation [13k], Marler’s “video output interface” is the
A/V device driver routine 130, which “forwards the received A/V content to
application software adapted to process and present the A/V content in the
receiving system,” and shows that the resulting combined/overlaid presentation is

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displayed on “display 30 of a receiver 16.” EX1007, ¶¶[0029], [0031], [0040]. A

POSITA would understand that this output path (A/V device driver 130) is coupled to the TV's video input to display either the first overlay screen or, after selection, the subsequent screen. EX1007, Fig. 2. As discussed above, the A/V device driver is code that is executed on the controller 120 as shown in Fig. 2. To the extent that this limitation is construed as requiring hardware, it would have been obvious to a POSITA to output the combined A/V content as discussed in EX1007, ¶[0030] through a port of the controller 120 (the claimed “video output interface”).

Alternatively, in embodiments in which the receiver 16 is implemented as a set top box configured for connection to an external television, it would have been obvious to incorporate a video encoder such as Zigmond's video encoder 26, as discussed below in Ground 6, limitation [1l] and [13k], into Marler's system to provide video suitable for input to a TV.

C. Claim 5

1. **5. The method according to claim 1, wherein the overlay enabling digital data comprises data representative of one or more second images, and for each of said one or more second images said overlay-enabling data comprises respective web site addresses where IP content associated with the respective second image is stored, and wherein said generating the overlay further includes within said first display said one or more second images.**

124. Marler discloses or renders obvious claim 1 as discussed above.

Marler also discloses this claim. Marler teaches that the overlay-enabling digital

data includes second images, because Marler discloses icons (32, 34, and 36) that visually represent the associated ancillary content, and further explains that “the receiver may be loaded with a plurality of content-identifying icon images.”

EX1007, ¶¶[0031], [0037]. Marler also discloses that each such image is associated with a respective website address, because that the icon image can be/include a hyperlink that includes a URL (uniform resource locator), *i.e.*, a Web link, that identifies a website where the associated enhancement content is stored. EX1007, ¶[0032] (“In some cases, the icons 32, 34, and 36 may be hyperlinks that allow the user to mouse click on the icon (or use another pointing device) and to jump immediately to the ancillary information.”). Thus, the hyperlink constitutes a “web site address where IP content associated with the respective second image is stored.”

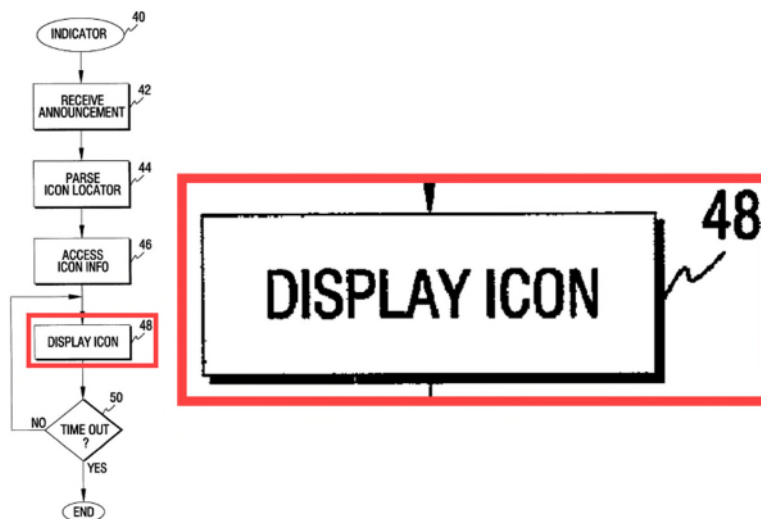


FIG. 5

125. Marler further discloses generating the overlay by displaying these images within the first display, because the receiver retrieves the icon information and displays “one or more icons” as part of the transparent overlay. EX1007, ¶¶[0034]-[0041]; Fig. 5. To the extent that these limitations require more than one second image, Marler discloses multiple second images in the form of icons 32-36.

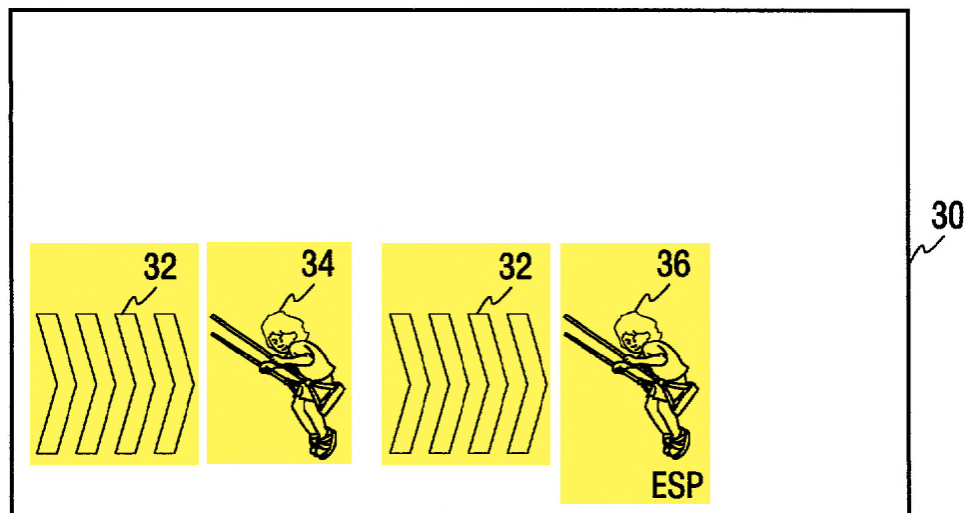


FIG. 3

D. Claim 6

1. **6. The method according to claim 1, wherein the overlay enabling digital data is supplementary or complementary to the video signals.**

126. Marler discloses claim 1 as discussed above. Marler also discloses this claim. Marler discloses that overlay-enabling digital data (ancillary/enhancement data) is provided in addition to the underlying A/V content and is intended to supplement or enhance the viewer's experience (e.g., by “the option of viewing

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent advertisements, educational information”, or other content displayed “while watching regular television programming”). EX1007, ¶¶[0003], [0031], [0040].

Because Marler’s enhancement data is presented as an overlay on top of the video and is expressly described as additional information accompanying the program, it is supplementary or complementary to the video signals.

E. Claims 7 and 18

1. **7. The method according to claim 1, wherein the image includes an icon that indicates to the user that digital data from Internet content is currently being displayed and which provides an indication of a nature of said Internet content.**

18. The TV-Internet Integration Box according to claim 13, wherein the image includes an icon that indicates to the user that digital data from Internet content is currently being displayed and which provides an indication of a nature of said Internet content.

127. Marler discloses or renders obvious claims 1 and 13 as discussed above. Marler also discloses the limitations of claims 7 and 18 because Marler’s overlay icons (i) provide an indication of the nature of the Internet/ancillary content, and (ii) indicate to the user that Internet-delivered digital data is being displayed, where “digital data from Internet content” is best understood to encompass the icon/overlay itself when delivered via the Internet path.

128. Marler discloses that the receiver displays multiple on-screen indicators/icons that communicate the type/nature of the associated

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ancillary/enhancement content: e.g., “an additional indicator 34 may be provided to give information about the particular type of content,” “the indicator 34 may be indicative of children’s content,” and “an additional indicator 36 may be provided to indicate that the children’s content is available in Spanish.” EX1007, ¶[0031].

129. Marler further explains that these indicators “give[] the user greater information about the ancillary information,” thereby enabling “an informed decision” whether to access it. EX1007, ¶[0032].

130. As “icon that indicates to the user that digital data from Internet content is currently being displayed” is best understood, Marler anticipates these claims because Marler’s system displays an overlay icon that is part of the Internet/secondary-link enhancement delivery path and thus constitutes “digital data from Internet content” being displayed on the TV image, as discussed in limitations [1c]/[13b] and [1g]/[13f].

F. Claim 10

1. [10 pre] The method according to claim 5, further including:

131. Marler discloses or renders obvious claim 5.

2. [10a] periodically accessing a web server for downloading said overlay-enabling digital data;

132. Marler discloses and renders obvious this limitation. Marler discloses periodic receipt of Internet-delivered enhancement data because “announcements, resources and triggers associated with an A/V channel [television program] may be

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent delivered at about the same times as, and with the transmission of, the A/V content on that channel” (EX1007, ¶[0020]-[0022]), and Marler’s receiver 16 “receiv[es] an announcement stream” and other enhancement data whenever transmitted (EX1007, ¶[0034]). Marler explains that the enhancement data is delivered over the “secondary link 20” “such as the Internet” (EX1007, ¶[0016]), and repeatedly received by the receiver’s network stack (EX1007, ¶¶[0029]-[0030]). It was well-known to a POSITA at the time of the '399 patent that TV programs were broadcast periodically (e.g., on a half-hour or hourly basis) and that individual programs were also broadcast periodically (e.g., once daily or once weekly). A POSITA would therefore have understood that enhancement data including overlay-enabling digital data, whether provided for one or more individual programs or all programs, would be downloaded periodically from a web-based source.

3. [10b] extracting from the overlay-enabling digital data said one or more second images and the respective web sites corresponding to each of said second images;

133. Marler discloses or renders obvious this limitation. As discussed above for limitations [1e]-[1h], Marler discloses that the receiver parses the announcement stream to identify an icon locator which is used to retrieve icon images and that “[i]n some cases, the icons 32, 34, and 36 may be hyperlinks that allow the user to mouse click on the icon (or use another pointing device) and to

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jump immediately to the ancillary information.”) EX1007, ¶[0032]. In

embodiments where the icon images (each a “second image”) include or are
hyperlinks, each hyperlink is a “respective web site corresponding to” “a second
image.” As discussed for claim 5, Marler discloses multiple icons/second images
including at least icons 32-36 in Fig. 5.

**4. [10c] retrieving and storing digital content from said web
sites; and**

134. Marler discloses or renders obvious this limitation. As discussed
above for limitations [1k] and [10b], in some embodiments, each of the icons are
or include a hyperlink to a respective website from which content may be
retrieved. A POSITA would have understood or at least found obvious that the
content is retrieved and at least temporarily stored when the user clicks on the
hyperlink. Alternatively, as discussed for limitations [1k] and [10b], a POSITA
would have found it obvious to configure Marler’s system so that a Weblink is
downloaded and associated with the icon locator information so that the content
associated with the Weblink is retrieved when the user clicks on the icon.

**5. [10d] if the overlay activation criterion is met and a user
command that is associated with an image from amongst
said one or more second images is identified, displaying the
respective image from amongst the second images, accessing**

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**the respective web site associated with the displayed image
and extracting and buffering content from the website.**

135. Marler discloses this limitation. See discussion of triggers and the display of icons resulting from the triggers in limitation [1i]. Marler discloses that triggers “generally include a URL” and may include timing information such as an “expiration date” governing when the icon/overlay is displayed. EX1007, ¶[0038]. If the expiration condition is met, the receiver checks the trigger at 50 and either displays or suppresses the icon. EX1007, ¶[0041]; Fig. 5.

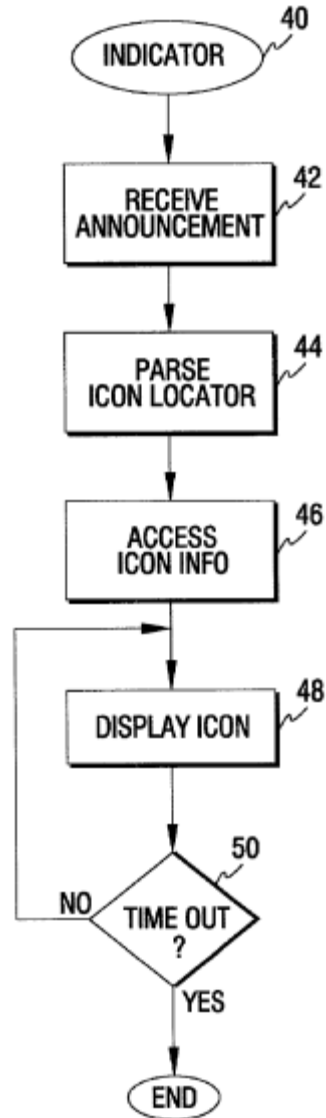


FIG. 5

136. Marler also discloses that the user may “mouse click on the icon (or use another pointing device)” to access the associated content (EX1007, ¶[0032]), after which the receiver retrieves and displays the content. (EX1007, ¶[0022], ¶[0037]). A POSITA would have found it obvious to buffer the content before

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent displaying it, particularly when the content corresponds to streaming media such as streaming video as discussed in Scott in Ground 5 below.

G. Claim 11

- 1. 11. The method according to claim 5, further comprising displaying a respective IP content when a corresponding one of said one or more second images is selected.**

137. Marler discloses or renders obvious claim 5 as discussed above.

Marler also discloses this claim. Marler teaches that when a user selects one of the overlaid second images (icons), the system retrieves and displays the corresponding Internet-based enhancement content. In particular, Marler discloses that the icons “may be hyperlinks that allow the user to mouse click on the icon (or use another pointing device) and to jump immediately to the ancillary information,” which is Internet-delivered enhancement content identified by the associated URL. EX1007, ¶¶[0032], [0035]. Marler further explains that this content—delivered via the Internet-based secondary link and stored or buffered in the receiver—can then be accessed and presented to the viewer. EX1007, ¶¶[0016], [0022], [0029]-[0030].

H. Claim 17

- 1. [17 pre] The TV-Internet Integration Box according to claim 13, wherein the overlay-enabling digital data comprises data representative of one or more second images, and for each of said one or more second images said overlay-enabling data comprises respective web site**

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**addresses where IP content associated with the respective
second image is stored,**

138. Marler discloses or renders obvious claim 13 and also discloses claim 17. For this preamble, see claim 5.

2. [17a] and wherein the combiner unit is configured to:

139. See claim 10, limitations [10a]-[10d].

3. [17b] periodically access a web server for downloading said overlay-enabling digital data;

140. See claim 10, limitation [10a].

4. [17c] extract from the overlay-enabling digital data said one or more second images and the respective web sites corresponding to each of said second images;

141. See claim 10, limitation [10b].

**5. [17d] retrieve and store digital content from said web sites;
and**

142. See claim 10, limitation [10c].

6. [17e] if the overlay activation criterion is met, and a user command that is associated with an image from amongst said one or more second images is identified, display the respective image from amongst the second images, access the respective web site associated with the displayed image and extract and buffer content from the website.

143. See claim 10, limitation [10d].

**VIII. GROUND 2: MARLER AND RASMUSSEN RENDER OBVIOUS
CLAIMS 2, 12, 14, 21**

144. As discussed below, Rasmussen discloses the limitations of claims 2 and 14. It would have been obvious to combine Rasmussen with Marler, which

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discloses claims 1 and 13 as discussed in Ground 1, for the reasons discussed
below.

A. Summary of Rasmussen (EX1015)

145. Rasmussen is a U.S. Patent Application Publication published on 9/12/2002 based on a U.S. patent application filed on 10/24/2001. EX1013, 1. I was informed that Rasmussen is therefore prior art to the '399 patent under 35 U.S.C. §§ 102(a) and 102(b).

146. Rasmussen is directed toward a system that displays interactive access points, or “hot spots,” overlaid on top of a television program that a user can select to link to enhanced content. EX1015, ¶¶[0007]-[0011], [0023]-[0026]. A hot spot can take the form of a geometric shape such as the shapes 202, 204, and 206 overlaid on a TV program such as shown in Fig. 2 below.

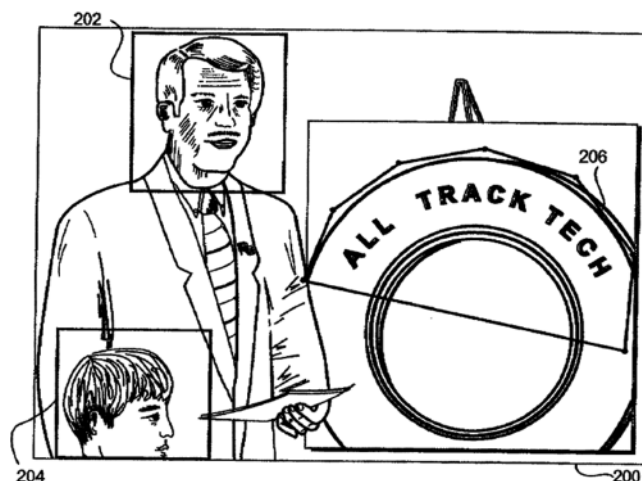


FIGURE 2

B. Claims 2 and 14

- 1. [2] The method according to claim 1, wherein said overlay enabling digital data is received at the user premises according to a pre-stored user profile**

[14] The TV-Internet Integration Box according to claim 13, wherein said overlay-enabling digital data is received at the user premises according to a pre-stored user-profile.

147. Marler discloses or renders obvious claims 1 and 13 as discussed above. The combination of Marler and Rasmussen renders obvious claims 2 and 14.

148. Rasmussen's "hot spots" are similar to Marler's icons/overlays in that both alert the user that additional content is available and can be activated by a user to obtain the display of that additional content. Rasmussen discloses that hot spots may be tailored to a user's buying habits, interests, and demographic segments (each of which is a criterion), and a distributor of the content may only make the hot spot available to users who satisfy the criterion. EX1015, ¶[0032]. A POSITA would have understood, or at least found obvious, that in order for the distributor to make hot spots available to only those users who satisfy such a criterion, the distributor would have available information for the user corresponding to the criterion available prior to transmitting the hot spot to the user (regarding Marler, prior to transmitting enhancement data/ancillary information to the receiver). If

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that information is available prior to transmission, it is pre-stored. Such pre-stored information for the user corresponding to the criterion is a user profile.

149. It would have been obvious to a POSITA to combine Marler and Rasmussen by modifying Marler's delivery infrastructure (e.g., the transport operator system and/or server(s) associated with delivering enhancement data over the secondary link) to pre-store profile information for users and to use that profile information to tailor the transmission of Marler's overlay-enabling digital data (e.g., announcements/resources/triggers and associated enhancement data used to produce the overlay/icon) so that such overlay-enabling digital data is received at the user premises according to the pre-stored user profile, as taught by Rasmussen. Marler expressly contemplates server-side storage and delivery of enhancement data over a separate data link (e.g., Internet) to receivers at user premises, including embodiments where "enhancement data may be stored" at "more than one server" and delivered over the "secondary link" to receivers. EX1007, ¶¶[0016], [0023], [0028]- [0029]. Marler also expressly contemplates "a viewer" "presented with the option of viewing advertisements," "while watching regular television programming." EX1007, ¶[0003].

150. A POSITA would have been motivated to do so in order to improve the user's experience, and focus advertising more narrowly, by avoiding the display of hot spots/icons corresponding to material that is not of interest or of less

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent interest to a user. A POSITA would have had a reasonable expectation of success in doing so because such modifications require only routine skill and were well-known in the art at the time of the alleged invention of the '399 patent.

C. Claims 12 and 21

1. 12. The method according to claim 7, including selecting specific Internet content by pressing a color-coded button on a remote control in accordance with a color of said icon.

21. The TV-Internet Integration Box according to claim 18, wherein the icon is colored so as to allow user selection of a specific Internet content by pressing a color-coded button on a remote control in accordance with a color of said icon.

151. Marler discloses claims 1, 7, 13 and 18 as discussed above. Marler also contemplates displaying multiple icons/indicators corresponding to different types of content (*e.g.*, multiple indicators/icons in EX1007, Fig. 3, and embodiments where a “plurality of icons indicating available content may be displayed alternately” (EX1007, ¶[0040])).

152. The combination of Marler and Rasmussen renders obvious the limitations of claims 12 and 21. As discussed above for Marler’s disclosure of overlaid icons/indicators that identify available ancillary/enhancement content (including embodiments with multiple icons indicating available content), a POSITA would have found it obvious to facilitate user selection among the overlaid icons/content using color coding and corresponding color-coded remote-control buttons as taught by Rasmussen.

153. Rasmussen expressly teaches that hot spot borders (and related visual cues) may be different colors, and that “the colors of each border may correspond with a button on an input device, such as a remote control or keyboard,” *i.e.*, the user selects content by pressing the corresponding color-coded button. EX1015, ¶[0030].

154. Thus, a POSITA would have found it obvious to modify Marler’s overlaid icon/indicator presentation to include colored icons (or colored frames/borders associated with the icons) and to provide a remote control with corresponding color-coded buttons to allow selection of specific Internet/ancillary content in accordance with the color of the icon, as taught by Rasmussen. A POSITA would have been motivated to do so to improve usability and simplify selection of interactive content in a TV/set-top-box environment by providing an intuitive one-to-one mapping between each displayed icon and a corresponding button input, with a reasonable expectation of success because Rasmussen describes this technique in the same interactive television context.

IX. GROUND 3: MARLER AND ZIGMOND RENDER OBVIOUS CLAIMS 3 AND 15

A. Summary of Zigmond (EX1008)

155. See section XII.A (Ground 6, Section A)

B. Claims 3 and 15

1. [3pre] The method according to claim 1, further including:

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**[15pre] The TV-Internet Integration Box according to claim
13, further comprising:**

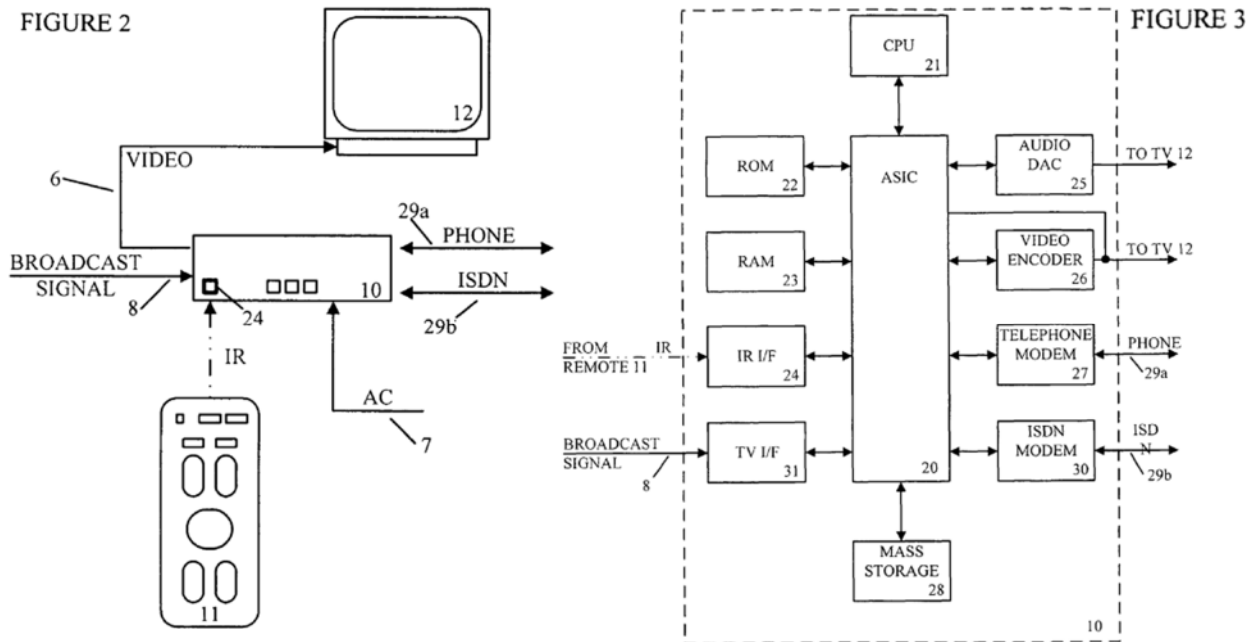
156. Marler discloses or renders obvious claims 1 and 13 as discussed above.

2. **[3a] receiving a command from the user at said user premises; and**

[15a] a command input for receiving a command from the user at said user premises; and

157. Marler in view of Zigmond renders obvious limitations [3a]/[15a]. Marler teaches that the user can issue a command at the user premises by selecting the overlaid icon, *e.g.*, “the icons” “may be hyperlinks that allow the user to mouse click on the icon (or use another pointing device) and to jump immediately to the ancillary information,” which is a user-initiated command received at the receiver in the user premises. EX1007, ¶[0032].

158. Zigmond discloses these limitations. Zigmond discloses that the set top box 10 includes a command interface in the form of an IR IF (infrared interface) 24 for receiving infrared commands from a remote control 11 operated by a user at the user’s premises. EX1008, 6:12-14, 6:38-39 and Figs. 2-3. The receipt of a command is discussed in connection with limitations [3b]/[15b].



159. It would have been obvious to a POSITA to implement Marler's user command for selecting the overlaid icon using Zigmond's remote-control command input (IR I/F 24), because both systems are interactive TV/set-top-box environments in which a user at the premises provides a command to access Internet/ancillary content associated with an on-screen icon. Marler teaches that "the icons" "may be hyperlinks" allowing the user to "mouse click on the icon (or use another pointing device)" to jump to the ancillary information, i.e., a user command received at the premises. EX1007, ¶[0032]. Zigmond teaches a command interface at the premises via IR IF 24 receiving commands from "remote control 11." EX1008, 6:12-14, 6:38-39; Figs. 2-3. Zigmond further refers to remote control 11 as "User interface selection device 11," reinforcing that its function is selection among displayable content. EX1008, 6:12. A POSITA would have had a

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reasonable expectation of success because substituting a known remote-control
input for another known user-input mechanism (mouse/pointing device) to select
the same icon yields predictable results and requires only routine implementation.

**3. [3b] responsive to said command, resizing said first portion
and/or said second portion of said first display screen.**

**[15b] a frame adjuster for resizing said first portion and/or
said second portion of said first display screen in response
to said command.**

160. Marler in view of Zigmond renders obvious limitations [3b]/[15b].

161. As discussed above in connection with limitations [3a]/[15a], Marler
discloses receiving a user command via icon selection (EX1007, ¶[0032]) and
Zigmond teaches a command input (IR I/F 24) for receiving remote-control
commands at the user premises (EX1008, 6:12-14, 6:38-39; Figs. 2-3).

162. Zigmond discloses these limitations. Zigmond discloses that a user
can use the remote control 11 to send a “Go” command as discussed above for
limitations [1k]/[13j]. As further discussed above in connection with those
limitations, this command results in the display of translucent panel 900 that
includes a “Go to Web Page” button 920 that, when selected at step 830, causes at
step 840 the retrieval via the Internet of the Web page content associated with the
icon 700 for display to the user. EX1008, 10:60-11:19 and Figs. 8-10. Zigmond
further discloses that in some embodiments, when the retrieval of the Web page is
complete, the set top box 10 is configured to replace the display of the television

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent program 500 with the display of the Web page and display the TV program in a window within that Web page. EX1008, 11:12-19. In that embodiment, the TV program corresponding to the first portion of the display screen must be resized to fit within that window, which Zigmond discloses is performed by dedicated video processing circuitry in the ASIC 20 constituting the claimed frame adjuster. EX1008, 6:30-37. The user's selection of the "Go to Web Page" button 920 is thus a command to which the set top box 10 responds by resizing the TV program 500 corresponding to the claimed first portion of the first display screen.

163. It would have been obvious to a POSITA to incorporate Zigmond's known windowing/resizing technique into Marler's receiver so that, responsive to the same user command selecting/accessing ancillary/Internet content as discussed above, the system resizes the first portion (TV video) and/or second portion (overlay/Internet region) of the first display screen. This is a straightforward substitution of a known UI behavior for predictable benefit (better concurrent viewing of TV and retrieved Internet content) with a reasonable expectation of success.

X. GROUND 4: MARLER AND GRAY RENDER OBVIOUS CLAIMS 8 AND 19

A. Summary of Gray (EX1018)

164. Gray is a publication of a U.S. patent application filed on 12/19/2003 and published on 6/23/2005. EX2018, 1. I was informed that Gray is therefore prior art under 35 U.S.C. § 102(e).

165. Gray is directed to a “system and method for enhanced hot key delivery.” EX1018, Title. A hot key indicates the availability of alternate content. EX1018, ¶[0028]. The alternate content may be an advertisement. EX1018, ¶[0032]. Importantly, Gray discloses several forms of hot keys and ways in which a user can select a hot key, including one example shown in Fig. 1c where the hot key is as icon 105 that indicates the subscriber may press 1 to accept the alternate content or 2 to decline the alternate content. EX1018, ¶[0029]; Fig. 1c.

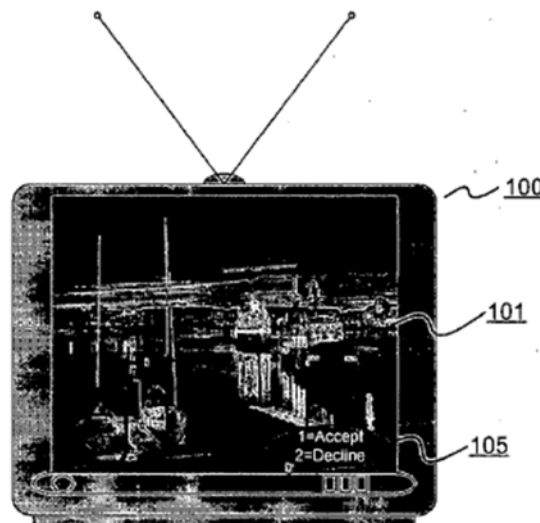


Figure 1C

B. Claims 8 and 19

- 1. [8/19]. The [method according to claim 1/TV-Internet Integration Box according to claim 13], wherein the image contains textual information advising the user to press a particular button on a remote control unit.**

166. Marler discloses or renders obvious claims 1 and 13 as discussed above. Gray discloses the limitations of claims 8 and 19. Gray discloses the display of an icon 105 that indicates the subscriber may press 1 to accept the alternate content or 2 to decline the alternate content. It would have been obvious to include Marler's overlaid icon images—which Marler teaches may include human-readable text delivered as part of the trigger “script” and which instruct the user how to activate the enhancement content (e.g., by clicking or otherwise selecting the icon)—together with textual instructions like those taught by Gray, so that the displayed image advises the user to press a particular button on a remote control. EX1007, ¶¶[0032], [0038]. It also would have been obvious to configure Marler's receiver to allow a user to select the overlaid icon using a specific numeric button (e.g., “1”) on the remote control and to decline or remove the icon using another numeric button (e.g., “2”), as taught by Gray, which further discloses removal of an icon upon pressing a designated button. EX1018, ¶[0030]. A POSITA would have been motivated to modify Marler to simplify interaction, avoid specialized inputs, and enable rejecting and cycling content, as in Gray's return process 1330. EX1018, ¶[0134]; Fig. 13.

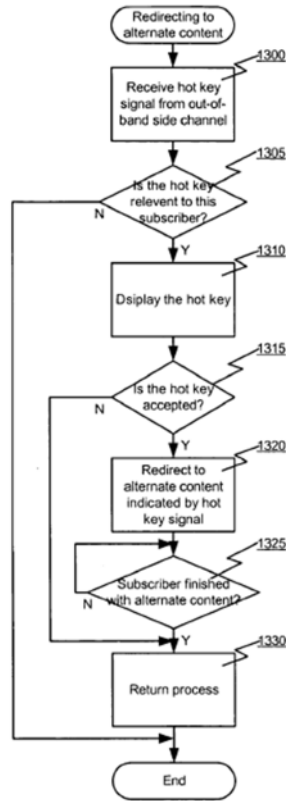


Figure 13

XI. GROUND 5: MARLER AND SCOTT RENDER OBVIOUS CLAIMS 4 AND 16

A. Summary of Scott (EX1019)

167. U.S. Patent No. 6,338,094 (Scott) was issued on 1/8/2002. EX1019, front cover. I was informed that Scott is therefore prior art under at least 35 U.S.C. § 102(b).

168. Scott discloses an interactive TV system 22 in which a user can select a link 44 which can be an icon shown on a display screen 25 to view a web page as shown in Fig. 2 below. EX1019, 4:30-45, 5:20-53. When the user selects the link

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44, video is immediately displayed to the user, and the web page is displayed to the
user after the video has completed. EX1019, 4:30-45.

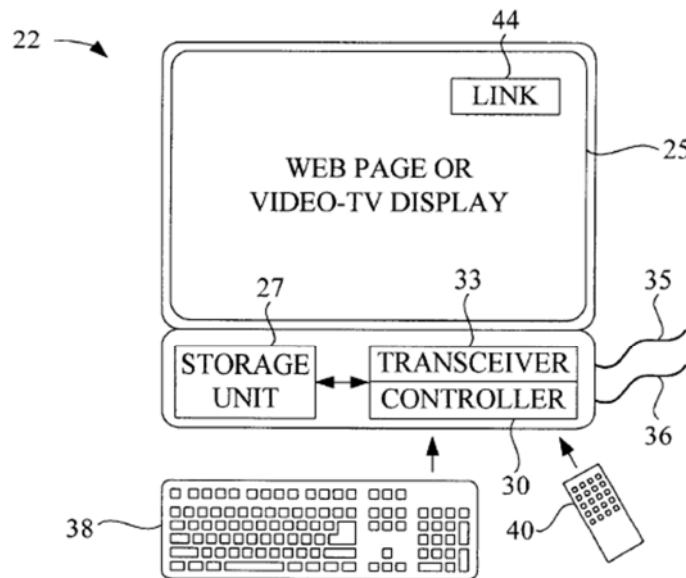


FIG. 2

A. Claims 4 and 16

1. [4 pre] The method according to claim 1, wherein the content stored at said website enables streaming of digital data over the Internet; and

[16 pre] The TV-Internet Integration Box according to claim 13, further including:

[16a] a receiver for receiving a digital data stream, wherein the stream of the digital data is enabled by the content stored at said website; and

169. Marler discloses or renders obvious the limitations of claims 1 and 13 as discussed above in Ground 1, and Marler and Scott disclose and render obvious the preambles and limitations of these claims. Marler discloses that enhancement

data which can include content such as “web pages, multimedia information or other digital files” (which a POSITA would have understood or found obvious to include video data) is delivered to Marler’s receiver 16 via the secondary link 20, “a data delivery communications channel such as the Internet.” EX1007, ¶¶[0002], [0013], [0016]; *see also* limitations [1e]-[1g] in Ground 1. Scott also discloses downloading enhancement data in the form of streaming video content over the Internet from a website corresponding to a Web link. EX1019, 6:16-28. Marler also discloses that the URL in the overlay-enabling data “may point to an Internet web address” for an icon used to indicate the availability of the enhancement data. (EX1007, ¶[0035]); limitation [1f] in Ground 1. See discussion of limitations [4a]/[16b] for the remainder of these limitations.

2. **[4a] said method further including: pre-fetching and buffering said digital data stream from said website, thereby allowing said digital data stream to be displayed substantially without delay upon redirection by the user.**

[16b] a processing unit for pre-fetching and buffering said digital data stream from said website, thereby allowing said digital data stream to be displayed substantially without delay upon redirection by the user.

170. Marler and Scott render obvious these limitations. As discussed above for limitation [1f] in Ground 1, Marler discloses that the icon image can be a hyperlink that includes a URL, *i.e.*, a Web link, that identifies a website where the

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associated enhancement content, which can be audio-visual content as discussed
above, is stored.

171. Marler does not provide details about how a video is retrieved in response to activation of the icon. Scott discloses a technique that allows a video to be displayed immediately upon selection an icon. In particular, Scott discloses an embodiment in which video content corresponding to a web link may be downloaded and stored during the time that the link is displayed when there is sufficient bandwidth so that the video may start being displayed immediately when the user clicks on the link. EX1019, 6:16-22. Scott further discloses that the video content “need not be completely downloaded to mass storage unit 27 before display of that content begins.” EX1019, 6:27-27.

172. The downloading of a part of the video prior to user selection of the link constitutes the claimed prefetching and buffering. To the extent claims 4 and 16 are construed as requiring streaming of video, the partial download of the video content before icon selection followed by display of the video while downloading the remaining part of the video content in response to selection of the link as taught by Scott is video streaming and would be recognized as such by a POSITA.

173. It would have been obvious to a POSITA to configure Marler’s receiver to start downloading video content for Marler’s icons that link to video content immediately once those icons are displayed as taught by Scott. A POSITA

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent would have been motivated to do so to improve Marler's system by making it capable of immediately beginning the display of a video upon selection of an icon as taught by Scott. A POSITA would have a reasonable expectation of success in making this modification because it involved applying a known technique in a known manner to improve a known system ready for improvement and involved only routine skill.

XII. GROUND 6: ZIGMOND RENDERS OBVIOUS CLAIMS 1, 3, 6, 13, 15

A. Summary of Zigmond (EX1008)

174. Zigmond is a U.S. patent issued on 12/7/2010 based on U.S. Patent Application No. 11/004,088 filed on 12/2/2004, which claims priority as a continuation to earlier U.S. Patent Application No. 09/153,577 filed on 09/15/1998 (EX1012). I was asked to confirm that the specifications of Zigmond and EX1012 are substantively identical, and I have done so. EX1008, *passim*; EX1012, *passim*. Zigmond and EX1012 name the same inventors, and Zigmond claims priority to EX1012. EX1008, front cover and 1:9-17; EX1012, 1-43. I was asked to confirm that at least one claim of Zigmond is supported by EX1012, and I have done so as indicated in the following table. I was informed that Zigmond is therefore prior art under 35 U.S.C. § 102(e) as of 09/15/1998.

U.S. Pat. No. 7,849,226 (EX1008)	U.S. Pat. App. No. 09/153,577 (EX1012)
1. A method of operating a screen used to display both television programming and auxiliary content using a client device, the client device comprising a processing unit and memory, the method comprising:	7:29-9:24; 11:14-12:12; 12:25-14:17; 30:1-10; Fig. 2, reference numeral 10; Fig. 3, reference numerals 10, 20, 21, 22, 23, 28; Figs. 7, 9 and 10; claim 21
receiving, by the client device, link data conveyed in a signal with the television programming, the link data associated with first auxiliary content, wherein the link data is received during the display of the television programming, to which the first auxiliary content is related;	11:14-12:12; 14:1-9
logging, by the client device, the received link data, including a number of times the link data has been received, wherein calculating the number of times the link data has been received comprises comparing the received link data against one or more previously received, and logged, link data; deciding, by the client device, whether or not to cause display of an alert indication with the displayed television programming, the alert indication indicating the availability of the first auxiliary content, wherein the decision is based at least in part upon the number of times the link data representing the availability of the first auxiliary content has been received by the client device: wherein the alert indication is an icon selected from a plurality of different icons each related to a different kind of auxiliary content; and if the decision indicates the alert indication is to be displayed, causing	11:16-27; 10:13-17; 18:3-19; 20:3-15; 24:1-14; claims 9-10

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display of the alert indication and, otherwise, skipping the causing display of the alert indication; wherein the link data associated with the first auxiliary content is received by the client device during the displayed television programming at M times, the alert indication is displayed N times, and N is less than M; and	
wherein, when the decision indicates the alert indication is to be displayed, the method further comprises:	8:8-10; 15:8-14; 15:25-16:2; 16:20-26; 16:26-30; 17:7-10; 18:3-19; 20:3-15; claims 9-10; Figs. 6-9
displaying the alert indication with the displayed television programming; receiving a selection of the displayed alert indication from a viewer; responsive to receiving the selection of the displayed alert indication, displaying a graphical control panel; that presents to the viewer a plurality of options selectable by the viewer, an option including a selection by the viewer to indicate desire to return to the displaying televised programming and ending the displaying the graphical control panel; and an option further including a selection by the viewer to receiving, from the viewer, a selection to view the first auxiliary content;	15:14-19; 16:20-17:13; Fig. 8, steps 640, 810, 820, 830, 840; Fig. 9.
and responsive to receiving the selection to view the first auxiliary content; ending the displaying the graphical control panel; and displaying the first auxiliary content; and	17:6-26; Fig. 8, steps 840, 860; Figs. 9-10
further responsive to a request from the viewer, displaying at least a portion of the previously logged link data to the viewer; receiving a selection, from the viewer, from the displayed previously logged link data;	18:3-19

and responsive to receiving the selection from the displayed previously logged link data, displaying, to the viewer, auxiliary content associated with the selection from the previously displayed logged link data.	18:3-19
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175. Zigmond, like the '399 patent, is directed to a system and method for “interactive television viewing of a television program and related content.”

EX1008, 2:64-66. In Zigmond’s system, a user watching a television program is presented with an icon 700, for example a translucent letter “i” in the upper right-hand corner of a television program 500 shown on the user’s television as shown in Fig. 7 below. EX1008, 10:4-14 and Fig. 7 (highlighting added). The icon 700 signals to the viewer that Internet content at a logical address link related to the program is present. *Id.*



176. In some embodiments, the links corresponding to the icon 700 are “batch mode logical address links” that are delivered to a client system from a Web server in advance of the broadcast of the television program 500. EX1008, 7:14-

27. These batch mode links typically define a time interval such as by including a start and stop time indicating when the link is to be made available to the viewer.

EX1008, 7:29-35. A user can select the link using a remote control if the user is interested in seeing the content associated with the icon 700 and cause Zigmond's system to retrieve and display the content from the Web page associated with the link via the Internet. EX1008, 10:37-11:2; Figs. 8-10.

177. Zigmond renders obvious claims 1 and 13 as explained in detail below.

B. Claims 1 and 13

1. **[1pre] A method for generating at a user's premises an overlay using video signals constituting a first data and overlay-enabling digital data constituting a second data, the method comprising:**

[13pre] A TV-Internet Integration Box for generating at a user's premises an overlay using video signals constituting a first data and overlay-enabling digital data constituting a second data, the TV-Internet Integration Box comprising:

178. To the extent the preambles of claims 1 and 13 are limiting, Zigmond discloses them. Zigmond discloses a TV-Internet Integration Box in the form of a set top box 10 located at a user's premises and connected to a user's TV 12 via video link 6 as shown in Fig. 2 below. EX1008, 5:60-6:4. The set top box 10 can be a standalone device as shown in Fig. 2 reproduced below or alternatively be built into the TV 12. *Id.*

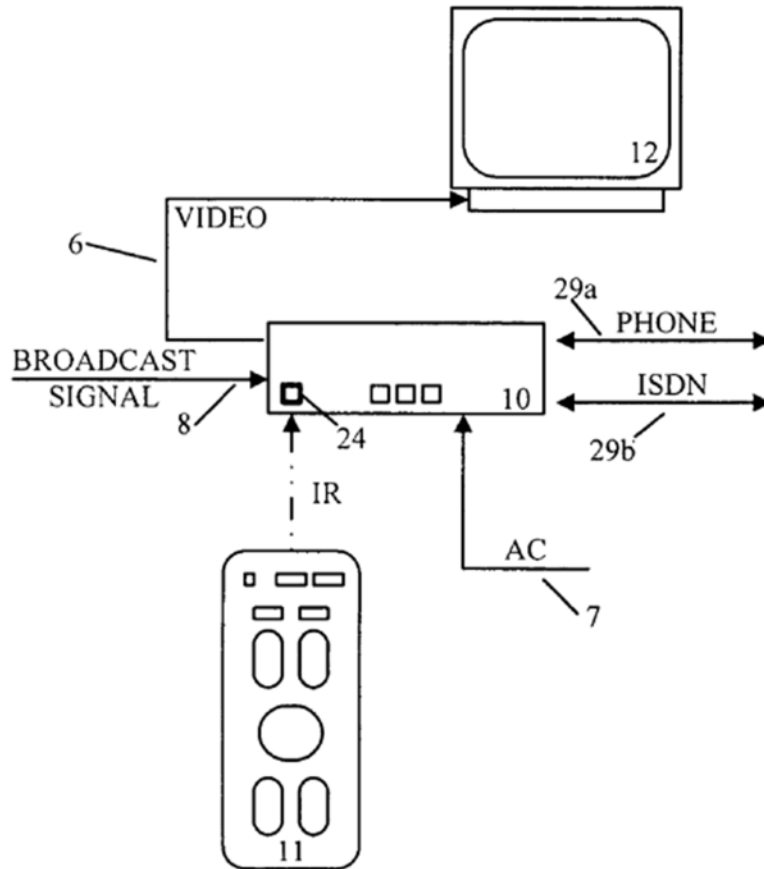


FIGURE 2

179. Zigmond further discloses that the set top box 10 generates an overlay, e.g., an icon 700 which is overlaid over a television program 500, and which is transmitted from the set top box 10 and displayed on the user's TV 12 as shown in Fig. 7. EX1008, 10:4-14.



FIGURE 7

180. Zigmond discloses that the set top box 10 generates the overlay shown in Fig. 7 using first data and second data. The first data corresponds to a broadcast television program video signal 8 as shown in Fig. 2 above. EX1008, 6:5-7. The second data correspond to “batch mode logical address links” as discussed above as well as other data received via the Internet as will be discussed in further detail below. EX1008, 7:14-35; see also limitations [1f]-[1h] below.

181. Regarding claim 1’s preamble, Zigmond also discloses a method performed by the set top box 10 for generating the overlay of Fig. 7 using the first and second data as discussed in further detail below in connection with limitations [1a]-[1k].

2. **[1a] (a) providing a combiner unit at the user’s premises, wherein;**

[13a] a combiner unit at the user’s premises coupled to a separate TV tuner box or TV tuner, wherein

182. Zigmond discloses or renders obvious these limitations. Zigmond’s set top box 10 includes a combiner unit, namely the combination of the ASIC

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(application specific integrated circuit) 20 and CPU 21 shown in Fig. 3 below.

Zigmond explains that the ASIC 20 is under the control of the CPU 21 and serves as a bus that couples the other illustrated components of Fig. 3 below.

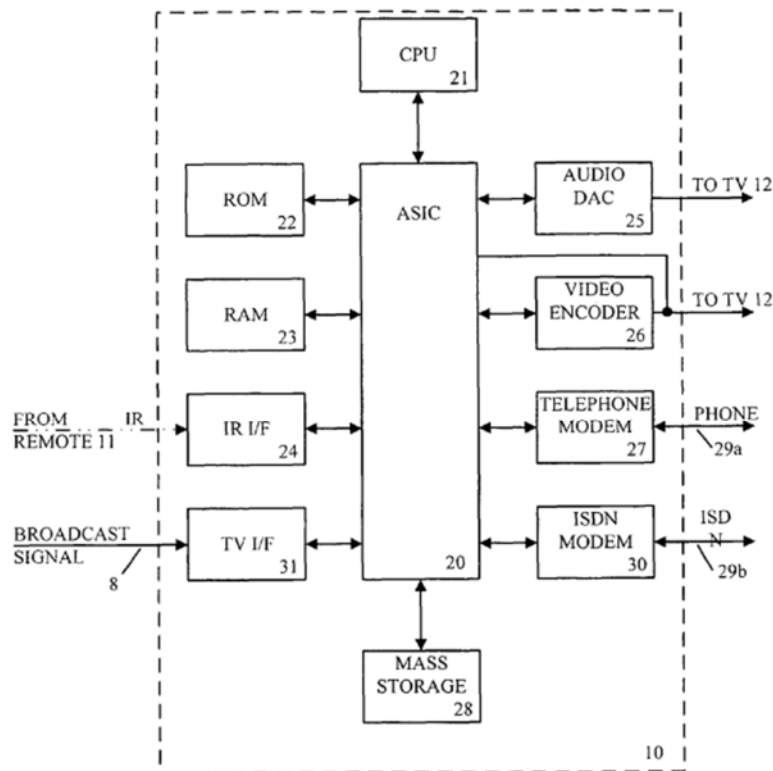


FIGURE 3

183. The combiner unit in the set top box 10 is located at the user's premises because it is shown attached to the user's TV 12 in Fig. 2 shown below, and because Zigmond further discloses that the set top box 10 may be integrated into the user's television. EX1008, 5:60-6:4; Fig. 2. See also limitations [1b]-[1d] below, which discuss the processing performed by the CPU 21 and ASIC 20 (the combiner unit). I address the requirement in limitation [13a] for the combiner unit

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to be "coupled to a separate TV tuner box or TV tuner" in connection with
limitation [1b] below.

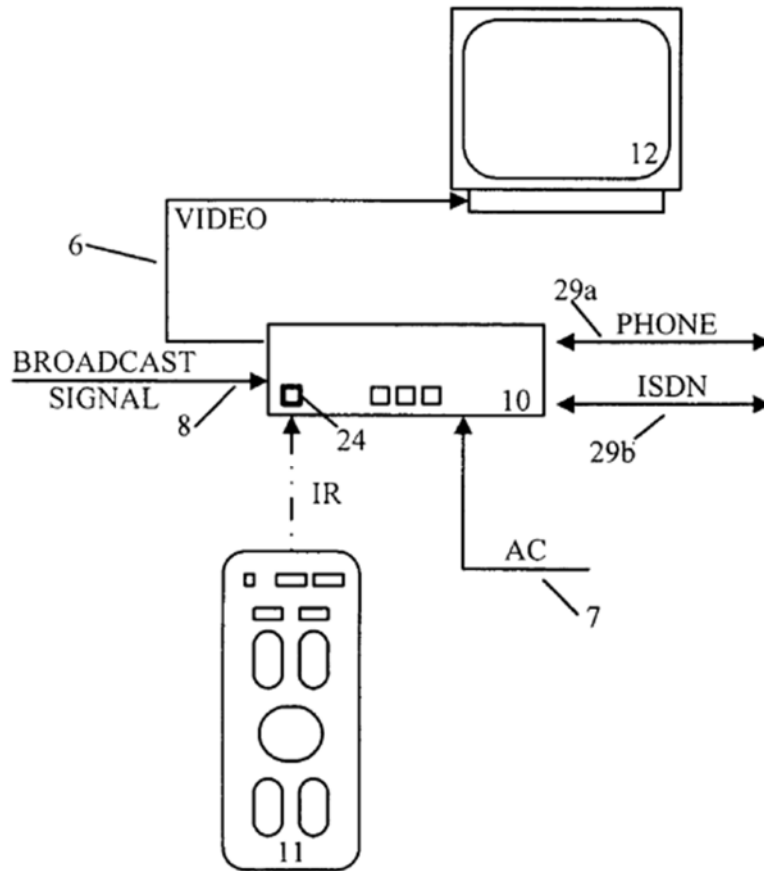


FIGURE 2

3. **[1b] the combiner unit is coupled to a TV set and connected to a separate TV tuner box or TV tuner in the TV set, at the user's premises, and**

184. Zigmond discloses or renders obvious these limitations. As shown in Fig. 3 below, the CPU 21 and ASIC 20 that constitute the claimed combiner unit are coupled to the TV 12 (also shown in Fig. 2) via the video encoder 26. EX1008, 6:1-4, 6:24-32, 9:44-47; Figs. 2-3.

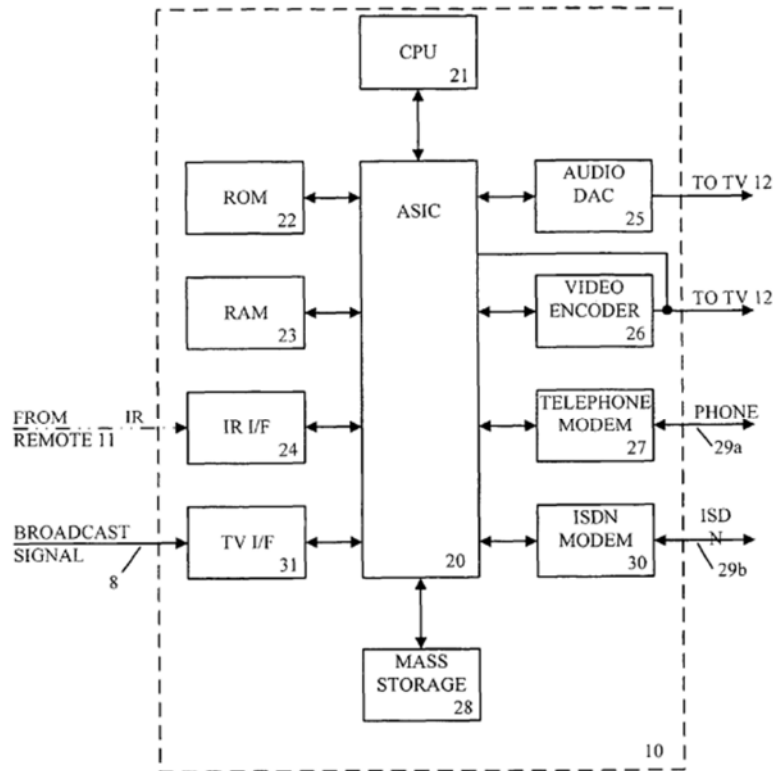


FIGURE 3

185. The CPU 21 and ASIC 20 are coupled to a broadcast TV signal 8 via the TV IF (interface) 31 as shown in Fig. 3 above. Zigmond discloses that TV IF 31 receives terrestrial broadcast video signals such as an NTSC television signal. EX1008, 6:40-41. It was well-known in the art that reception of a broadcast NTSC television signal requires a tuner, and therefore it would have been obvious if not inherent that TV IF 31 includes a TV tuner. See, e.g., EX1007, ¶[0029] (“the receiving circuit 114 (*e.g.*, a TV tuner card) is adapted to receive content over the transport medium 22.”). As discussed above, Zigmond discloses that the set top box 10 including the TV IF 31, CPU 21, and ASIC 20 can be integrated into a TV set, which almost always included at the time of the alleged invention of the '399

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patent an input for receiving a terrestrial broadcast television signal. EX1008,

5:63-65. Alternatively, Zigmond discloses that the TV IF 31 may be connected to receive the broadcast TV signal 8 via cable TV or digital satellite. EX1008, 5:53-56. In that case, a POSITA would have found it obvious that the broadcast signal 8 of Figs. 2-3 would be received via a separate cable or satellite set top box including a tuner (each a claimed "separate TV tuner box") because such signals were typically pay television signals which were broadcast in encrypted form and required decryption which was typically accomplished in a proprietary set top box at that time. *See, e.g.*, EX1013, 3:36-39; Figs. 1-2 (discussing "cable box 20 channel selector," including a tuner).

4. **[1c], [13b] the combiner unit is also connected through distinct networks to each of a video signal source providing video signals through the separate TV tuner box or the TV tuner in the TV set, and an Internet data source providing overlay-enabling digital data over the Internet, wherein**

186. Zigmond discloses or renders obvious these limitations. The ASIC 20 and CPU 21 are connected to receive a broadcast signal 8 via a terrestrial broadcast television network or via a digital satellite or cable network as discussed above for limitation [1b]. Zigmond further discloses that the ASIC 20 and CPU 21 are connected to a telephone modem 27 and an ISDN modem 30 as shown in Fig. 3:

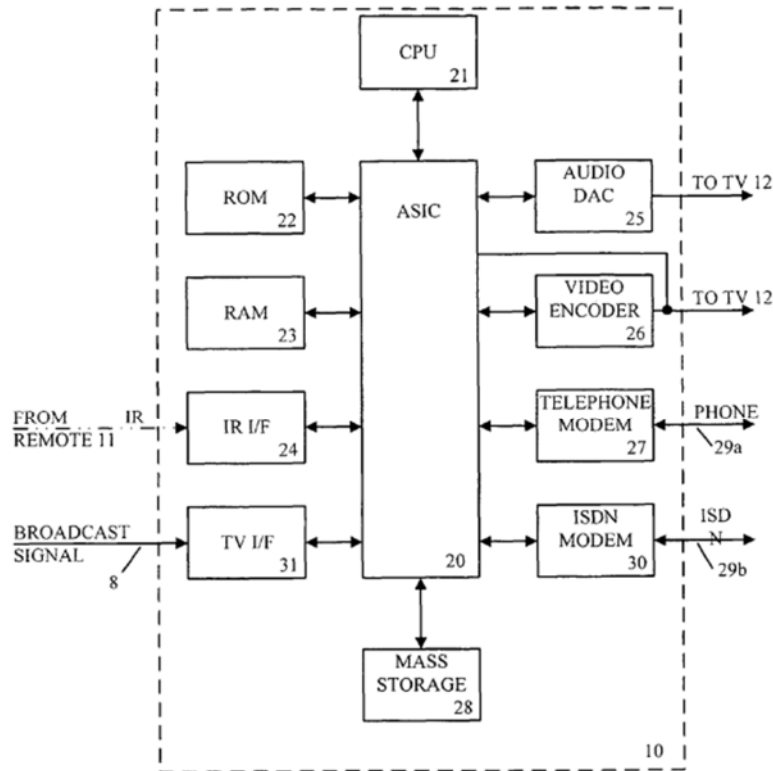


FIGURE 3

187. Either telephone modem 27 or ISDN modem 30 connects via phone network 29a or ISDN network 29b (Fig. 3 above) to the Internet 3 and servers 4 and 5—each an Internet data source—as shown in Fig. 1, where each client 1 is an STB 10.. EX1008, 4:54-67; Fig. 1.

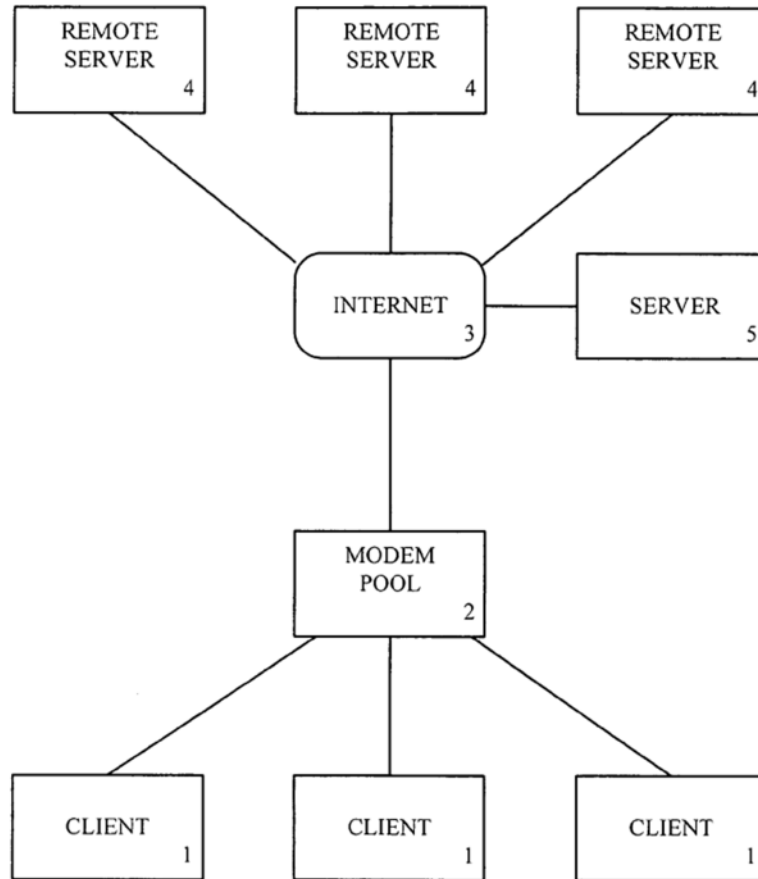


FIGURE 1

188. The server 5 supports the clients 1. EX1008, 4:64-65. The server 5 provides overlay-enabling digital data over the Internet as discussed in detail below in connection with limitations [1d]-[1h]. The phone or ISDN networks 29a, 29b that provide the connection to the Internet and from which the overlay-enabling digital data is received are distinct from the terrestrial broadcast, cable or satellite network from which the TV broadcast signal 8 is received.

5. **[1d], [13c] said video signals and said overlay-enabling digital data originate from unrelated sources and are**

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**transmitted to the user's premises by different resources as
mutually distinct and independent inputs, and wherein**

189. Zigmond discloses or renders obvious these limitations. As discussed above for limitation [1c], the broadcast TV signals 8 (the video signals) are received at the set top box 10 (including the ASIC 20 and CPU 21) via a terrestrial broadcast, cable or satellite network, whereas the overlay-enabling digital data is received from a server 5 via the Internet and phone or ISDN networks 29a, 29b. These are unrelated sources as that term is construed above in Section VI.B because they are separate facilities. To the extent that Patent Owner argues that Zigmond does not disclose them as separate facilities, it would have been obvious to a POSITA for the server 5 that generates the overlay-enabling digital data to be independent and separate from the broadcaster of the broadcast TV signal 8. It was well-known for the entity that generates the overlay-enabling digital data (the enhanced content) to be separate and independent of the broadcast. For example, consistent with my analysis of Reisman and Redling above for the same limitations as applied to Marler (§VII.B.5), Reisman and/or Redling disclose unrelated sources. EX1014, ¶[0860] (discussing an independent enhanced content creator) and EX1013, 3:34-4:6 (discussing an advertising icon generated using information from an AD Server 70 which is separate from a cable company that supplies TV signals). Therefore, a POSITA would have been motivated to make this modification to enable independently sourced enhancement content to be delivered

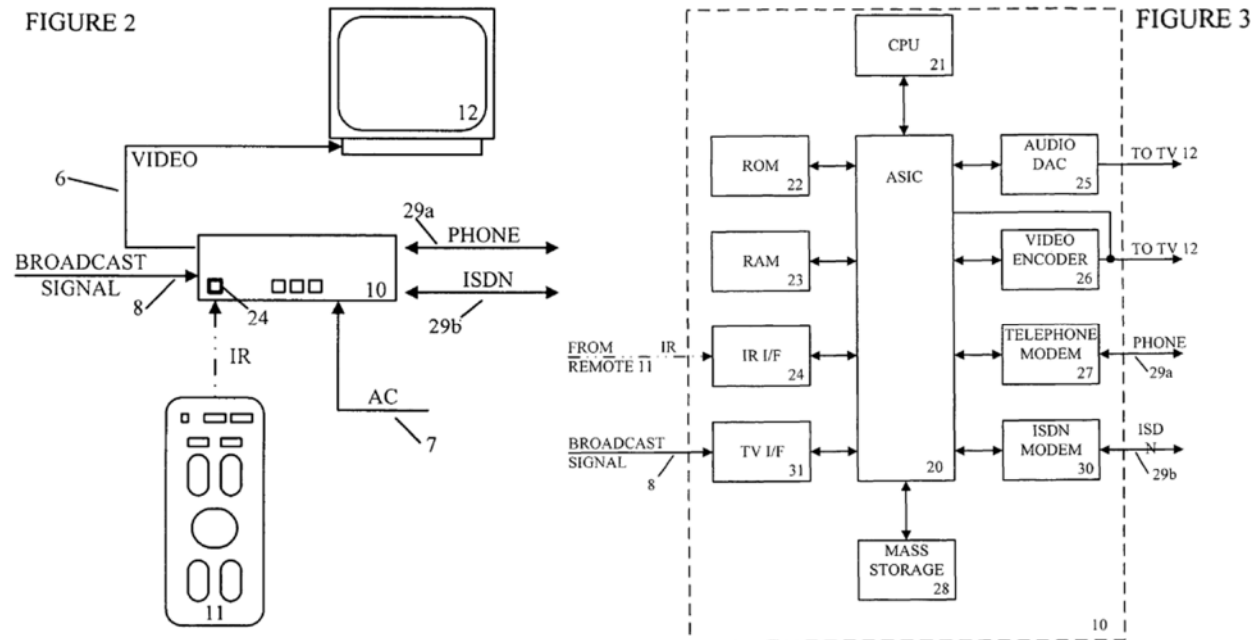
without requiring cooperation or participation by the broadcast provider. A

POSITA would have had a reasonable expectation of success because this

modification involves using known techniques in a known manner to achieve a

known result and requires only routine skill in the art.

190. Zigmond's TV broadcast signal 8 on the one hand and phone or ISDN connections 29a, 29b over which the overlay-enabling digital data is received are transmitted over different resources (terrestrial RF frequencies, cable networks or satellite frequencies on the one hand and phone or ISDN networks on the other hand) and are received as mutually distinct and independent inputs as shown in Figs. 2 and 3 below.



6. [1e], [13d] said overlay-enabling digital data includes at least:

191. Zigmond discloses or renders obvious these limitations. Zigmond discloses overlay-enabling digital data as discussed above that includes the components discussed below for limitations [1f]-[1h].

7. [1f], [13e] a Web link indicating a website where content that is associated with said overlay-enabling digital data is stored,

192. Zigmond discloses these limitations. As discussed above in the summary of Zigmond, Zigmond discloses “batch mode logical address links” that are delivered to a client system from a Web server over the Internet in advance of the broadcast of the television program 500. EX1008, 7:14-27; Figs. 8-10. These batch mode links are one type of a “logical address” disclosed in Zigmond (other types include links embedded in TV signals as discussed at 5:3-5) that can be a link to the Internet and in particular can be a URL. EX1008, 5:1-21.

8. [1g], [13f] an image indicative of the content associated with said overlay-enabling digital data, and

193. Zigmond discloses and/or renders obvious these limitations. Zigmond discloses an image in the form of a translucent icon 700 as shown in Fig. 7 below (highlighting added). The icon 700 indicates the presence of a logical address link which can be used to retrieve associated content from a Web server. EX1008, 5:5-44, 10:4-7, 9:57-63; Fig. 7.



FIGURE 7

194. Zigmond discloses that the same icon 700, i.e. the stylized “i” shown in Fig. 7, is used to alert the user to the presence of all related content. EX1008, 12:41-43. The icon 700 is therefore indicative of the presence of the related content. Zigmond does not explicitly disclose how the icon is delivered to the set top box 10 and the CPU 21/ASIC 20 in this embodiment. However, given that a single icon 700 is used in this embodiment, a POSITA would have found it obvious to include the icon 700 with the program code executed by the CPU 21 and/or ASIC 20, *e.g.*, as an image file that is retrieved from memory when the icon 700 is to be displayed.

195. Zigmond also discloses that different icons may be used, and gives as an example different icons used to distinguish between program-related content and advertising-related content. EX1008, 12:41-45. Each of these two icons is therefore indicative of the type/subject matter of the related content associated with the Web link, i.e., that the content is either advertising-related or program-related. Given that only two icons are used in this example, it would again have been

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obvious to a POSITA to include these icons with the program code executed by the
CPU 21 and/or ASIC 20.

196. Zigmond further discloses that the program code may be downloaded to the set top box via the Internet. In particular, Zigmond discloses that software may be downloaded over network connection 29 and stored in the mass storage 28, shown below in Fig. 3. EX1008, 6:54-60. A POSITA would have understood or found obvious that the downloaded code stored in the mass storage 28 would (perhaps after a checksum was performed) be transferred from the mass storage 28 to the EPROM/flash 22 for execution by the CPU 21 and/or ASIC 20.

197. This understanding is consistent with what was well known in the art, as disclosed in Escobar, which teaches that application programs for a set-top box may be downloaded from a URL. Escobar explains that “the URL can be used by the trigger to inform the browser where to go for content ... [and] can indicate where a browser should access application programs for downloading to the set top device.” EX1016 (Escobar at 10), 11. In view of this disclosure, a POSITA would have understood that downloaded program code—including any associated icon images—would be stored and transferred for execution, making it obvious that the icons could be received via the Internet as part of a program code update, regardless of whether they were transmitted with the logical address links.

198. Thus, in embodiments in which only one or two icons are used, it would have been obvious to a POSITA that these icons would be received via the Internet as part of a program code update. That they are received as part of a program code update rather than in the same message as the batch mode logical address links is of no moment because there is no requirement in claims 1 or 13 for the image of limitations [1g]/[13f] to be received in the same message or at the same time as the Web link of limitations [1f]/[13e].

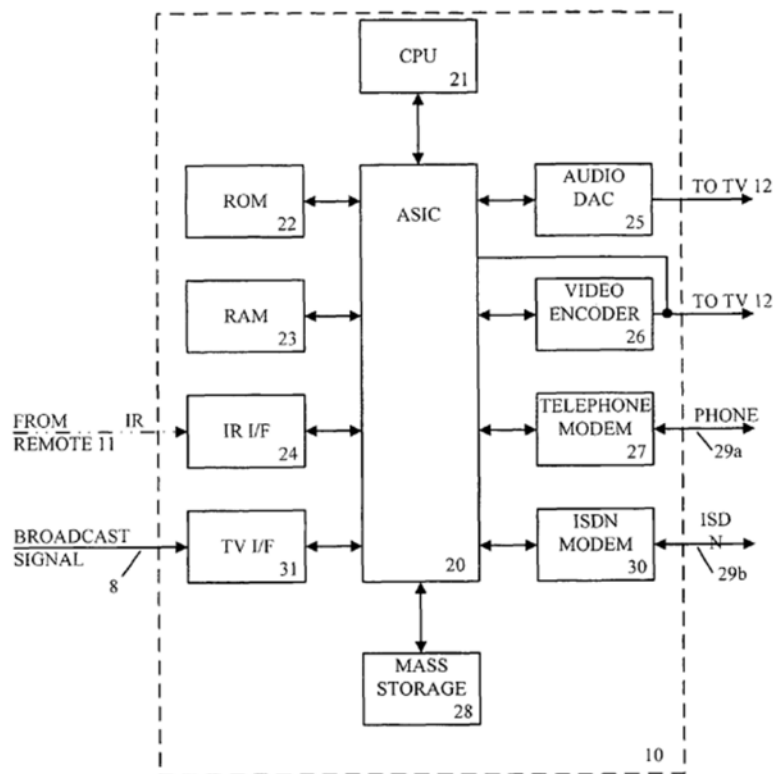


FIGURE 3

9. [1h] an overlay activation criterion; and

[13g] an overlay activation criterion, wherein

199. Zigmond discloses these limitations. Zigmond's batch mode links typically define a time interval such as by including a start and stop time indicating when the link is to be made available to the viewer. EX1008, 7:29-35. Zigmond discloses that these limitations are received via the Internet. EX1008, 7:19-34.

10. [1i] (b) processing at the user's premises said overlay-enabling digital data and generating at the user's premises a corresponding overlay only if said overlay activation criterion is met, wherein generating [an] the overlay includes:

[13h] the combiner unit is responsive to the overlay activation criterion being met to for generating a corresponding overlay, including:

200. Zigmond discloses and renders obvious these limitations. Zigmond discloses that overlay activation criterion (the interval defined by the start and stop times included with the batch mode logical address links) is processed by Zigmond's combiner unit (ASIC 20 and CPU 21) to generate an icon overlaid on a television program such as shown in Fig. 7 if the current time is within the interval in which the content associated with the batch mode logical address link is to be made available to the user. EX1008, 7:29-35. To the extent that Zigmond does not expressly disclose that the ASIC 20 and CPU 21 perform the processing necessary to implement the description at 7:29-35, the same would have been obvious to a

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POSITA in view of Zigmond's disclosure that the ASIC 20 and CPU 21 perform
other processing discussed therein.

- 11. [1j], [13i] generating at the user's premises a first display screen including at least a first portion corresponding to said video signals and a second portion overlaid over said first portion and corresponding at least to said image, and**

201. Zigmond discloses and renders obvious these limitations. As discussed above, Zigmond discloses the generation of a display screen on a user's TV 12 including a first portion in the form of a TV program 500 and a second portion in the form of a translucent icon 700 overlaid on the TV program 500.

EX1008, 10:4-14; Fig. 7. As discussed above, Zigmond discloses that the ASIC 20 and CPU 21 generate the video signals output to the TV 12 via the video encoder 26. EX1008, 6:24-37. To the extent not explicitly disclosed in Zigmond, configuring the ASIC 20 and CPU 21 to generate the video signals output to the TV 12 via the video encoder 26 would have been obvious to a POSITA.

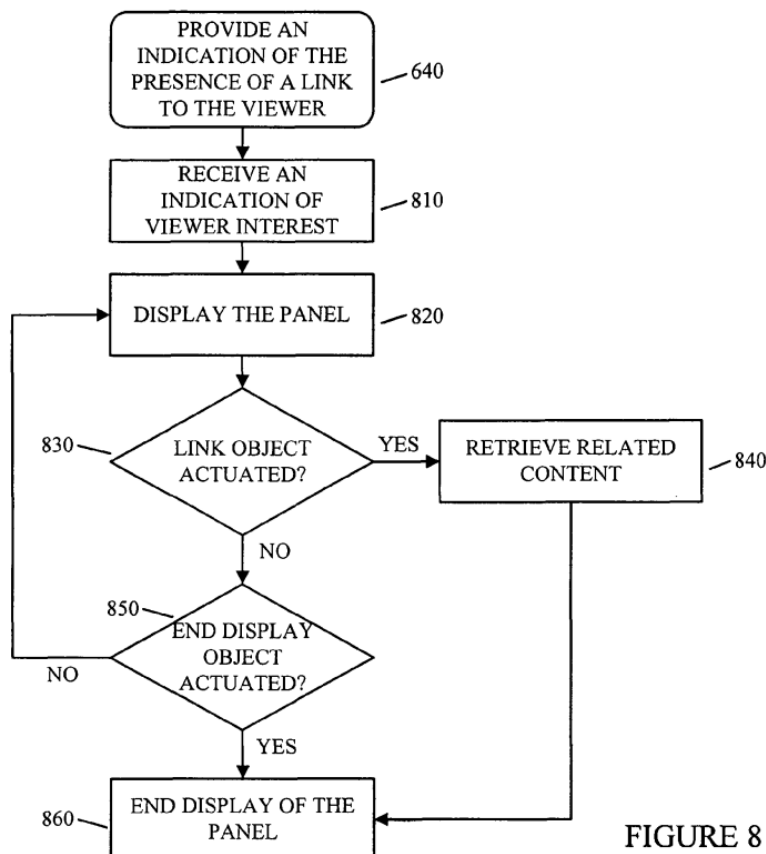


FIGURE 7

- 12. [1k], [13j] associating the Web link with said second portion of the first display screen thereby allowing a user to cause**

the combiner unit to retrieve said content, generate a second video display screen including at least a portion which corresponds to said content, and

202. Zigmond discloses and renders obvious these limitations. Zigmond discloses that a logical address link, which a POSITA would have understood to include a batch mode logical address link, is associated with the icon 700 in the second portion of the first display screen. EX1008, 10:4-33. The association allows the user to cause the combiner unit to retrieve the content associated with the logical address link by performing a series of steps starting with, e.g. pressing a “Go” button on an input device such as a remote control to indicate an interest in the content associated with the icon (step 810 of Fig. 8). EX1008, 37-45.



203. This results at step 820 in the display of a translucent panel 900 as shown in Fig. 9 below. The translucent panel 900 includes a “Go to Web Page” button 920 that, when selected at step 830, causes at step 840 the retrieval via the Internet of the Web page content associated with the icon 700 for display to the user. EX1008, 10:60-11:19 and Figs. 8-10. To the extent not explicitly disclosed in Zigmond, configuring the ASIC 20 and CPU 21 to perform the processing associated with Figs. 8-10 would have been obvious to a POSITA.

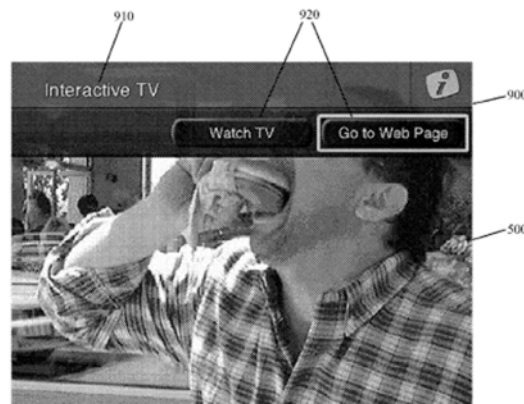


FIGURE 9

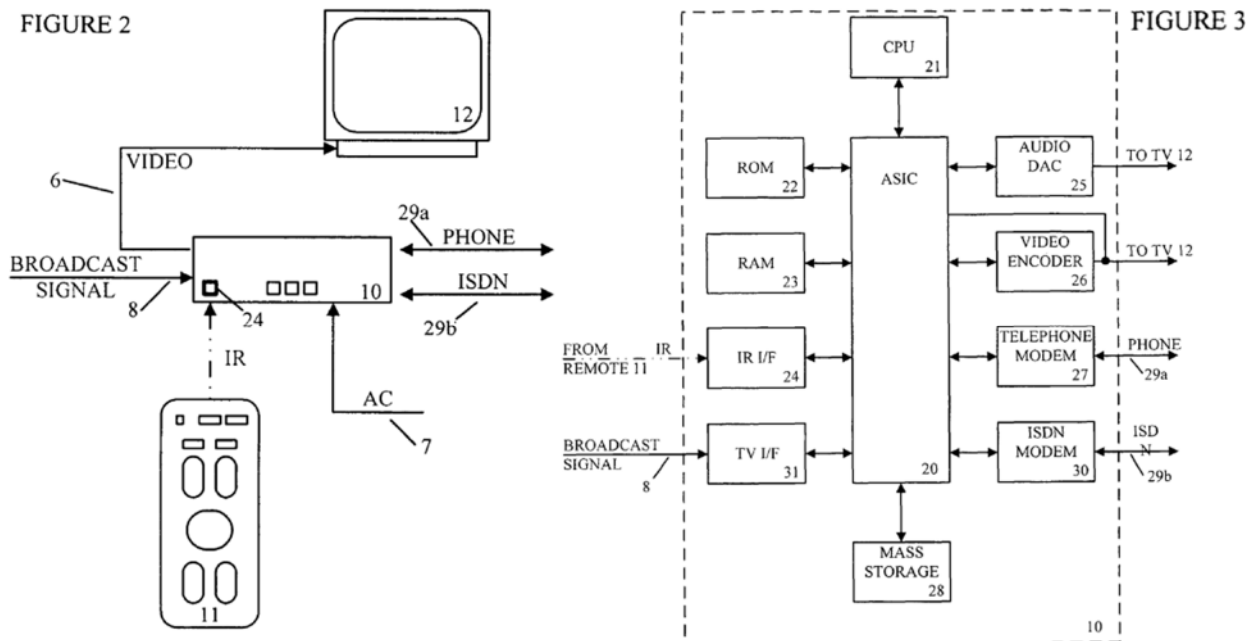


FIGURE 10

13. [11] input the second display screen to said TV set.

[13k] a video output interface, coupled to or integrated within the combiner unit and configured to be coupled to a video input of said TV set and to display said first display screen or said second video display screen.

204. Zigmond discloses these limitations. Zigmond discloses that the ASIC 20 is connected to a video output interface in the form of video encoder 26 as shown in Fig. 3 below that in turn is coupled to a video input of a TV 12 as shown in Fig. 2 below. This arrangement allows the first display screen of Fig. 7 and the display that is generated upon completion of the downloading of the Webpage (shown in progress in Fig. 10) to wholly or partially replace the content of Fig. 10 as discussed in EX1008 at 11:12-19.



C. Claims 3 and 15

1. [3pre] The method according to claim 1, further including:
[15pre] The TV-Internet Integration Box according to claim

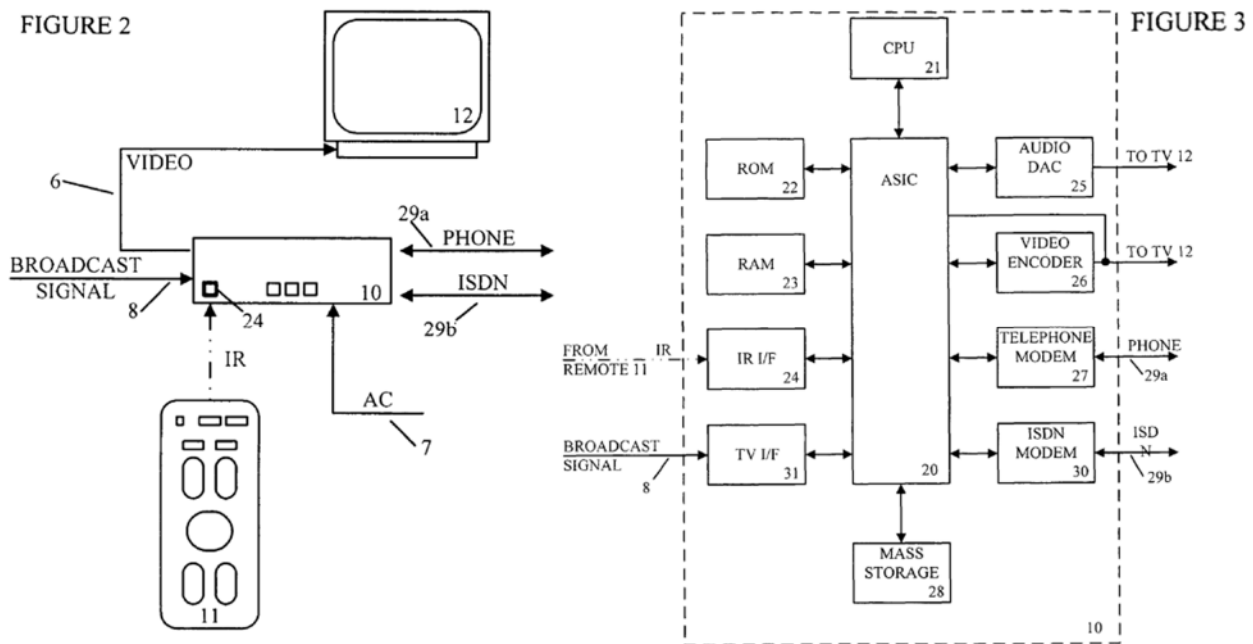
13, further comprising:

205. Zigmond renders obvious claims 1 and 13 as discussed above.

2. **[3a] receiving a command from the user at said user premises; and**

[15a] a command input for receiving a command from the user at said user premises; and

206. Zigmond discloses these limitations. Zigmond discloses that the set top box 10 includes a command interface in the form of an IR IF (infrared interface) 24 for receiving infrared commands from a remote control 11 operated by a user at the user's premises. EX1008, 6:12-14, 6:38-39; Figs. 2-3. The receipt of a command is discussed in connection with limitations [3b]/[15b].



3. **[3b] responsive to said command, resizing said first portion and/or said second portion of said first display screen.**

[15b] a frame adjuster for resizing said first portion and/or

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**said second portion of said first display screen in response
to said command.**

207. Zigmond discloses these limitations. Zigmond discloses that a user can use the remote control 11 to send a “Go” command as discussed above for limitations [1k]/[13j]. As further discussed above in connection with those limitations, this command results in the display translucent panel 900 that includes a “Go to Web Page” button 920 that, when selected at step 830, causes at step 840 the retrieval via the Internet of the Web page content associated with the icon 700 for display to the user. EX1008, 10:60-11:19; Figs. 8-10. Zigmond further discloses that in some embodiments, when the retrieval of the Web page is complete, the set top box 10 is configured to replace the display of the television program 500 with the display of the Web page and display the TV program in a window within that Web page. EX1008, 11:12-19. In that embodiment, the TV program corresponding to the first portion of the display screen must be resized to fit within that window, which Zigmond discloses is performed by dedicated video processing circuitry in the ASIC 20 constituting the claimed frame adjuster. EX1008, 6:30-37. The user’s selection of the “Go to Web Page” button 920 is thus a command to which the set top box 10 responds by resizing the TV program 500 corresponding to the claimed first portion of the first display screen.

D. Claim 6

- 1. 6. The method according to claim 1, wherein the overlay enabling digital data is supplementary or complementary to the video signals.**

208. Zigmond renders obvious claim 1 as discussed above, and also discloses the limitations of claim 6. Zigmond discloses that the overlay enabling digital data that can include, e.g., a link to supplemental or complementary information associated with characters and guest starts on a “Seinfeld TV program” shown on the TV. EX1008, 8:14-27.

XIII. GROUND 7: ZIGMOND AND REDLING RENDER OBVIOUS CLAIMS 1, 5, 7, 10-13, 17-18, 21

A. Summary of Redling (EX1013)

209. Redling is a U.S. Patent issued on 9/11/2007 based on a U.S. patent application filed on 05/31/2000. EX1013, 1. I was informed that Redling is therefore prior art to the '399 patent under 35 U.S.C. §102(e).

210. Redling is directed to an interactive television advertising method in which a semi-transparent icon 50 is overlaid on the display of a television program 12 on a TV 10 as shown in Fig. 1 below to alert the user to the availability of advertising content. EX1013, 2:36-56. A user may select the icon 50 to retrieve the advertising content associated with the icon 50 from an Internet server and display it on the user's TV. *Id.*

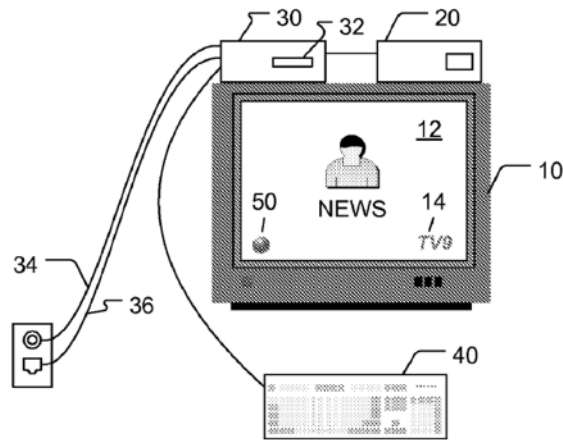


Figure 1

B. Claims 1 and 13

211. The analysis for all limitations of claims 1 and 13 other than limitations [1g]/[13f] addressed below is the same as for Ground 6 above.

1. [1g], [13f] an image indicative of the content associated with said overlay-enabling digital data, and

212. As discussed above, Zigmond discloses embodiments with either a single icon used to indicate the presence of and select all additional content, or two icons indicating that the subject matter of the additional content is either advertising-related or program-related.

213. Zigmond together with Redling renders obvious the inclusion of icon images downloaded to the user's set top box 10 along with the Web links of limitations [1f]/[13e] and the start and stop times/overlay activation criterion of limitations [1h]/[13b] (collectively, "overlay-enabling digital data"). Redling discloses the use of a semi-transparent icon used in connection with advertising

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent content that “periodically changes to resemble different product trademarks or company names” and that is used as a link to an advertisement or other product information for the trademark or name. EX1013, 2:46-55. A POSITA would readily envision icons resembling company logos such as Apple’s and McDonald’s logos. Redling discloses that these icons can be downloaded from the Internet on a periodic basis. EX2013, 4:44-67.

214. A POSITA would have found it obvious to modify Zigmond to include Redling’s different icons that are periodically changed to resemble different products, trademarks or company names and to transmit each of those icons via the Internet to Zigmond’s set top box 10 along with its corresponding batch mode logical address link and accompanying start and stop times so that a different icon corresponding to the content associated with a batch mode logical address link is displayed on the TV screen during the interval defined by the start and stop times. A POSITA would have been motivated to do so in order enhance the user’s viewing experience by providing the user with a more specific indication of the nature of the content that would be displayed if the user selects the icon as taught by both Zigmond and Redling. A POSITA would have had a reasonable expectation of success when making these modifications because downloading images together with content such as links involves only routine skill and was well-known in the art.

A. Claim 5

- 1. 5. The method according to claim 1, wherein the overlay enabling digital data comprises data representative of one or more second images, and for each of said one or more second images said overlay-enabling data comprises respective web site addresses where IP content associated with the respective second image is stored, and wherein said generating the overlay further includes within said first display said one or more second images.**

215. Zigmond and Redling render obvious claim 1 as discussed above, and also disclose or render obvious the limitations of claim 5. As discussed above for limitation [1g] in this Ground 7, Zigmond and Redling render obvious the display of different images/icons to indicate the availability of IP content such as an advertisement associated with those icons, and downloading those icons along with the batch mode logical address links and start/stop times (collectively, the claimed overlay-enabling digital data). It would further have been obvious to a POSITA to concurrently display two or more icons overlaid over the TV program to indicate the availability of two or more IP contents as disclosed in, e.g., Marler (EX1007, ¶[0031] and Fig. 3); Rasmussen (EX1015, ¶¶[0024]-[0026]; Fig. 2); and Escobar (EX1016, 14:17-22; Fig. 7C). A POSITA would have been motivated to do so in order to enable the display of icons indicating the availability of multiple contents, such as an advertisement and program-related content, to improve the user's experience by offering a choice among more than one IP content at a particular time. A POSITA would have had a reasonable expectation of success because

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modifying the Zigmond-Redling system to display two different icons for two
different contents concurrently involved applying known techniques to a known
system to achieve known results and involved only minimal skill.

B. Claim 10

1. [10 pre] The method according to claim 5, further including:

216. Zigmond and Redling render obvious claims 1 and 5 as discussed above, and also disclose or render obvious the limitations of claim 10.

2. [10a] periodically accessing a web server for downloading said overlay-enabling digital data;

217. Zigmond discloses that the batch mode logical address links are delivered to the client system in advance of the television broadcast to which they relate. In view of this disclosure, a POSITA would have found it obvious to send these batch mode links periodically because a POSITA would have understood that TV program such as game shows and sitcoms is broadcast periodically (e.g., daily or weekly). To the extent not obvious over Zigmond alone, a POSITA would have looked at other references for this implementation detail. Redling expressly discloses that the icons may be automatically downloaded to the user's set top box 30 via the Internet "on a regular basis" such as "during the early morning of each day or once per week." EX1013, 4:44-59. It would have been obvious to a POSITA to configure Zigmond's system to periodically download the overlay-enabling digital data on a periodic basis as taught by Redling given the disclosures

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent
in Zigmond concerning delivery of that data before broadcast of periodic
programming and Redling discussed above.

**3. [10b] extracting from the overlay-enabling digital data said
one or more second images and the respective web sites
corresponding to each of said second images;**

218. The combination of Zigmond and Redling render this limitation obvious. Zigmond and Redling render obvious the display of different images/icons, including the concurrent display of multiple different icons, to indicate the availability of IP content as discussed above for limitation [1g] and claim 5 in this Ground 7, and further enable using web links associated with those icons to retrieve content from a Web server for display to the user as discussed for Ground 6, limitations [1k]/[1l]. Zigmond and Redling further render obvious the downloading of both the images/icons and the web links (“batch mode logical address links”) which together with time criteria constitute “overlay-enabling digital data” as discussed for limitation [1g] in this Ground 7. A POSITA would have understood that it would have been inherent, or at least found it obvious, to extract the images/icons and websites from this data to accomplish the functionality discussed above.

**4. [10c] retrieving and storing digital content from said web
sites; and**

219. The combination of Zigmond and Redling render this limitation obvious. As discussed above for limitation [1k] in Ground 1, clicking on an icon

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent
such as icon 700 results in the retrieval of digital content from a website associated
with the icon 700, and it would have been obvious to configure the Zigmond-
Redling system to display multiple icons concurrently as discussed for claim 5.

5. **[10d] if the overlay activation criterion is met and a user command that is associated with an image from amongst said one or more second images is identified, displaying the respective image from amongst the second images, accessing the respective web site associated with the displayed image and extracting and buffering content from the website.**

220. The combination of Zigmond and Redling renders this limitation obvious. Zigmond discloses displaying an icon during an interval defined by a corresponding start and stop time as discussed for limitation [1h] in Ground 6. Zigmond further discloses a user command in the form of pressing a 'Go' button on the remote control to cause the retrieval of the corresponding information from the website as discussed for limitations [1k]/[1l] for Ground 6.

221. To the extent this claim is construed as requiring the concurrent display of different icons, a POSITA would have found it obvious to configure Zigmond's system to associate different icons displayed on the screen over the TV program with different commands on the user's remote. As one example, a POSITA would have found it obvious to include color coded frames around the icons and provide the remote with corresponding color-coded buttons corresponding to those colored frames as disclosed in, *e.g.*, EX1015 (Rasmussen,

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent which is discussed in Grounds 2 and 8), ¶[0030]; EX1017, 23:15-23 (discussing colored icons and corresponding colored remote control buttons).

C. Claim 17

1. **[17 pre] The TV-Internet Integration Box according to claim 13, wherein the overlay-enabling digital data comprises data representative of one or more second images, and for each of said one or more second images said overlay-enabling data comprises respective web site addresses where IP content associated with the respective second image is stored,**

222. See claim 5.

2. **[17a] and wherein the combiner unit is configured to:**

223. See claim 10, limitations [10a]-[10d]. A POSITA would have found it obvious to configure Zigmond's CPU 21 and ASIC 20 (the claimed combiner unit) to perform the functions discussed therein,

3. **[17b] periodically access a web server for downloading said overlay-enabling digital data;**

224. See claim 10, limitation [10a].

4. **[17c] extract from the overlay-enabling digital data said one or more second images and the respective web sites corresponding to each of said second images;**

225. See claim 10, limitation [10b].

5. **[17d] retrieve and store digital content from said web sites; and**

226. See claim 10, limitation [10c].

6. **[17e] if the overlay activation criterion is met, and a user command that is associated with an image from amongst said one or more second images is identified, display the respective image from amongst the second images, access the respective web site associated with the displayed image and extract and buffer content from the website.**

227. See claim 10, limitation [10d].

D. Claims 7 and 18

1. **7. The method according to claim 1, wherein the image includes an icon that indicates to the user that digital data from Internet content is currently being displayed and which provides an indication of a nature of said Internet content.**

18. The TV-Internet Integration Box according to claim 13, wherein the image includes an icon that indicates to the user that digital data from Internet content is currently being displayed and which provides an indication of a nature of said Internet content.

228. Zigmond and Redling render obvious claims 1 and 13 as discussed above. As best understood, Zigmond and Redling also render obvious the limitations of claims 7 and 18. As discussed above for limitation [1g], Zigmond discloses an image in the form of icon 700, and together with Redling discloses an embodiment in which different icons are used, where one icon indicates program-related content and the other indicates advertising-related content, which are indications of the nature of the Internet content. EX1008, 12:41-45; *see also* limitation [1g] above. As “icon that indicates to the user that digital data from Internet content is currently being displayed” is best understood, Zigmond also

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent renders obvious this limitation because Zigmond renders obvious downloading the icon from the Internet as discussed for limitation [1g] above, and in that case the icon itself is “digital data from Internet content that is currently being displayed” and also indicates the same to a user.

E. Claims 12 and 21

1. 12. The method according to claim 7, including selecting specific Internet content by pressing a color-coded button on a remote control in accordance with a color of said icon.

21. The TV-Internet Integration Box according to claim 18, wherein the icon is colored so as to allow user selection of a specific Internet content by pressing a color-coded button on a remote control in accordance with a color of said icon.

229. Zigmond and Redling render obvious claims 1, 7, 13 and 18 as discussed above. Zigmond and Redling also render obvious the limitations of claims 12 and 21. As discussed above for limitation [1g] and claim 5, Zigmond and Redling render obvious the concurrent display of multiple different icons to indicate different available Internet content such as advertisements. As further discussed above for limitation [10d], a POSITA would have found it obvious to include color coded frames around those icons and provide the remote with corresponding color-coded buttons corresponding to those colored frames as disclosed in, *e.g.*, EX1015, ¶[0030]; EX1017, 23:15-23 (discussing colored icons and corresponding colored remote control buttons).

F. Claim 11

- 1. 11. The method according to claim 5, further comprising displaying a respective IP content when a corresponding one of said one or more second images is selected.**

230. Zigmond and Redling render obvious claim 5, and Zigmond and Redling each disclose the limitations of claim 11. Zigmond discloses displaying IP content corresponding to a “batch mode logical address link” when a user selects a “Go” button to activate an icon 700 to cause the display of translucent panel 900 then presses a “Go to Web page” button as discussed above for Ground 6, limitation [1k]. To the extent that the concurrent display of multiple icons is required by this claim, the same would be obvious to a POSITA as discussed above for limitation [10d] and claim 5.

231. To the extent that claim 11 is construed as requiring the display IP content from a corresponding web page upon selection of a second image/icon without further user action, Zigmond renders this obvious. The intervening translucent panel 900 is a design choice that a POSITA would have found obvious to eliminate and instead proceed directly to downloading the IP content from the Web page and displaying Fig. 10. Alternatively, Redling discloses displaying content in response to a user selection of icon without further user action. EX1013, 4:20-5:9; Fig. 3 (steps 110, 130, 140, 150, 160). It would have been obvious to a POSITA to modify Zigmond to display the IP content in response to

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 selection of the icon/image without further user action as taught by Redling to
 decrease the number of user actions required to retrieve content. A POSITA would
 have had a reasonable expectation of success because this change involved only
 routine skill and was trivial in that it involves simply eliminating an intermediate
 step.

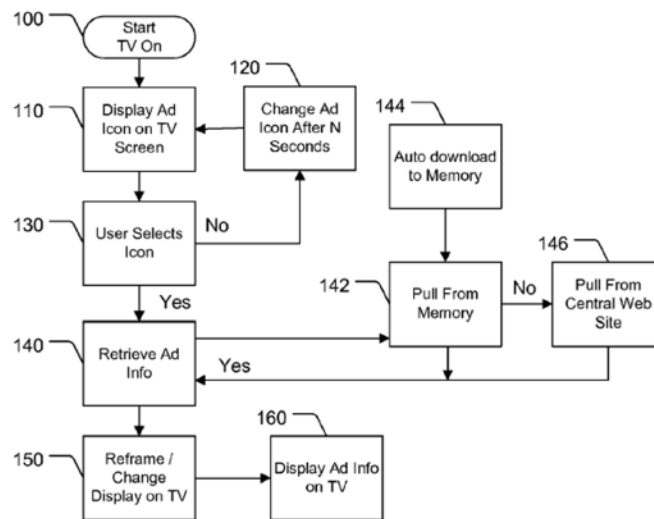


Figure 3

XIV. GROUND 8: ZIGMOND, ALONE OR IN COMBINATION WITH REDLING, AND FURTHER IN VIEW OF RASMUSSEN RENDER OBVIOUS CLAIMS 2 AND 14

232. As discussed below, Rasmussen discloses the limitations of claims 2 and 14. It would have been obvious to combine Rasmussen with Zigmond alone, which renders obvious claims 1 and 13 as discussed in Ground 6, or with the combination of Zigmond and Redling which renders claims 1 and 13 obvious as discussed above in Ground 7, for the reasons discussed below.

B. Claims 2 and 14

- 1. [2] The method according to claim 1, wherein said overlay enabling digital data is received at the user premises according to a pre-stored user profile**

[14] The TV-Internet Integration Box according to claim 13, wherein said overlay-enabling digital data is received at the user premises according to a pre-stored user-profile.

233. Zigmond, alone or in combination with Redling, discloses or renders obvious claims 1 and 13 as discussed above in Grounds 6-7. The combination of Zigmond and Rasmussen renders obvious the limitations of claims 2 and 14.

234. Rasmussen's hot spots are similar to Zigmond's icons in that they both alert the user that additional content is available and can be activated by a user to obtain the display of that additional content. Rasmussen discloses that hot spots may be tailored to a user's buying habits, interests, and demographic segments (each of which is a criterion), and a distributor of the content may only make the hot spot available to users who satisfy the criterion. EX1015, ¶[0032]. A POSITA would have understood, or at least found obvious, that there are several ways in which this could be accomplished.

235. For example, a POSITA would have understood that a user could use a menu system to specify and locally store information indicating categories of subject matter of hot spots in which the user is interested as taught by Rasmussen in ¶[0032]. Such information constitutes a user profile. In view of this disclosure,

a POSITA would have found it obvious to identify Zigmond's batch mode logical address links in, for example, one or more XML documents with a subject matter indicator (e.g., sports, cars, shopping, comedies, etc., which could be encoded directly into the address as, e.g. a parameter in a URL) and a corresponding address (e.g., a URL) for each batch mode logical address link and to send the XML document(s) to a user's set top box in advance of related TV programming, and to configure Zigmond's set top box 10 to examine each subject matter indicator, compare it to the categories in the user profile stored in the set top box 10, and download the batch mode logical address links from the address in the XML file for which the subject matter indicator matches the user profile.

236. In a second alternative, it would have been obvious to a POSITA to modify Zigmond's server 5 (shown in Fig. 1) to transmit via the internet (e.g., via multicast) batch mode logical address links along with a subject matter indicator for each link (e.g., by including a subject matter parameter in each batch mode logical address link), and to modify Zigmond's set top boxes to discard any batch mode logical address link that do not match the pre-stored user profile.

237. In another alternative for the distributor to make hot spots available to only those users who satisfy such a criterion, it would have been obvious to a POSITA to combine Zigmond and Rasmussen by modifying Zigmond's server 5 (shown in Fig. 1) to pre-store profile information for users and to use that profile

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent information to tailor the transmission of batch mode logical address links so that those links are received by users with profiles corresponding to the subject matter associated with those links as taught by Rasmussen.

238. A POSITA would have been motivated to implement one of the alternatives discussed above to improve user experience and target ads by avoiding hot spots/icons for content in which a user is not interested. A POSITA would have had a reasonable expectation of success in doing so because such modifications require only routine skill and were well known in the art at the time of the alleged invention of the '399 patent.

XV. GROUND 9: ZIGMOND ALONE OR IN COMBINATION WITH REDLING AND FURTHER IN VIEW OF GRAY RENDER OBVIOUS CLAIMS 8 AND 19

A. Summary of Gray (EX1018)

239. See Section X.A (Ground 4, Section A).

B. Claims 8 and 19

- 1. [8/19]. The [method according to claim 1/TV-Internet Integration Box according to claim 13], wherein the image contains textual information advising the user to press a particular button on a remote control unit.**

240. Zigmond alone or in combination with Redling, discloses or renders obvious claims 1 and 13 as discussed above in Grounds 6-7. Gray discloses the limitations of claims 8 and 19. As discussed above, Gray discloses the display of an icon 105 that indicates the subscriber may press 1 to accept the alternate content

or 2 to decline the alternate content. It would have been obvious to include Zigmond's stylized "i" image together with an image of these instructions as an icon 105 as taught by Gray, and to configure Zigmond system to allow a user to select the icon 105 using a number 1 button on the remote and to decline the alternate content by pressing a number 2 on the remote as taught by Gray. EX1018, ¶[0030]. and to allow a user to immediate cause removal of the icon by pressing a number 2 button on the remote as taught by Gray. A POSITA would have been motivated to modify Zigmond in this manner to avoid the need for a special "Go" button on Zigmond's remote, thereby reducing cost and complexity on the remote, and also to allow the user to reject the content indicated by the image/icon and retrieve another icon/image for other alternate content as discussed in Gray at ¶[0134] and Fig. 13 (discussing a return process 1330 that in one embodiment presents the subscriber with other alternative content based on other hot key signals).

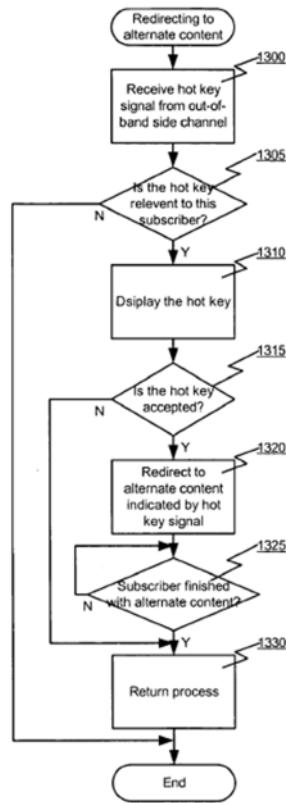


Figure 13

XVI. GROUND 10: ZIGMOND ALONE OR IN COMBINATION WITH REDLING AND FURTHER IN VIEW OF SCOTT RENDER OBVIOUS CLAIMS 4 AND 16

A. Summary of Scott (EX1019)

241. See Section XI.A (Ground 5, Section A) above.

B. Claims 4 and 16

1. [4 pre] The method according to claim 1, wherein the content stored at said website enables streaming of digital data over the Internet; and

[16 pre] The TV-Internet Integration Box according to claim 13, further including:

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[16a] a receiver for receiving a digital data stream, wherein the stream of the digital data is enabled by the content stored at said website; and

242. Zigmond alone or in combination with Redling, discloses or renders obvious claims 1 and 13 as discussed above in Grounds 6-7, and Zigmond and Scott render obvious the preambles and limitations of these claims. Zigmond discloses that logical address links such as URLs may identify content available over the Internet to be displayed to a user via selection of an icon 700 as discussed above. EX1008, 5:1-25; 7:14-27; *see also* limitations [1e]-[1g]/[1j]-[1l] in Ground 6. It was well-known in the art that internet content can include video files as taught by Scott (EX1019, 3:24-34); *see also, e.g.,* EX1016, 7:7-11. It would have been obvious to a POSITA to configure Zigmond's logical address links, including batch mode logical address links, to include an address for an audiovisual file such as an advertisement or other video data. A POSITA would have been motivated to do so in order to provide the ability to provide advertising or other audio/video information to the user. A POSITA would have had a reasonable expectation of success because doing so was a design choice that involved only routine skill. See discussion of limitations [4a]/[16b] below for the remainder of these limitations.

2. **[4a] said method further including: pre-fetching and buffering said digital data stream from said website, thereby allowing said digital data stream to be displayed substantially without delay upon redirection by the user.**

[16b] a processing unit for pre-fetching and buffering said

digital data stream from said website, thereby allowing said digital data stream to be displayed substantially without delay upon redirection by the user.

243. Zigmond discloses that content corresponding to a selected icon is retrieved after the link is selected by pressing a “Go” button on a user’s remote and after a user presses a “Go to Web Page” button that is displayed on the screen is activated by the user as discussed for limitation [1k] of Ground 6. As discussed above for claim 11 in Ground 7, it would have been obvious to a POSITA to eliminate the display of the translucent panel 900 with the “Go to Web Page” button and instead immediately begin download of the corresponding content in response to user selection of the icon.

244. Alternatively, it would also have been obvious to a POSITA to configure Zigmond’s system to start downloading video content for Zigmond’s icons that link to video content immediately once those icons are displayed (whether or not the translucent panel 900 is displayed) as taught by Scott to allow Zigmond’s system to begin display of the video content immediately upon user election of the icon as taught by Scott for the same reasons discussed in connection with limitations [4a]/[16b] in Ground 5. A POSITA would have been motivated to do so and would have had a reasonable expectation of success for the same reasons discussed in connection with limitations [4a]/[16b] in Ground 5.

XVII. SECONDARY CONSIDERATIONS

245. I am not aware of any relevant information related to secondary considerations of obviousness. For example, I am not aware of any attempt to commercialize the claimed technology in a product or through licensing. To the extent Patent Owner comes forward with any such information, I reserve the right to consider it and address it.

XVIII. AVAILABILITY FOR CROSS-EXAMINATION

246. In signing this declaration, I recognize that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during a time as mutually agreed between the parties.

XIX. RIGHT TO SUPPLEMENT

247. I reserve the right to supplement my opinions in the future to respond to any arguments that the Patent Owner raises. This declaration represents only those opinions that I have formed to date. I reserve the right to revise, supplement, and/or amend my opinions stated herein based on new information that becomes available to me and on my continuing analysis of the materials already provided.

XX. CONCLUSION

248. I may utilize the documents cited and/or listed herein, or portions of those documents, as exhibits at any hearing or trial in this proceeding. I may further prepare and use exhibits that summarize portions of my testimony or key terms or concepts presented therein, or other demonstrative exhibits, at any hearing or trial in this proceeding.

249. I reserve the right to supplement my testimony and this report in response to any judicial determinations, in response to the arguments expressed by the Patent Owner or the opinions of the Patent Owner's experts in this proceeding, and/or in light of additional evidence or testimony brought forth at trial or otherwise brought to my attention after the date of my signature on the cover page.

APPENDIX A

U.S. Patent No. RE50,399
Declaration of Dr. V. Michael Bove, Jr. for the '399 patent

V. Michael Bove, Jr.
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V. Michael Bove, Jr. holds an S.B.E.E., an S.M. in Visual Studies, and a Ph.D. in Media Technology, all from the Massachusetts Institute of Technology. He is the author or co-author of over 100 journal or conference papers on digital television systems, video processing hardware/software design, user experience, scene modeling, image processing and machine vision, visual display technologies, and optics. He holds over 35 patents on inventions relating to video recording, image processing, hardcopy, interactive television, medical imaging, sports equipment, IoT, social media, and holographic displays. He is co-author with the late Stephen A. Benton of the book Holographic Imaging (Wiley, 2008). He is on the Board of Editors of the SMPTE Motion Imaging Journal, and has served as SMPTE's Education Director. He served as general chair of the 2006 IEEE Consumer Communications and Networking Conference (CCNC'06) and co-chair of the 2012 International Symposium on Display Holography. Bove is a fellow of the SPIE and of the Institute for Innovation, Creativity, and Capital. He is technical advisor of Modern Mirror, Inc., was a founder of and technical advisor to the interactive television E-commerce company WatchPoint Media, Inc. and served as technical advisor to One Laptop Per Child (creators of the XO laptop for children in developing countries).

Education

M.I.T., S.B. Electrical Engineering

M.I.T, S.M. Visual Studies

M.I.T., Ph.D. Media Technology (Dissertation title, "Synthetic Movies Derived from Multi-Dimensional Image Sensors")

Employment

2015-present Owner and Technology Consultant, vmbove.com

2014-present Technical Advisor, The Modern Mirror, Inc., New York NY and London UK

1997-2019 Principal Research Scientist, and Head of Object-Based Media Group, MIT Media Lab, Cambridge MA

2014-2018 Visiting Professor, Toyohashi University of Technology, Toyohashi Japan

2006-2013 Technical Advisor, One Laptop Per Child, Cambridge MA

1999-2003 Co-Founder and Technical Advisor, WatchPoint Media, Inc., Boston MA and London UK

Committees and Service

Conference Co-Chair, SPIE Conference on Integration Issues in Large Commercial Media Delivery Systems, 1995, 1996

Board of Editors, SMPTE Journal, 1995-present

Conference Co-Chair, SPIE Conference on Reconfigurable Technology for Rapid Product Development and Computing, 1996

General Chair, ACM Multimedia Conference, 1996

Organizer, Objects of Communication Symposium, 1996

Conference Co-Chair, SPIE Conference on Multimedia Networks and Applications, 1997-2000

Conference Co-Chair, SPIE Conference on Media Processors, 1999-2005

Declaration of Dr. V. Michael Bove, Jr. for the '399 patent

Associate Editor, Optical Engineering, 2004-2012
 General Chair, IEEE Consumer Communications and Networking Conference 2006
 Emmy Advanced Media Committee, National Academy of Television Arts and Sciences, 2006
 Board of Governors, National Academy of Media Arts and Sciences, 2007
 Conference co-chair, SPIE Practical Holography conference, 2011-2019
 Conference co-chair, International Symposium on Display Holography, 2012
 Co-Chair, Optical Society of America 3D Display Technology, Perception, and Application
 Incubator Meeting, 2012
 Education Director, SMPTE, 2013-2017
 Co-Chair, OSA Incubator on Solving the Bandwidth Challenge of Large 3D Displays, 2019-
 2020
 Chair, Journal Awards Committee, SMPTE, 2019-2021

Awards Received

IEEE ASIC '93 (Conference on Application Specific Integrated Circuits) Speaker's Award, 1993
 IEEE Computer Society Certificate of Appreciation, 1994
 Alex W. Dreyfoos, Jr. Career Development Professorship, 1995-1997
 ACM Recognition of Service Award, 1997
 Distinguished Alumnus Award, John Piersol McCaskey High School, Lancaster PA, 1997
 Fellow, IC2 Institute, University of Texas at Austin, 2001
 Fellow, SPIE, 2002
 INDEX: Design to Improve Life Award (as member of team that designed OLPC XO laptop),
 2007
 Effie Award (bronze) for work on Sprite Slam Dunk Competition, 2013
 Sports Social TV Award, 2013
 Yuri N. Denisyuk Medal, D.S. Rozhdestvensky Optical Society (Russia), 2015
 MIT Excellence in Mentoring Award, 2016
 Mellon Faculty Arts Grant, 2018-2019

US Patents

1. U.S. Patent 4,673,981, "Unrecordable Video Signals," (co-inventors Andrew Lippman and Jerome Wiesner)
2. U.S. Patent 5,185,852, "Antialiasing Apparatus and Method for Computer Printers," (co-inventor Christopher Mayer)
3. U.S. Patent 5,946,425, "Method and Apparatus for Automatic Alignment of Volumetric Images Containing Common Subject Matter," (co-inventor Tamas Sandor)
4. U.S. Patent 6,022,648, "Bistable, Thermochromic Recording Materials for Rendering Color and Gray Scale," (co-inventor Joseph Jacobson).
5. U.S. Patent 6,642,940, "Management of Properties for Hyperlinked Video," (co-inventors Edmond Chalom, Jonathan Dakss, and Nuno Vasconcelos).
6. U.S. Patent 6,816,628, "Methods for Outlining and Filling Regions in Multi-Dimensional Arrays," (co-inventors Karen Sarachik, Jonathan Dakss, and Joshua Wachman).
7. U.S. Patent 6,879,720, "Methods for Outlining and Filling Regions in Multi-Dimensional Arrays," (co-inventors Karen Sarachik, Jonathan Dakss, and Joshua Wachman).
8. U.S. Patent 6,944,228, "Method and Apparatus for Encoding Video Hyperlinks," (co-inventors Jonathan Dakss and Daniel Katcher).

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Declaration of Dr. V. Michael Bove, Jr. for the '399 patent

9. U.S. Patent 6,978,053, "Single-Pass Multilevel Methods for Applying Morphological Operators in Multiple Dimensions," (2 co-inventors).
10. U.S. Patent 7,117,517, "Method and Apparatus for Generating Data Structures for a Hyperlinked Television Broadcast," (4 co-inventors).
11. U.S. Patent 7,120,924, "Method and Apparatus for Receiving a Hyperlinked Television Broadcast," (5 co-inventors).
12. U.S. Patent 7,249,367, "Method and Apparatus for Switching Between Multiple Programs by Interacting with a Hyperlinked Television Broadcast," (3 co-inventors).
13. U.S. Patent 7,367,042, "Method and Apparatus for Hyperlinking in a Television Broadcast," (6 co-inventors).
14. U.S. Patent 7,636,365, "Smart Digital Modules and Smart Digital Wall Surfaces Combining the Same," (3 co-inventors).
15. U.S. Patent 8,010,986, "Synchronization and Automation in an ITV Environment," (4 co-inventors).
16. U.S. Patent 8,149,265, "Holographic Video Display System," (3 co-inventors).
17. U.S. Patent 8,356,329, "Method and Apparatus for Interaction with Hyperlinks in a Television Broadcast," (8 co-inventors).
18. U.S. Patent 9,002,752, "Tangible Social Network," (co-inventor Jeevan Kalanithi).
19. U.S. Patent 9,223,287, "Force Sensing Net," (3 co-inventors).
20. U.S. Patent 9,483,021, "Methods and Apparatus for Holographic Animation," (2 co-inventors).
21. U.S. Patent 9,597,590, "Methods and Apparatus for Accessing Peripheral Content," (2 co-inventors).
22. U.S. Patent 9,764,212, "Force Sensing Net," (3 co-inventors).
23. U.S. Patent 9,983,547, "Holographic Video Display System," (2 co-inventors).
24. U.S. Patent 10,108,146, "Anisotropic Leaky-Mode Modulator for Holographic Video Displays," (2 co-inventors).
25. U.S. Patent 10,452,026, "Transparent Flat-Panel Holographic Display," (2 co-inventors).
26. U.S. Patent 10,462,196, "Tangible Social Network," (co-inventor Jeevan Kalanithi).
27. U.S. Patent 10,855,974, "Methods and Apparatus for Radial Automultiscopic Display," (3 co-inventors).
28. U.S. Patent 11,226,591, "Transparent Flat-Panel Holographic Display," (2 co-inventors).
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8. V. M. Bove, Jr., et al., Comment on FCC 96-207, Fifth Further Notice of Proposed Rule Making in the Matter of Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service, 1996.
9. V. M. Bove, Jr., N. Miyaho, and D. A. Harris, introductory chapter, Multimedia Communication Networks: Technologies and Services, M. Tatipamula and B. Khasnabish, eds., Artech House, Norwood MA, 1997.
10. V. M. Bove, Jr., "Online to the Future" (opinion column), The Sunday Times (London), October 4, 1998.
11. V. M. Bove, Jr., "Communication," The New Book of Knowledge, Grolier, Bethel CT, 2000, pp. 462-471.
12. V. M. Bove, Jr., "Astronauts and Mosquitos" (opinion column), Communications of the ACM, March 2001, p. 48.
13. V. M. Bove, Jr., "Connected by Media" (opinion column), IEEE Multimedia, Oct. 2001.
14. Nora A. L. Jackson and V. M. Bove, Jr., "The Magic of Design: The Future-Making Power of Objects," exhibition catalogue for Designs for Different Futures, Philadelphia Museum of Art, 2019.
15. V. M. Bove, Jr., "Holographic Television," (book chapter), Optical Holography—Materials, Theory and Applications, P.-A. Blanche, ed., Elsevier, 2019.

Invited Lectures and Seminars

1. "Model Building Cameras," National Computer Graphics Association, Philadelphia PA, April 18, 1989.
2. "Extensible/Intercompatible Digital Video Representations," EIA Digital Advanced Television Workshop, Washington DC, November 7, 1989.
3. "Television of Tomorrow," ILP Symposium on Telecommunications Technology and Policy for the 21st Century, M.I.T., April 24, 1990.
4. "Open Architecture Television," Symposium on the Media Laboratory 5th Anniversary, M.I.T., October 2, 1990.
5. "Open Architecture Television," EIA/IEEE Second International Workshop on Digital Video Communications, Cambridge MA, November 26, 1990.
6. "Scalable Video Representations for Visual Information Services," National Engineering Consortium Information Networking ComForum, Orlando FL, December 14, 1990.
7. "Scalable (Extensible, Interoperable) Video Coding," National Research Council Visual Factors in Electronic Image Communications Conference, Woods Hole MA, July 22, 1991.
8. "Scalability and Open Architecture," Digital Television Symposium, M.I.T., May 21, 1992.
9. "A Future Model for HDTV," Production '93, Montreal, May 26, 1993.
10. "Hardware and Software Implications of Representing Scenes as Data," (banquet address) IEEE Conference on Application Specific Integrated Circuits '93, Rochester NY, September 29, 1993.

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11. "Some Thoughts on Image Representations, Scene Representations, and Hardware/Software Architectures," IEEE International Conference on Computer Design '93, Cambridge MA, October 4, 1993.
12. "Image and Scene Representations and System Architectures," EIA Digital Advanced Television Workshop, Cambridge MA, October 14, 1993.
13. "Machines Behind the Scenes: Computation and Structured Video," Perspectives Lecture Series, M.I.T., April 26, 1994.
14. "Object-Oriented Television," Joint New England SIGGRAPH/New England SMPTE Meeting, Cambridge MA, October 27, 1994.
15. "Object-Oriented Television," Symposium on The Digital Revolution and its Effect on Japanese Industry (sponsored by Kodansha Publishing), Tokyo, March 15, 1995.
16. "Multimedia Computing: Parallelism without Pain," IEEE Workshop on Multimedia Processors (part of ICMCS '95), Washington DC, May 19, 1995.
17. "Stream-Based Computing and Future Television," EIA/IEEE-CES Digital Television Workshop, Philadelphia, October 5, 1995.
18. "Eyes, Cameras, Objects," Symposium on the Media Laboratory 10th Anniversary, M.I.T., October 10, 1995.
19. "Future Television: Why We Need All Those MIPS and Where We're Going to Get Them," Princeton University Dept. of Electrical Engineering, October 24, 1995.
20. "The Likely Convergence of Multimedia, Video, Communications, and Computing" (panel discussion), Photonics East '95, Philadelphia, October 24, 1995.
21. "Trends to Watch For in Consumer (and Professional) Multimedia," CommExpo, Houston TX, January 11, 1996.
22. "Multimedia Trends," Texas Instruments National Sales Meeting, Dallas TX, April 23, 1996.
23. "Object-Based Multimedia," Objects of Communication Symposium, M.I.T., May 22, 1996.
24. "Object-Based Media and Why It's a Good Problem," Bell Laboratories, Murray Hill NJ, August 28, 1996.
25. "The Future of Electronic Visual Communications," Medientage Muenchen, Munich, October 17, 1996.
26. "Hardware and Software Impacts of New Media Representations," ACM Workshop on Media Processors (part of ACM MM'96), Boston, November 19, 1996.
27. "Convergence in the 21st Century" (panel discussion), SPIE International Symposium on Voice, Video and Data Communications, Boston, November 20, 1996.
28. "Object-Based Media," Hewlett-Packard Laboratories, Palo Alto CA, February 11, 1997.
29. "Stream-Based Media Computing: What, How, and Why," University of California at Berkeley Dept. of EECS, January 30, 1998.
30. "Responsive Object-Based Media," Greater Boston ACM, February 19, 1998.
31. "Stream-Based Media Processing," American Physical Society Symposium on the Physics of Imaging, Rochester NY, April 24, 1998.
32. "The Future of Media is Object-Based," Southeastern Mass. MIT Alumni Club, New Bedford MA, May 20, 1998.
33. "Object-Based Media and Stream-Based Computing," First International Workshop on Advanced Graphics and Multimedia Systems, Naples Italy, November 17, 1998.
34. "The Object-Based Media Group," Mitsubishi Electric Research Laboratory, Cambridge MA, December 11, 1998.

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35. "The Object-Based Media Group," Stanford University Computer Science Dept., January 29, 1999.
36. "Hyperlinked Television as an E-Commerce Portal," Vanguard Technology Transfer Institute, Cambridge MA, May 17, 1999.
37. "Video and the Internet: TV or not TV?" American Museum of the Moving Image, New York, December 8, 1999.
38. "Will Anyone Really Need a Web Browser in Five Years?" Canadian Institute for Telecommunication Research annual meeting, Ottawa, August 28, 2000.
39. "Imaging at the MIT Media Lab" (plenary speaker), IS&T PICS 2001, Montreal, April 23, 2001.
40. "The Future" (panel discussion), ITV Content Emergency, Columbia University, New York, July 17, 2001.
41. "Responsive Media: The Intersection between Broadcast and Personalization," The Interactive TV Show USA, New York, August 16, 2001.
42. "Development of Technology from Unlikely Sources," Canadian Undergraduate Technology Conference, Toronto, January 17, 2002.
43. "Sharing and Playing Well with Others: Everything We Need to Know about the Future, We Learned in Kindergarten," (keynote) IDC Imaging Convergence Forum, New York, August 7, 2002.
44. "Really Smart Cameras and Sugar-Cube-Sized Video Projectors," MIT Family Weekend, Cambridge MA, October 18, 2003.
45. "Computational Ecosystems," Ubi-Comp Symposium on Ubiquitous Computing, Seoul, December 10, 2003.
46. "Really Smart Cameras and Sugar-Cube-Sized Video Projectors," MIT Alumni Club of RI, Warwick RI, April 13, 2004.
47. "The Consumer Electronics Laboratory at the MIT Media Laboratory," GSPx, Santa Clara CA, September 29, 2004.
48. "Really Smart Cameras and Sugar-Cube-Sized Video Projectors," MIT Alumni Club of Cape Cod, Hyannis MA, November 17, 2004.
49. "Consumer Electronics Research at the MIT Media Lab," Harvard Business School Entrepreneurship Conference, March 3, 2005.
50. "Changing Dynamic in Consumer Electronics," 2005 Perspective Forum, Berkeley CA, March 9, 2005.
51. "View from the Consumer Electronics Laboratory," 2005 North American Broadcasters Association General Meeting, Toronto, May 18, 2005.
52. "Musings – and a Few Facts – about 3-D TV," MIT CIPS Workshop on Advanced Television, Cambridge, January 21, 2009.
53. "Holographic Video and 3-D Television," "Photons, Neurons and Bits: Holography for the 21st Century," Cambridge MA, March 7, 2009.
54. "From 3-D TV to Holographic TV," Microsoft Hardware Day, Redmond WA, August 5, 2009.
55. "Debunking Hollywood's Holograms," MIT Museum, Cambridge MA, December 11, 2009.
56. "Moving Holographic TV from the Lab to Your Living Room," New England Section, Optical Society of America, Cambridge MA, 20 October 2010.
57. "Hollywood's Holograms (and MIT's)" and "Pattern Recognition is Everywhere." (2 lectures), Connecticut Science Education Conference, Hamden CT, 30 October 2010.

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58. "A Look Back – and Forward – at Holographic TV," New England SID and SMPTE joint meeting, Needham MA, 18 January 2012.
59. "Holographic Video and How it Might Become Part of the 3D Ecosystem," Third Workshop on 3D Cinematography (part of CVPR 2012), Providence RI, 16 June 2012.
60. "A Look Back – and Forward – at Holographic TV," IEEE Photonics Laser Workshop, Lexington MA, 7 November 2012.
61. "Digital Storytelling," The Economist Technology Frontiers 2013, London, 5 March 2013.
62. "Beyond the cinema screen," Toronto International Stereoscopic 3D Conference, 21 Sept. 2013.
63. "An introduction to holographic television," SMPTE Webcast, 31 Oct. 2013.
64. "CES Summary: What Were the Biggest Technology Advancements?" SMPTE Webcast, 23 January 2014.
65. "2015 CES Round-Up," SMPTE Webcast, 22 January 2015.
66. "Reconstructing and Augmenting Reality with Holographic Displays," (distinguished lecture), IEEE International Symposium on Multimedia, Miami FL, 16 Dec. 2015.
67. "Fostering and Managing Innovation at the MIT Media Lab," US General Accounting Office, Boston, 11 Feb. 2016.
68. "Holographic Video: Materials, Computation and Perception," 100th Anniversary Magnetics Lab Seminar, Toyohashi University of Technology, Japan, 11 March 2016.
69. "Reconstructing and Augmenting Reality with Holographic Displays," Stanford University, 25 April 2016.
70. "CES 2017: Innovations, Advancements, and Disappointments," SMPTE Webcast, 23 March 2017.
71. "Real Holograms, Almost-Holograms, and Fake Holograms," MIT Museum, Cambridge MA, 7 April 2017.
72. "Holograms and Other 'Magic' Technologies for Communication, Education, and Entertainment," (keynote) Beyond Disciplines: Understanding the World Around Us, University of Rhode Island, Kingston RI, 8 April 2017.
73. "Intellectual Property at the MIT Media Lab," OSA Webcast, 13 September 2017.
74. "Adventures in Volumetric Cinema," SMPTE Webcast, 7 March 2019.
75. "Immersive Experiences Without Headsets," Boston CHI, 18 June 2019.
76. "Building the Path for Immersive Displays," Adeia Webcast, 25 October 2022.