

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VIZIO, INC.
Petitioner

v.

MAXELL, LTD
Patent Owner

IPR2023-00316
U.S. PATENT NO. 8,170,394 B2

DECLARATION OF BENJAMIN B. BEDERSON, PH.D.

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LIST OF EXHIBITS TO PETITION

Exhibit	Description
1001	U.S. Patent No. 8,170,394 (the “394 Patent”)
1002	Declaration of Dr. Benjamin B. Bederson
1003	Curriculum Vitae of Dr. Benjamin B. Bederson
1004	Excerpts from File History of U.S. Patent No. 8,170,394
1005	U.S. Patent No. 7,293,276 to Phillips
1006	U.S. Patent Publication No. 2005/0188408 to Wallis
1007	U.S. Patent No. 8,112,711 to Ackley
1008	U.S. Patent No. 8,181,205 to Russ
1009	U.S. Patent No. 7,073,189 to McElhatten
1010	U.S. Patent No. 8,773,360 to Uchida
1011	U.S. Patent No. 7,667,123 to Phillips
1012	U.S. Patent No. 7,365,782 to Tanaka
1013	Excerpts from Sony’s <i>Digital Dreams</i> Publication
1014	Excerpts from Apple’s <i>Macintosh Human Interface Guidelines</i>
1015	<i>A taxonomy of window manager user interfaces</i> , IEEE Computer Graphics and Applications, Volume 8 Issue 5, Sept. 1988
1016	<i>Personal Computing: Compuvision or Teleputer</i> , Communications of the ACM, Volume 33 Issue 9, Sept. 1990
1017	ARIB Technical Report TR-B14 Version 2.8 (Fascicle 1) (2/2)
1018	Overview and Amendment History of ARIB Technical Report TRB14
1019	Preliminary Infringement Contentions of U.S. Patent No. 8,170,394, <i>In re: Certain Mobile Electronic Devices</i> , Inv. No. 337-TA-1312 (ITC)
1020	<i>Blackberry Corp. v. Maxell, Ltd.</i> , IPR2019-00089, Paper 10 (PTAB Mar. 29, 2019)
1021	<i>Motorola Mobility, LLC v. Maxell, Ltd.</i> , IPR2022-01348, Paper No. 2 (PTAB August 18, 2022)
1022	<i>Motorola Mobility, LLC v. Maxell, Ltd.</i> , IPR2022-01348, Paper No. 7 (PTAB February 23, 2023)

I. Introduction and Qualifications

1. I, Benjamin B. Bederson, have been retained by the attorneys for VIZIO, Inc. to provide my opinion concerning the patentability of claims 2-9 of U.S. Patent No. 8,170,394 (Ex. 1001, “the ’394 patent”) in support of this Petition for *Inter Partes* Review of the ’394 patent. My opinions are set forth below.

2. I am being compensated at my rate of \$600 per hour for the time I spend on this matter. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of this or any other proceeding. I have no other interest in this proceeding.

3. I previously provided similar declarations in connection with IPR petitions filed by Blackberry and Motorola Mobility (“Motorola”) against the ’394 patent in 2018 and 2022, respectively. I understand that IPR was instituted based on Blackberry’s petition, but was terminated shortly thereafter. I further understand that Motorola’s IPR petition was instituted on February 24, 2023. My prior declaration for Blackberry included opinions regarding certain suggested claim construction positions (for different claim terms than those addressed below). I understand that none of the constructions proposed in the Motorola or Blackberry IPR petitions were adopted by the Board.

4. I received a Bachelor of Science degree in Computer Science with a minor in Electrical Engineering from Rensselaer Polytechnic Institute (“RPI”) in

1986. I received a Master of Science degree and a Ph.D. in Computer Science from New York University (“NYU”) in 1989 and 1992, respectively.

5. Since 1998, I have been a Professor of Computer Science at the University of Maryland (“UMD”), where I have joint appointments at the Institute for Advanced Computer Studies and the College of Information Studies (Maryland’s “iSchool”), and am currently Professor Emeritus. I was also Associate Provost of Learning Initiatives and Executive Director of the Teaching and Learning Transformation Center from 2014 to 2018. I am a member and previous director of the Human-Computer Interaction Lab (“HCIL”), the oldest and one of the best-known Human-Computer Interaction research groups in the country. I was also co-founder and Chief Scientist of Zumobi, Inc. from 2006 to 2014, a Seattle-based startup that is a publisher of content applications and advertising platforms for smartphones. I am also co-founder and co-director of the International Children’s Digital Library (“ICDL”), a web site launched in 2002 that provides the world’s largest collection of freely available online children’s books from around the world with an interface aimed to make it easy for children and adults to search and read children’s books online. I am also co-founder and prior Chief Technology Officer of Hazel Analytics, a data analytics company. In addition, I have for more than 15 years consulted for numerous companies in the area of user interfaces, including

Microsoft, Logitech, the Palo Alto Research Center, Sony, Lockheed Martin, Hillcrest Labs, and NASA Goddard Space Flight Center.

6. For more than 30 years, I have studied, designed, and worked in the field of computer science and human-computer interaction. My experience includes 30 years of teaching and research, with research interests in human-computer interaction and the software and technology underlying today's interactive computing systems. This includes the design and implementation of software applications on mobile devices, including smart phones and PDAs, such as my work on DateLens, LaunchTile, and StoryKit described below. My consulting included helping companies apply my work on "zoomable user interfaces" to their consumer-facing audio/video access software.

7. For example, my work with Sony in 1996 and 1997 was summarized in their "Digital Dreams"¹ book, which summarized the work of the Sony Design Center (pp. 162–165 (original pagination), Ex. 1013):

The Zooming User Interface combines the free-form space and passive quality of television with the active quality of gathering, creating, storing and sending associated with the PC – giving us a form of interaction that is direct, intuitive and enjoyable on every level. Unlike today's Netscape-or Microsoft-style browsers, zooming proved ideal for searching the web. 'A zooming interface makes surfing the web, or

¹ Paul Kunkel (1999). "Digital Dreams: The Work of the Sony Design Center," Universe, ISBN-13 978-0789302625.

viewing any digital content, an immersive experience.’ Says Proehl.

Ex. 1013, p. 6.

The book goes on to explain how this approach could be applied to the TV watching experience bridging linear and interactive content:

Next time you switch on your TV, imagine how a WaveCatcher interface would transform your viewing experience, with video content, photographs, magazines and links to your favorite sources for music and news arranged in a fluid Zooming environment. Unlike, today’s Windows-based interfaces or the PerfecTV interface shown elsewhere in this book, the Zooming User Interface favors a continuous inflow of data, allowing you to continually explore or receive data using PUSH technology – setting the stage for a new kind of consumer media technology that exists somewhere between conventional television and a personal computer search engine that operates continuously. Ex. 1013, p. 8.

8. My work with Hillcrest Labs in 2005 through 2009 was focused on helping them build a television electronic program guide for their “HoME UI” experience as represented by this image² that includes screenshots from their mid-2000’s product. My recollection is that this software was shipped on some set top boxes in that time frame.

² <http://www.smart2zero.com/news/wireless-rd-firm-interdigital-buys-sensor-processing-tech-developer>



9. At UMD, my research is in the area of Human-Computer Interaction “HCI”), a field that relates to the development and understanding of computing systems to serve users’ needs. Researchers in this field are focused on making universally usable, useful, efficient, and appealing systems to support people in their wide range of activities. My approach is to balance the development of innovative technology that serves people’s practical needs. Example systems following this approach that I have built include PhotoMesa (software for end users to browse personal photos), DateLens (2002 software for end users to use their mobile devices to efficiently access their calendar information), LaunchTile (2005 “home screen” software for mobile devices to allow users to navigate apps in a zoomable environment), SpaceTree (2001 software for end users to efficiently browse very large hierarchies), ICDL (as described above), and StoryKit (a 2009 iPhone app for children to create stories).

10. LaunchTile led to my creation of Zumobi in 2006, where I was responsible for investigating new software platforms and developing new user interface designs that provide efficient and engaging interfaces to permit end users to access a wide range of content on mobile platforms (including the iPhone and Android-based devices). For example, I designed and implemented software called “Ziibii,” a “river” of news for iPhone, software called “ZoomCanvas,” a zoomable user interface for several iPhone apps, and iPhone apps including “Inside Xbox” for Microsoft and Snow Report for REI. At the International Children’s Digital Library (ICDL), I have since 2002 been the technical director responsible for the design and implementation of the web site, www.childrenslibrary.org (originally at www.icdlbooks.org). In particular, I have been closely involved in designing the user interface as well as the software architecture for the web site since its inception in 2002.

11. Beginning in the mid-1990s, I have been responsible for the design and implementation of numerous other web sites in addition to the ICDL. For example, I designed and built my own professional web site when I was an Assistant Professor of Computer Science at the University of New Mexico in 1995 and have continued to design, write the code for, and update both that site (which I moved to the University of Maryland in 1998, currently at <http://www.cs.umd.edu/~bederson/>) as well as numerous project web sites, such as Pad++,

<http://www.cs.umd.edu/hcil/pad++/>. I received the Janet Fabri Memorial Award for Outstanding Doctoral Dissertation for my Ph.D. work in robotics and computer vision. I have combined my hardware and software skills throughout my career in Human-Computer Interaction research, building various interactive electrical and mechanical systems that couple with software to provide an innovative user experience.

12. My work has been published extensively in more than 160 technical publications, and I have given about 100 invited talks, including 9 keynote lectures. I have won a number of awards including the Brian Shackel Award for “outstanding contribution with international impact in the field of HCI” in 2007, and the Social Impact Award in 2010 from Association for Computing Machinery’s (“ACM”) Special Interest Group on Computer Human Interaction “(SIGCHI)”. ACM is the primary international professional community of computer scientists, and SIGCHI is the primary international professional HCI community. I have been honored by both professional organizations. I am an “ACM Distinguished Scientist,” which “recognizes those ACM members with at least 15 years of professional experience and 5 years of continuous Professional Membership who have achieved significant accomplishments or have made a significant impact on the computing field.” I am a member of the “CHI Academy,” which is described as follows: “The CHI Academy is an honorary group of individuals who have made substantial

contributions to the field of human-computer interaction. These are the principal leaders of the field, whose efforts have shaped the disciplines and/or industry, and led the research and/or innovation in human-computer interaction.” The criteria for election to the CHI Academy are: (1) cumulative contributions to the field; (2) impact on the field through development of new research directions and/or innovations; and (3) influence on the work of others.

13. I have appeared on radio shows numerous times to discuss issues relating to user interface design and people’s use and frustration with common technologies, web sites, and mobile devices. My work has been discussed and I have been quoted by mainstream media around the world over 120 times, including by the New York Times, the Wall Street Journal, the Washington Post, Newsweek, the Seattle Post-Intelligencer, the Independent, Le Monde, NPR’s All Things Considered, New Scientist Magazine, and MIT’s Technology Review.

14. I have designed, programmed, and publicly deployed dozens of user-facing software products that have cumulatively had millions of users. I am the co-inventor of 14 U.S. patents and 19 U.S. patent applications. The patents are generally directed to user interfaces/experience.

15. My *curriculum vitae*, which includes a more detailed summary of my background, experience, and publications, is attached to the accompanying Petition as Ex. 1003.

II. Summary of Materials Reviewed and Considered

16. All of the opinions contained in this Declaration are based on the documents I reviewed and my knowledge and professional judgment. In forming the opinions expressed in this Declaration, while drawing on my experience and knowledge regarding graphical user interfaces, I read and considered the '394 patent, its prosecution history, as well as any other material referenced herein.

17. My opinions are guided by my appreciation of how a person of ordinary skill in the art would have understood the claims of the '394 patent at the time of the alleged invention, which I have been asked to assume is the 2005 time frame.

III. Background

18. The '394 patent is related to the display of a particular operation control panel on a multimedia player's graphical user interface depending on the content of the displayed data. The following discussion provides background information about this well-known concept, which was widely applied across many technology areas prior to 2005.

19. In computing, a "user interface" is the boundary where interaction between humans and computers occurs. The development of "graphical user interfaces" (GUIs), often attributed to Douglas Engelbart in the late 1960's, offers visual interfaces on display screens that are designed for simplicity and ease of learning. These GUIs were designed to have common element types that were

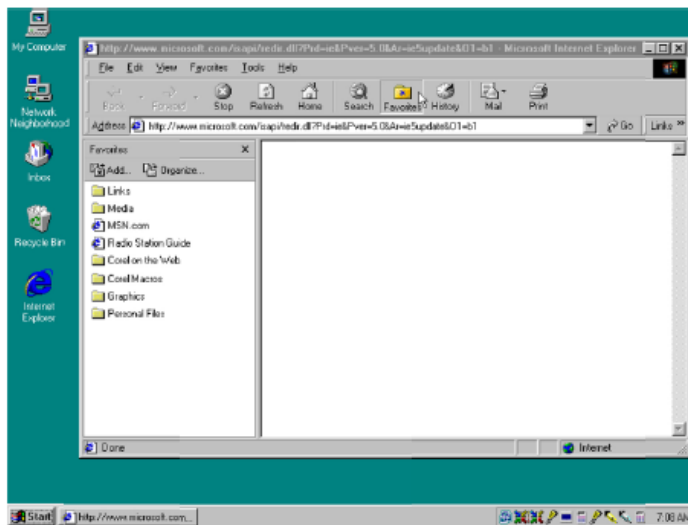
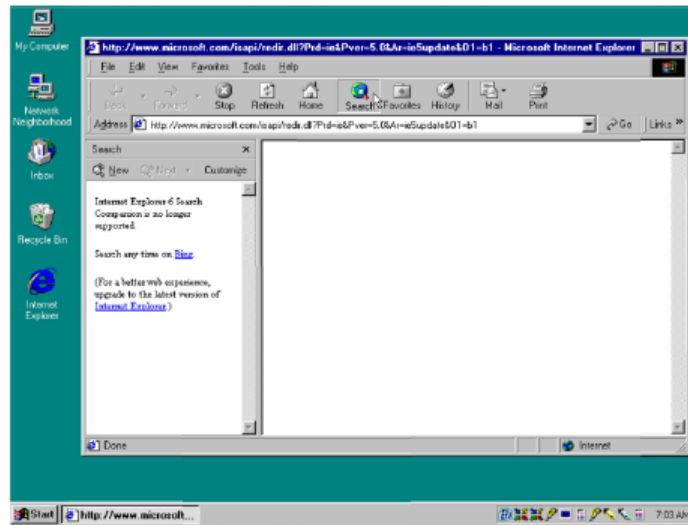
intended to be used consistently to aid users in transferring their skills from one application to another. Apple described consistency as one of their key “Human Interface Principles” in their 1982 Human Interface Guidelines. Ex. 1014.

Consistency

Consistency in the interface allows people to transfer their knowledge and skills from one application to any other. Use the standard elements of the Macintosh interface to ensure consistency within your application and to benefit from consistency across applications.

Ex. 1014, p. 32.

20. One of the re-usable user interface elements commonly used in GUIs was the “panel”, containing smaller elements such as buttons and menus. These panels were often used consistently in structure and location. For example, Microsoft’s Internet Explorer web browser that was widely deployed with Windows 95 used such panels as indicated in the following two screenshots. These show the result of first clicking on the “Search” button, which then displays the Search panel on the left side of the application. If the user then clicks on the “Favorites” button, the Search panel is replaced with the Favorites panel in exactly the same position with different user interface elements. I generated and captured these screenshots myself on Sept 28, 2018 by executing Internet Explorer on Windows 95 running as a virtual machine within the VMWare application on MacOS 10.13.



21. GUI designers considered many factors in determining what was displayed on the screen, including what appeared in panels. One factor that was considered was what data was being displayed. For example, Microsoft Windows 95 displayed different panel elements in the “Printers” control panel depending on what printers were installed, as depicted in the following screenshot.



22. Well prior to 2005, it was common for GUIs to allow the presentation and interaction with more than one display panel at a time through what was called a “window manager.” A window manager is a well-known type of software program that manages computing resources, such as display space, that relate to a user’s interaction with a computing system. A window manager was known in the art to be a useful user interface tool in a multitasking computing environment. A multitasking computing device is capable of executing more than one application concurrently or of switching execution rapidly between two applications, such that the computing device may be able to process one task while another is running, and/or such that a user may be able to interact with more than one application concurrently. It is my opinion that one of ordinary skill in the art would have immediately recognized that the same layout principles of window managers would be applicable to display panels in a set top box environment because they both apply

to positioning and sizing of user interface elements in a GUI. Numerous window management systems were known in the art before the priority date of the '394 patent, such as the X Window System, Microsoft Windows window managers, NeWS, Macintosh, and Andrew.

23. Additionally, it was widely known since the late 1980s that window managers supported tiled window layouts and overlapped window layouts. In a tiled layout, the edge of one window is near to the edge of the next windows, so that no substantial space separates the windows and so that no window conceals (by overlapping) another window. Advantages of tiled layouts include less manual arrangement of windows and speed of window arrangement. Ex. 1015, pp. 7, 9 (Myers, *A taxonomy of window manage user interfaces*).

24. Examples of well-known window managers supporting tiled window layouts before the '394 patent's priority date included Cedar and the original versions of Microsoft Windows. *Id.* For example, Myers' Figure 2, reproduced below (Ex. 1015, p. 4), shows the Cedar tiled window manager.

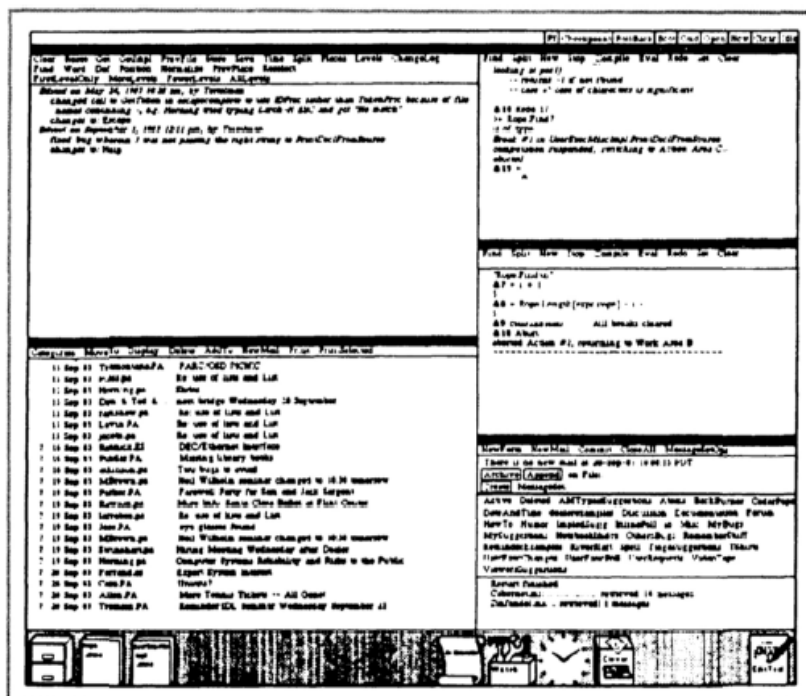


Figure 2. A screen from the Cedar^{10,11} window manager. Windows are “tiled” into two columns. There is a row of icons along the bottom. Each window has a fixed menu of commands below the title line.

25. Not only have GUI panels and window managers/tiled window layouts been a part of standard computer interface design, but they also were used in entertainment related platforms such as interactive television, and in other applications such as kiosks, ticketing services, and the like. Even before the 1990’s, people realized that computing and television technologies could be combined to create a user experience which allows a television viewer to control their television in an interactive environment, or alternatively, allows a computer user to experience high quality entertainment on their desktop computer. Beginning in the mid-1980’s, desktop computer companies and television technology companies competed head-

to-head to offer such combination products to consumers.³ The personal computing industry rapidly invented ways to incorporate the high-quality audiovisual presentation of television into computers, while the television industry similarly explored ways of incorporating interactive information services into a user's television experience. Throughout the early 1990's, an increased use of network technologies, the Internet and the World Wide Web, further encouraged the innovation of personal computing and entertainment systems, resulting in the development of novel underlying technologies, deployed to consumers via new user interfaces.

26. Television companies, for example, worked to develop interactive television solutions. Around 1994, Time Warner Cable tested its "Full Service Network" in Orlando, FL, a widely publicized experiment that offered interactive television – including video on demand – to home consumers. This highly visible example was among numerous attempts to add more user control to the television experience. Similar interactive television systems including video on demand and PVR or DVR capability were deployed throughout the late 1990s and early 2000s.

27. Similarly, there were numerous efforts to add entertainment services, including high quality audio-visual channels, to computers. The introduction of the

³ See, e.g., Larry Press, Personal Computing: Compuvision or Teleputer, COMM. OF THE ACM, Sept. 1990. Ex. 1016, p. 1.

CD-ROM in the mid-1980's, for example, which offered portable rich multimedia experiences, drove the development of everything from games and videos to encyclopedias, making these products widely available to personal computer users by the early 1990's.

28. And as early as 1992, video tuner cards were available, which digitized a standard analog television signal, enabling standard broadcast or cable television to be displayed on a regular personal computer. In fact, the '394 patent itself refers to prior art GUIs displaying linear and interactive controls on “a digital broadcasting compatible personal computer.” Ex. 1001, 1:36-40.

29. The direct competition between these industries in the early 1990's encouraged companies competing in both fields to utilize technological advances from both industries. The alleged innovation in the '394 patent, as will be described later in this report, utilizes well-known computer technologies, implemented in an entertainment platform such as a television environment.

30. In particular, the '394 patent purports to provide a “Multimedia Player Displaying Operation Panel Depending on Contents”—that is, the user's GUI or operation panel is specific to the displayed contents. But as shown above, it was common practice by the mid-1990s for computer GUIs to be designed such that the user was provided with a distinct operation panel that was tailored to the selected and displayed content. Not only was this a common GUI practice in general but, as

shown by the prior art addressed in this declaration, this was also a common practice in the television industry prior to the '394 patent.

31. For example, Phillips (Ex. 1005) and Russ (Ex. 1008) show that the GUIs or operation panels used for linear content, such as video and music, are unique to that content and distinct from the GUIs or operation panels used for interactive content, such as Video on Demand (VoD) or Personal Video Recorder (PVR) menu screens. Similarly, Ackley (Ex. 1007), Wallis (Ex. 1006), and McElhatten (Ex. 1009) provide known metadata-monitoring mechanisms to determine the type of content being input into the television system or set-top-box and, based on that determination, an appropriate operation panel is selected. Further still, Uchida (Ex. 1010) shows that it was known prior to the '394 patent to split a device's display into a content display area and an operation panel display area—in other words, to incorporate a window manager/tiled window in a TV display. Hence, and as will be explained in greater detail below, all of the alleged inventive elements of the '394 patent were well understood and routine interface design concepts by the time the '394 patent was filed, and were widely used by those of ordinary skill in the art in general, as well as in the television industry.

IV. The '394 Patent

32. The '394 patent – titled “Multimedia Player Displaying Operation Panel Depending on Contents” – is directed to a cable set top box that utilizes distinct

content operation panels for “interactive” content, such as “data broadcast contents” (which could be a program map, video-on-demand (VoD) menu screen, or the like), and different content operation panels for “linear” content, such as video and audio. The ’394 patent was filed on August 23, 2006, and claims priority to a Japanese application filed on August 30, 2005. Ex. 1001. As explained above, this type of display methodology was well-known and widely utilized prior to the ’394 patent.

33. The ’394 Patent describes a prior art GUI in which “keys for linear contents and interactive contents are displayed on a screen and unusable keys are disabled” Ex. 1001 at 1:40-43. This arrangement requires “a large panel rendering area.” Ex. 1001 at 1:43-44.

34. In contrast, the ’394 Patent states that the present invention displays “only usable operation keys” such that “the panel rendering area is made small.” Ex. 1001 at 1:60-64.

35. The ’394 patent explains that “FIGS. 2 to 4 show image display states during digital broadcast reproduction. A monitor A1 has a content display area A2 and an operation panel display area A3. During reproduction of linear contents such as moving image contents, a linear content operation panel A4 is displayed in the operation panel display area A3.” Ex. 1001 at 3:43-48. The linear content operation panel includes “functions of reproduce, stop, temporary stop, fast forward, fast backward, previous skip, next skip and the like.” Ex. 1001 at 3:49-51.

FIG. 2

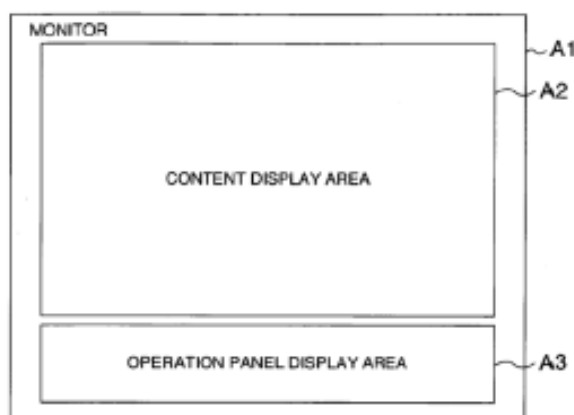
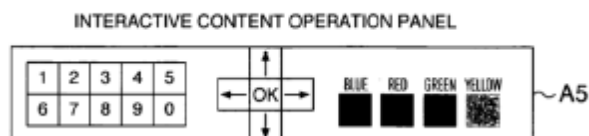


FIG. 3



36. “During reproduction of interactive contents such as data broadcast contents, an interactive content operation panel A5 is displayed in the operation panel display area A3.” Ex. 1001 at 3:52-54. The interactive content operation panel includes “functions of numerical keys from 0 to 9, up/down/right/left keys, a decide key, blue/red/green/yellow keys and other keys.” Ex. 1001 at 3:55-57.

FIG. 4



37. The patent explains that a “program map table (‘PMT’)” with “data encode descriptor” containing an “auto-start-flag” indicator may be used to determine when either the linear content operation panel or the interactive content operation panel should be displayed: “In data added TV services, if the

auto_start_flag is '1', data broadcasting is automatically displayed, whereas if it is "0", data broadcasting is displayed upon instruction from a user. The data monitor unit monitors the auto_start_flag, and when the flag becomes '1', the interactive content operation panel A5 is displayed, and when the flat [sic] becomes '0', the linear content operation panel A4 is displayed." Ex. 1001 at 4:9-15.

38. When describing the auto_start_flag descriptor, the '394 patent cites to the Association of Radio Industries and Businesses (ARIB): Terrestrial Digital Television Broadcasting Operational Guideline TR-B14. Ex. 1001 at 4:1-6. An English translation (provided by ARIB) of the TR-B14 Fascicle 1(2/2) version 2.8 is available here: https://www.arib.or.jp/english/std_tr/broadcasting/tr-b14.html. I also located a copy of that same technical report on the Wayback Machine from 2007:

<https://web.archive.org/web/20071003151823/http://www.dibeg.org/aribstd/ARIBSTD-j.htm>. A copy of the TR-B14 Fascicle 1(2/2) Report is included as Exhibit 1017.

39. The guidelines explain that the auto_start_flag descriptor was monitored and, when a 1 was sensed, the set top box's "BML engine" started automatically, without waiting for a button to be pushed by the user. Ex. 1017, p. 75-76 (3-51, 3-52 in original pagination). The BML engine "receives and interprets multi-media data (BML documents) in order to present it to viewers." *Id.* at p. 28

(3-4 in original pagination). Multi-media data stands in contrast to “mono-media,” which includes “[i]ndependently presented media such as video [and] audio.” *Id.* at p. 32 (3-8 in original pagination). Thus, the system of the ’394 patent represents nothing more than populating a particular operation panel based on monitoring the `auto_start_flag` descriptor, which the set top box was already doing, for example, to initiate the “BML engine” for multi-media data. This further confirms my opinion that the ’394 patent represents nothing more than a trivial implementation of the known and widely used GUI practice to use and display an operation panel that is specific to the selected and displayed content.

A. The ’394 Patent’s Claims

40. I understand that the ’394 patent’s claims 2-9 have been challenged. Each challenged independent claim largely overlap in substance. I have italicized below the language in claims 4 and 7 that does not mirror claim 2.

41. **2.** A digital content reproducing apparatus, comprising:

an input unit which inputs digital content;

a reproducer which reproduces the inputted digital content;

an output unit which outputs the reproduced digital content;

a display which displays the outputted digital content together with an alternative display of either of a linear content operation panel allowing user-instruction regarding linear reproduction functions of the reproduced digital content or an interactive content operation panel allowing user-instruction of interactive functions to an outside of the digital content reproducing apparatus, wherein the linear content operation panel and the interactive content operation panel are distinct

panels from each other, which are not generated by a disabling of buttons; and

a controller which controls the alternative display of either of the linear content operation panel or the interactive content operation panel, wherein only one of the linear content operation panel or the interactive content operation panel is displayed exclusively at any given time, together with the outputted digital content:

wherein the outputted digital content together with either the linear content operation panel or the interactive content operation panel, are displayed concurrently in one screen.

42. 3. The digital content reproducing apparatus according to claim 2, wherein the linear content operation panel and the interactive content operation panel are common in size, and are alternatively switched between each other in a same panel rendering area of the screen as alternative operation panels.

43. 4. A digital content reproducing apparatus, comprising:

an input unit which inputs digital content;

a reproducer which reproduces the inputted digital content;

an output unit which outputs the reproduced digital content;

a display which displays the outputted digital content together with an alternative display of either of a linear content operation panel allowing user-instruction regarding linear reproduction functions of the reproduced digital content or an interactive content operation panel allowing user-instruction of interactive functions to an outside of the digital content reproducing apparatus, *wherein buttons of the linear content operation panel are mutually different from buttons of the interactive content operation panel*; and

a controller which controls the alternative display of either of the linear content operation panel or the interactive content operation panel, wherein only one of the linear content operation panel or the interactive content operation panel is displayed exclusively at any given time, together with the outputted digital content;

wherein the outputted digital content together with either the linear content operation panel or the interactive content operation panel, are displayed concurrently in one screen.

44. 5. The digital content reproducing apparatus according to claim 4, wherein all the buttons are mutually different from each other.

45. 6. The digital content reproducing apparatus according to claim 4, wherein the linear content operation panel and the interactive content operation panel are common in size, and are alternatively switched between each other in a same panel rendering area of the screen as alternative operation panels.

46. 7. A digital content reproducing apparatus, comprising:

an input unit which inputs digital content;

a reproducer which reproduces the inputted digital content;

an output unit which outputs the reproduced digital content;

a display which displays the outputted digital content together

with an alternative display of either of a linear content operation panel allowing user-instruction regarding linear reproduction functions of the reproduced digital content or an interactive content operation panel allowing user-instruction of interactive functions to an outside of the digital content reproducing apparatus, *wherein buttons of the linear content operation panel producing mutually differing functions from functions of buttons of the interactive content operation panel*; and

a controller which controls the alternative display of either of the linear content operation panel or the interactive content operation panel, wherein only one of the linear content operation panel or the interactive content operation panel is displayed exclusively at any given time, together with the outputted digital content;

wherein the outputted digital content together with either the linear content operation panel or the interactive content operation panel, are displayed concurrently in one screen.

47. 8. The digital content reproducing apparatus according to claim 7, wherein all the buttons of the linear content operation panel and the

interactive content operation panel, provide mutually differing functions from each other.

48. 9. The digital content reproducing apparatus according to claim 7, wherein the linear content operation panel and the interactive content operation panel are common in size, and are alternatively switched between each other in a same panel rendering area of the screen as alternative operation panels.

B. The '394 Patent's Prosecution History

49. I reviewed the prosecution history of the '394 patent. Although I am not a patent attorney, I have a general understanding of patent prosecution and the significance of the prosecution history because I am a named inventor on numerous patents and patent applications.

50. Although a number of Office Actions were issued against the '394 patent, I believe the Examiner's October 21, 2011 Office Action is particularly instructive. There, the Examiner determined that the Wallis reference (Ex. 1006), discussed herein, summarized the state of the art prior to the '394 patent's filing. Specifically, the examiner stated that Wallis showed "the fact that it was known in the art to have used metadata to associate sets of attribute data with respective segments of an A/V content stream, wherein the associated set of attribute data allows the receiver/reproduction circuitry to judge/identify/determine which of a plurality of different types of navigation controls, *i.e.*, linear and non-linear controls, are active/enabled ..., and wherein the active/enabled navigation controls are

incorporated into a GUI for presentation to, and selection by, the user....” Ex. 1004, p. 80-81. I agree with the Examiner’s summary of the state of the art.

51. The Examiner applied Wallis and Kawakami to reject application claim 13 (which issued as claim 2). Ex. 1004, p. 84-87. At the time, claim 13 required the display of “the outputted digital content and either a liner [sic] content operation panel or an interactive content operation panel,” and required that either the linear content operation panel or the interactive content operation panel “is displayed exclusively as the user operation interface.” Ex. 1004, p. 68.

52. Regarding the display of different panels, the Examiner found that Kawakami disclosed that it was “notoriously well known in the GUI display art to have displayed non-active and/or non-enabled buttons/options of a displayed GUI in a ‘gray-out’ state and, more desirably, to have simply removed the non-active and/or non-enabled buttons/options from the displayed GUI[.]” Ex. 1004, p. 82. According to the Examiner, Kawakami showed that “it was well known in the GUI display arts for such ‘disablement’ to have resulted in the removal of the non-applicable ‘unusable’ keys from the GUI display.” Ex. 1004, p. 86.

53. Following the rejection, the Applicant’s representative and the Examiner conducted an interview. Ex. 1004, p. 90-92. During the interview, “Applicant’s representative proposed amending claim to . . . recite that the apparatus switches between separate/different linear and non-linear control panels.” Ex. 1004,

p. 91. “The examiner took the position that the system of the applied ‘prior art’ switches between separate/different linear and non-linear control panels by selectively enabling and/or disabling keys - such that the separate/different panels that are produced comprise different sets/subsets of keys.” *Id.*

54. Following the interview, in its December 8, 2011 response to the pending rejection, Applicant amended application claim 13 to require that “the linear content operation panel and the interactive content operation panel are distinct panels from each other, which are not generated by a disabling of buttons[.]” Ex. 1004, p. 114-115.

55. Applicant also introduced new claims 15 and 18. Ex. 1004, p. 115-117). New application claim 15 (issued claim 4) included the requirement that “buttons of the linear content operation panel are mutually different from buttons of the interactive content operation panel.” Ex. 1004, p. 115-116. New application claim 18 (issued claim 7) included the requirement that “buttons of the linear content operation panel producing mutually different functions from functions of buttons of the interactive content operation panel.” Ex. 1004, p. 116-117.

56. In the same December 8, 2011 response, Applicant provided detailed remarks distinguishing amended claim 13 and new claims 15 and 18 from the operation panels of Kawakami. Ex. 1004, p. 97-104.

57. With regard to the requirements of amended claim 13 that the claimed panels be “distinct panels” and “not generated by a disabling of buttons,” Applicant stated that “whereas Kawakami’s FIG. 1(b) . . . illustrates a master operation panel having ALL . . . buttons selectable, Kawakami’s FIG. 1(a) . . . illustrates a variation operation panel where several of the buttons have . . . been ghosted out so as to not be selectable.” Ex. 1004, p. 99 (emphasis original). The Applicant included the below figures from Kawakami in connection with its remarks:

FIG. 1 (b)

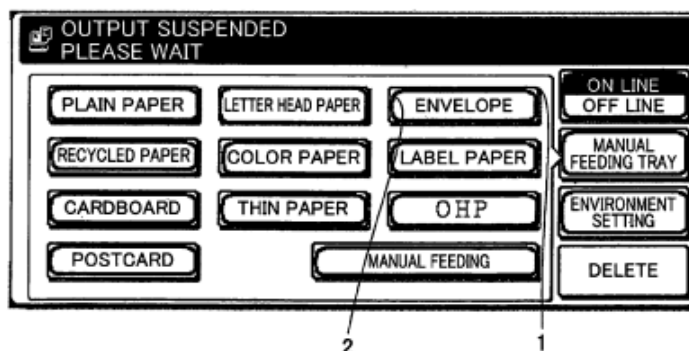
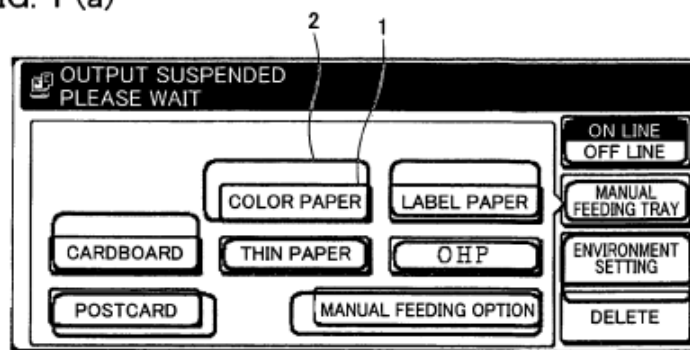


FIG. 1 (a)



Ex. 1004, p. 99.

58. The Applicant concluded that while application claim 13 requires that the claimed operation panels are “distinct panels from each other, which are not generated by a disabling of buttons,” Kawakami disclosed “alternative panels” that are achieved by the disabling of buttons. Ex. 1004, p. 100.

59. With regard to application claim 15, the Applicant stated that the claimed panels, as illustrated by Figures 3 and 4 “have buttons being mutually differing from one another,” while “Kawakami’s FIG. 1(b) master operation panel and Kawakami’s FIG. 1(a) variation operation panel . . . do NOT have buttons of one panel mutually different from buttons of the other panel, e.g., whereas Kawakami’s FIG. 1(a) panel has a COLOR PAPER button, as one example, so does Kawakami’s FIG. 1(b) master panel.” Ex. 1004, p. 102 (emphasis original). Thus, the Applicant concluded, “Kawakami’s panels can never have mutually differing buttons.” *Id.*

60. Similarly, with regard to application claim 18, Applicant stated that the claimed panels, illustrated by Figures 3 and 4 “have buttons effecting mutually differing functions from one another,” while “Kawakami’s FIG. 1(b) master operation panel and Kawakami’s FIG. 1(a) variation operation panel . . . do NOT have buttons effecting mutually different functions from buttons of the other panel, e.g., whereas Kawakami’s FIG. 1(a) panel has a COLOR PAPER button, as one example, so does Kawakami’s FIG. 1(b) master panel,” and thus, Applicant

concluded “Kawakami’s panels can never have buttons with mutually differing functions.” Ex. 1004, p. 103-104) (emphasis original).

61. Following Applicant’s amendment and remarks, the Examiner allowed the pending claims, stating that “[t]he prior art of record fails to show or fairly suggest the reproduction apparatus structures set forth in each of independent claim 13, 15, and 18, producing the alternative display of linear and interactive content operation panels, in the manners argued by applicant in the response filed 12/8/2011.” Ex. 1004, p. 126.

V. Relevant Legal Principles

62. I am not an attorney. My understanding of my role in this matter is that I am to apply my scientific and technical expertise in technical matters to the determination of whether or not the challenged claims are patentable. To do this, I will use certain informal explanations of the required legal standards that have been provided to me by the attorneys for Petitioner.

63. I understand that a claim is unpatentable if it is anticipated. Anticipation of a claim requires that every element of a claim be disclosed expressly or inherently in a single prior art reference, arranged in the prior reference as arranged in the claim. I understand that for a feature to be “inherent” in a reference, the feature must necessarily be present based on the details that are disclosed. I also understand that in order to anticipate, a reference must enable a person of ordinary

skill to practice an embodiment of the claimed invention without undue experimentation.

64. I also understand that a prior art reference can render a patent claim obvious to a person of skill in the art if the differences between the subject matter set forth in the patent claim and the prior art are such that the subject matter of the claim would have been obvious at the time the claimed invention was made. I understand that obviousness is a legal conclusion and I am testifying regarding the relevant facts that underlie the legal conclusion: the level of skill in the relevant art, the scope and content of the prior art, the differences between the prior art and the claims, and any secondary considerations.

65. I understand that when the claimed subject matter involves combining pre-existing elements to yield no more than one would expect from such an arrangement, the combination is obvious. I understand that in assessing whether a claim is obvious one must consider whether the claimed improvement is more than the predictable use of prior art elements according to their established functions. I understand that there need not be a precise teaching in the prior art directed to the specific subject matter of a claim because one can take account of the inferences and creative steps that a person of skill in the art would employ. I understand that a person of ordinary skill is a person of ordinary creativity, not an automaton.

66. I understand that obviousness cannot be based on the hindsight combination of components from the prior art. I understand that in an obviousness analysis, neither the motivation nor the avowed purpose of the inventors controls the inquiry. Any need or problem known in the field at the time of the invention and addressed by the patent can provide a reason for combining elements. For example, I understand that it is important to consider whether there existed at the time of the invention a known problem for which there was an obvious solution encompassed by the patent's claims. I understand that known techniques can have obvious uses beyond their primary purposes, and that in many cases a person of ordinary skill can fit the teachings of multiple pieces of prior art together like pieces of a puzzle.

67. I understand that, when there is a reason 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. I understand that, if this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense, which bears on whether the claim would have been obvious.

68. I understand that secondary considerations can include, for example, evidence of commercial success of the invention, evidence of a long-felt need that was solved by an invention, evidence that others copied an invention, or evidence

that an invention achieved a surprising result. I understand that such evidence must have a nexus, or causal relationship to the elements of a claim, in order to be relevant.

69. I am not aware of any secondary considerations applicable to the subject matter of the '394 patent, and have not provided any opinions related to secondary considerations at this time. If Patent Owner provides any evidence of secondary considerations, I will evaluate it at that time.

VI. Level of Skill in the Art and Perspective Applied in this Declaration

70. I understand that certain issues relating to patentability must be judged from the perspective of a person of ordinary skill in the relevant art. Based on my knowledge and experience, I understand what a person of ordinary skill in the art would have known at the time of the alleged invention.

71. The invention of the '394 patent relates to apparatus and systems for displaying operation panels depending upon the displayed data's contents. In my opinion, based on the materials and information I have reviewed, and based on my experience in the technical areas relevant to the '394 patent, a person of ordinary skill in the art at the time of the alleged invention of the '394 patent (mid-2005) would have had a Bachelor's degree in computer science, electrical engineering, or a similar discipline, and one to two years of work experience in user interface design, or a related area. This description is approximate, and a higher level of education or skill might make up for less experience, and vice-versa.

72. I believe that I would have qualified as a person of at least ordinary skill in the art as of the claimed 2005 priority date of the '394 patent, and I believe that I have a sufficient level of knowledge, experience, and education to provide an expert opinion in the field of the '394 patent. Also, I have supervised many persons of ordinary skill in the art as of the relevant time frame, and I am familiar with their capabilities.

73. My opinions in this Declaration are based on the perspective of a person of ordinary skill in the art in the 2005 time frame. This is true even if the testimony is stated in the present tense.

VII. Claim Construction

74. I have been asked to offer opinions related to the construction of certain terms in this analysis. I understand that in this proceeding, patent claims are construed using the same claim construction standard that would be used to construe the claim in district court, including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.

75. I understand that the claim construction analysis is focused on the meaning of claim terms to a person of ordinary skill in the art in light of the intrinsic evidence, including the patent's claims, specification and prosecution history. I

understand that extrinsic evidence may also be consulted if the intrinsic evidence does not resolve any ambiguity about the meaning of the claims.

76. I understand that a patentee may disclaim or disavow subject matter during prosecution of the patent by making clear and unequivocal statements regarding claim scope.

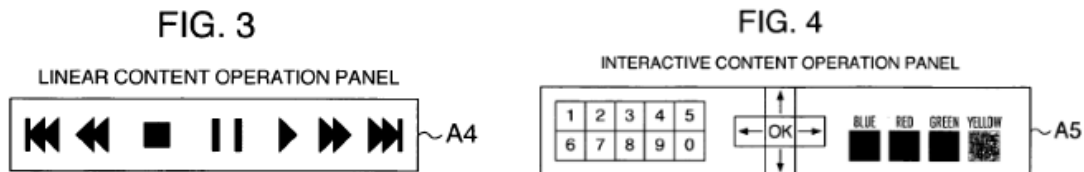
77. The following table summarizes the terms I have construed and the constructions I have adopted.

Claim Term	Proposed Construction
<i>“distinct panels”</i> (claim 2)	“panels in which the buttons are all mutually different”
<i>“mutually different”</i> (claim 4)	“all mutually different”
<i>“buttons . . . mutually differing”</i> (claim 7)	“all buttons . . . mutually differing”

A. “distinct panels” (claim 2) / “mutually different” (claims 4) / “buttons...mutually differing (claim 7)”

78. The specification does not define these terms, but the specification and the prosecution history would inform a person of ordinary skill in the art that the linear content operation panel and interactive content operation panel of the ’394 patent are limited to panels in which the buttons and functions are all mutually different between the panels.

79. The specification of the '394 patent shows that the buttons and functions of the claimed linear content operation panel are all mutually different from the buttons and functions of the claimed interactive content operation panel. As noted above, the '394 patent discloses a linear content operation panel and an interactive content operation panel. Ex. 1001 at 3:45-57; *id.* at Fig. 3, Fig. 4. The linear content operation panel is described as including “functions of reproduce, stop, temporary stop, fast forward, fast backward, previous skip, next skip and the like.” Ex. 1001 at 3:49-51. The interactive content operation panel is described as including “functions of numerical keys from 0 to 9, up/down/right/left keys, a decide key, blue/red/green/yellow keys and other keys.” Ex. 1001 at 3:55-57. The panels are depicted at Figures 3 and 4:



80. The specification states that “[a]ccording to the digital content reproduction apparatus of the present invention, . . . the user operation interfaces are automatically and exclusively displayed” Ex. 1001 at 2:6-12; *see also id.* at 3:58-60 (linear content operation panel and the interactive content operation panel are “displayed exclusively and are not displayed at the same time.”).

81. The '394 patent does not include any disclosure of a linear content operation panel that shares buttons or functions with an interactive content operation panel.

82. The '394 patent explains that one of the problems addressed by the invention of the '394 patent was the large display area required for control panels resulting from display of interactive buttons during linear content, and vice versa. Ex. 1001 at 1:33-44 (stating that “a large panel rendering area is required” in prior art configuration where “reproduction keys for linear contents and interactive contents are displayed on a screen and unusable keys are disabled”); *id.* at 1:51-55 (stating that prior art “apparatus using GUI is also required to display all keys so that a wide operation panel rendering area is used.”); *id.* at 1:60-65 (“It is therefore an object of the present invention to display automatically only usable operation keys . . . Accordingly, . . . since the panel rendering area is small, a mouse motion distance can be shortened, and an easy to use performance can be improved.”).

83. During prosecution, the Applicant distinguished the linear and interactive content operation panels of its invention (as claimed in issued claims 2, 4, and 7) from the disclosures of Kawakami, and in particular the two alternative control panels shown in Kawakami Figs. 1(a) and 1(b). Ex. 1004, p. 97-104.

FIG. 1 (b)

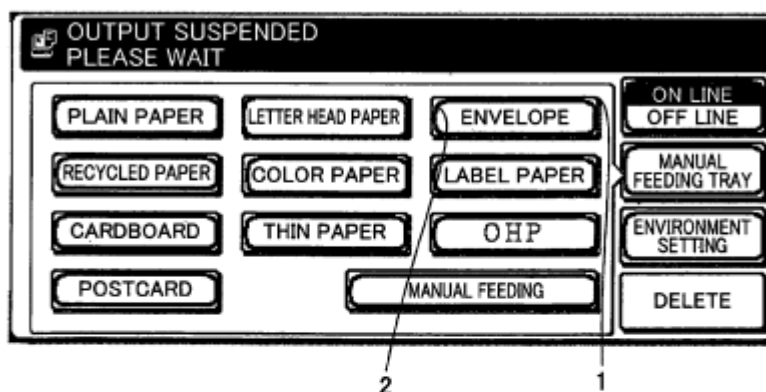
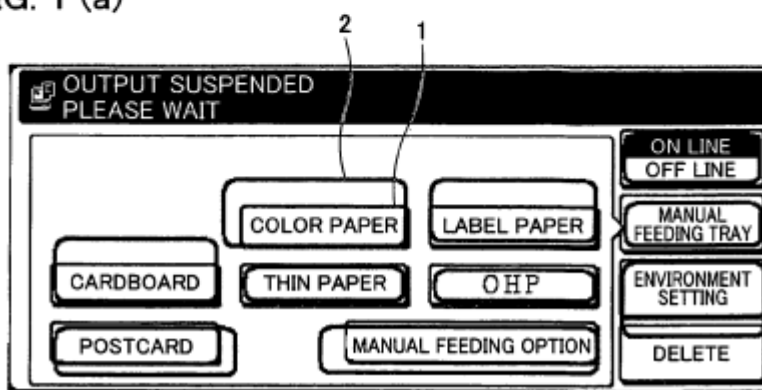


FIG. 1 (a)



84. As set forth above, with regard to application claim 15 (issued claim 4) the Applicant stated that because Kawakami's panels have buttons in common (for example the COLOR PAPER button), they "do NOT have buttons of one panel mutually different from buttons of the other panel" and "can never have mutually differing buttons." Ex. 1004, p. 102. Similarly, with regard to application claim 18 (issued claim 7), the Applicant stated that because Kawakami's panels have buttons in common (for example the COLOR PAPER button), they "do NOT have buttons

effecting mutually different functions from buttons of the other panel” and “can never have buttons with mutually differing functions.” Ex. 1004, p. 103-104.

85. With regard to application claim 13 (issued claim 2), the Applicant distinguished the “distinct panels” of the invention from Kawakami’s “master operation panel having ALL . . . buttons selectable,” and Kawakami’s variation operation panel where several of the buttons have . . . been ghosted out so as to not be selectable” but at least some others remain, including the color paper button. Ex. 1004, p. 99 (emphasis original).

86. In the reasons for allowance, the Examiner stated that the prior art of record did not “produc[e] the alternative display of linear and interactive content operation panels,” of application claims 13, 15, and 18 “in the manners argued by applicant in the response filed 12/8/2011.” Ex. 1004, p. 126.

87. In my opinion, the Applicant’s amendments and statements with regard to Kawakami would lead a person of ordinary skill in the art to conclude that claims 2, 4, and 7 of the ’394 Patent are limited to panels in which the buttons and functions are all mutually different. The disclosures of the specification of the ’394 Patent are consistent with this conclusion. As noted above, the specification discloses panels in which all buttons and functions are mutually different, and distinguishes prior art in which unusable keys were disabled but still displayed, requiring a “large panel rendering area.” Although claims 5 and 8 include limitations requiring that “all” of

the buttons and functions be mutually different between the two panels of the '394 patent, I understand that clear and unmistakable statements by the Applicant during prosecution can overcome the presumption that dependent claims are narrower in scope than independent claims.

B. “Input unit” / “output unit”

88. I have been informed that an element in a claim for a combination may be expressed as a means for performing a specified function without the recital of structure, material, or acts in support thereof, and that such element should be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof. I understand this is referred to as a “means-plus function” claim. I also understand that in order for a prior art reference to teach a means-plus function limitation, the prior art must disclose some structure that is deemed to be the same as, or an equivalent of, the structure disclosed in the specification for carrying out the claimed function. I have been informed that equivalence can be found when the structure in the prior art performs the claimed function in substantially the same way and with substantially the same result as the corresponding structure in the specification.

89. I am not providing an opinion regarding whether these are means-plus-function terms. However, if the Board finds that these terms are subject to means-plus-function treatment, I provide the following analysis. As set forth above, the

prior art discloses the claimed input and output units whether they are limited to the structures below or given their plain and ordinary meaning.

1. “input unit”

90. At the time of the '394 patent's 2005 priority date, it is my opinion that one of ordinary skill would have associated the claimed “input unit” with well-known hardware including tuners, network adapters, and device controllers to input media into the set top box, such as the tuner/broadcast receiving unit 1 in Figure 1, the network adapter/network connection unit B2 in in Figure 5, and the device controller 2 (which receives content from the data record unit 3) in Figure 7. Similarly, and consistent with the foregoing, at col. 4, lines 3-6 of the '394 patent, the patent references the Japanese terrestrial digital broadcasting and associated guidelines, which depict in Figure 1-1 the “[h]ardware components of basic receiver units” and includes a “tuner” as an exemplary input unit. Ex. 1017, p. 37 (3-13 in original pagination).

91. To the extent the '394 patent's claims do not directly recite the use of the known structure described above, I provide the following means-plus-function analysis. The function recited by the “input unit” in claims 2, 4, and 7 is inputting digital content. The structures most closely linked to this function in the patent's specification are the described tuner/broadcast receiving unit 1 (Fig. 1), network adapter/network connection unit B2 (Fig. 5), or device controller 2 (Fig. 7), together

with the mid-2000s era processors known to those skilled in the art. These structures are also described in the '394 patent:

the digital content reproduction apparatus records broadcast data received at a broadcast receiving unit 1 in a data record unit 3 with involvement of a data input/output control unit 2. The data input/output control unit 2 reads data from the data record unit 3 and supplies the read data via a data extraction (demultiplex) unit 4 to a content decode unit 6 which decodes the supplied data and sends the decoded data to an image rendering unit 7. A data monitor unit 5 always monitors information on digital contents in the data extraction unit 4, and in accordance with a change in the information, instructs the image rendering unit 7 to perform rendering of a user operation interface corresponding to the information on the contents. The decoded contents and the user operation interface are superimposed and output as image data by the image rendering unit 7. A user input to the displayed user operation interface from a mouse, keyboard or a remote controller is sent to a user operation unit 8 which transfers the user operation information to a system control unit 9. In accordance with the user operation information, the system control unit 9 controls the broadcast receiving unit 1, data input/output control unit 2, data extraction unit 4, content decode unit 6 and image rendering unit 7. Ex. 1001 at 3:19-42.

In the above description, although data is supplied to the apparatus by using broadcasting waves, in this embodiment, digital content services via a network B1 are assumed. In this case [as shown in Figure 5], data can be acquired via a network connection unit B2 connected to the

network B1. The data input/output control unit 2 and other succeeding units are similar to those described above, and the description thereof is omitted. Ex. 1001 at 4:37-43.

In the foregoing description, although data acquired by using broadcasting waves is recorded in the data record unit 3, in this embodiment [as shown in Figure 7], the broadcast receiving unit 1 is not provided and only data recorded beforehand in the data record unit 3 is reproduced. This embodiment assumes an apparatus dedicated only to reproduction. The data input/output control unit 2 and other succeeding units are similar to those described above, and the description thereof is omitted. Ex. 1001 at 4:62-5:2.

2. “output unit”

92. At the time of the '394 patent's 2005 priority date, it is my opinion that one of ordinary skill in the art would have understood the claimed “output unit” to recite a graphics system that generates an image for output to a display, given the data needed to create the image. This is consistent with the '394 patent's explanation that “decoded contents and the user operation interface are superposed and output as image data by the image rendering unit 7.” Ex. 1001 at 3:31-33. This is also consistent with the ARIB TR-B14 Technical Report, which shows “Video OUTPUT” being controlled by “Display Processing,” which communicates with a “Video Decode” unit. Ex. 1017, p. 37 (3-13 in original pagination).

93. To the extent the '394 patent's claims do not directly recite the use of the known structure described above, I provide the following means-plus-function analysis. The function recited by the "output unit" is outputting the reproduced digital content. The structure most closely linked to this function in the patent's specification is the image rendering unit 7 shown, for example, in Figure 1, where it is labeled "GRAPHICS." This structure is described at col. 3, lines 19-42. It is my opinion that one of ordinary skill in the art would have understood this structure to constitute circuitry or software for generating graphics. One example is a GPU, a specialized kind of processor designed for creating graphical images.

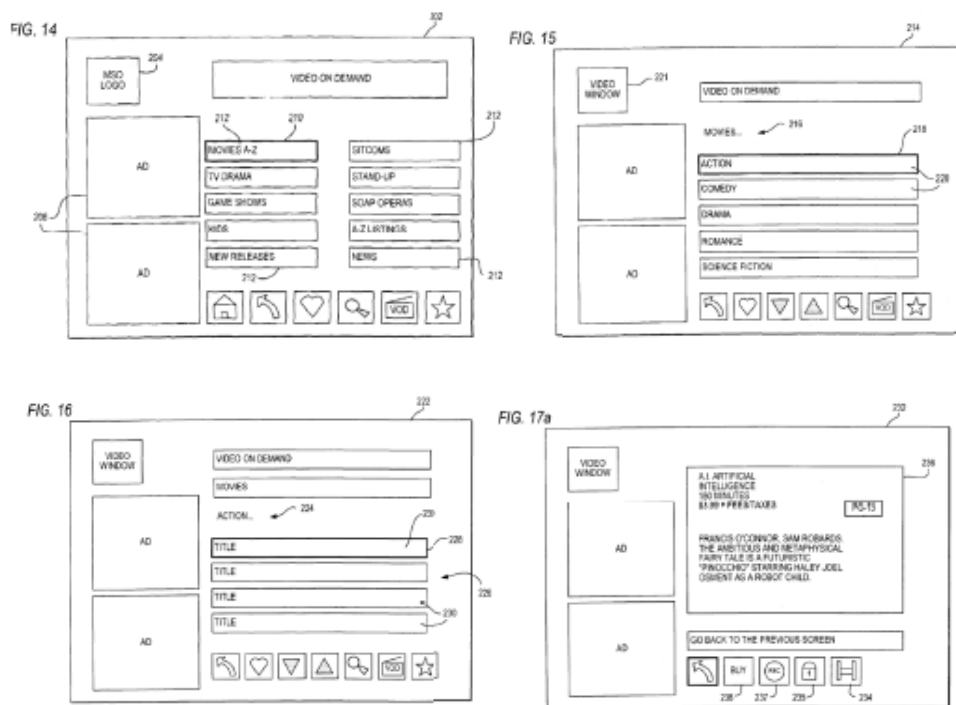
VIII. Summary of Prior Art References

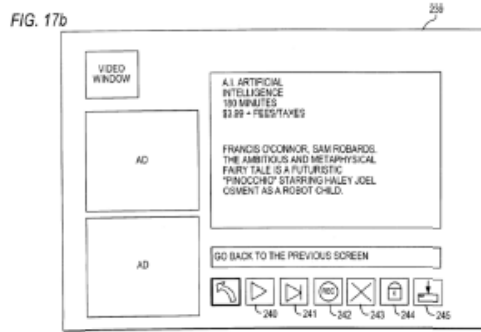
94. I have been informed that the references in this section are prior art. I am not a patent lawyer and I do not hold myself out as an expert in determining whether a reference is prior art.

A. U.S. Patent No. 7,293,276 to Phillips (Ex. 1005).

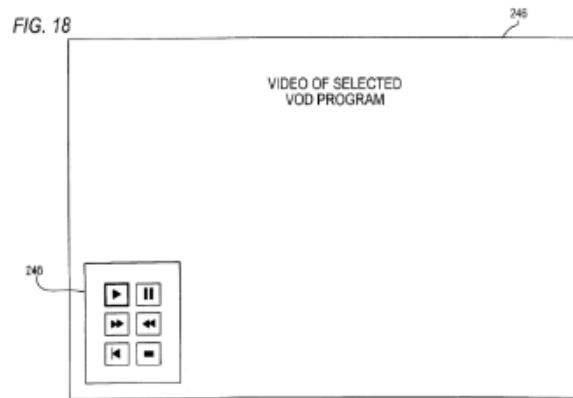
95. Phillips provides a set top box or an "Interactive Television Program Guide for Recording Enhanced Video Content" that displays linear and interactive content to an end-user watching television. Ex. 1005 at 6:31-63. Phillips's "interactive content" includes, for example, interactive VoD menu structures, whereas Phillips's linear content includes video media.

96. Phillips’s “interactive television services” also include an “interactive television program guide application, a home shopping application, a home banking application, a video-on-demand application, game applications, and other applications.” Ex. 1005 at 8:45-50; *see also id.* at 7:27-9:22. Some of Phillips’s interactive VoD screens are shown in Figures 14-17, below. The interactive content operation panels include the buttons arranged at the bottom of Phillips’s screen. These buttons allow the user to scroll through the displayed interactive content, select the next VoD screen and, in this way, the user’s interaction with Phillips’s operation panel drives the subsequent content that is displayed.

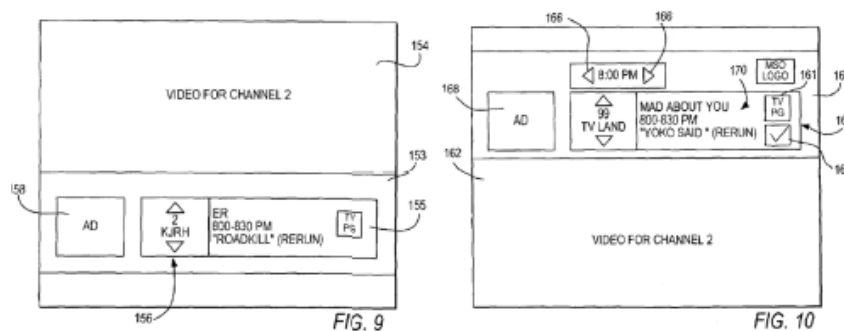




97. Figure 18 shows a selected VoD program, allowing the user to control the linear video content with the following controls: rewind to the beginning, rewind, play, fast-forward, pause, and stop delivery. Ex. 1005 at 20:18-30.



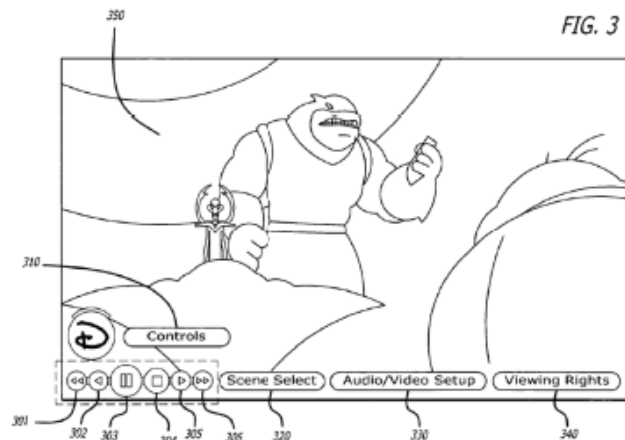
98. Phillips's Figures 9 and 10 depict overlaid operation panels for "flip" tuning through TV channels (Figure 9), or for browsing through the TV guide (Figure 10). Ex. 1005 at 16:22-17:32.



B. U.S. Patent No. 8,112,711 to Ackley (Ex. 1007).

99. Ackley discloses a DVD system that monitors the metadata of incoming content and, based on that metadata, populates an appropriate operation panel.

100. Specifically, Ackley describes “a menu system that overlays the video on a DVD, and can be viewed and selections made during playback/viewing of a video stream.” Ex. 1007 at 3:25-32.



101. If the system’s metadata indicates that the displayed video is streaming a section of the movie that may take an alternate ending, or if a depicted item in the movie is for sale, Ackley’s interaction content operation panel will automatically appear. Ex. 1007 at 4:52-5:3. By doing so, the displayed operation panel allows for the user to select the alternate ending or make a purchase:

In another embodiment, an automatic menu may also appear if the video is streaming a section where the movie may take an alternate ending, or an alternate plot. Once the section in the video with an alternate plot is showing, an automatic menu would be displayed showing the possible alternate endings. The streaming of the movie would continue unless the user selects one of the options.

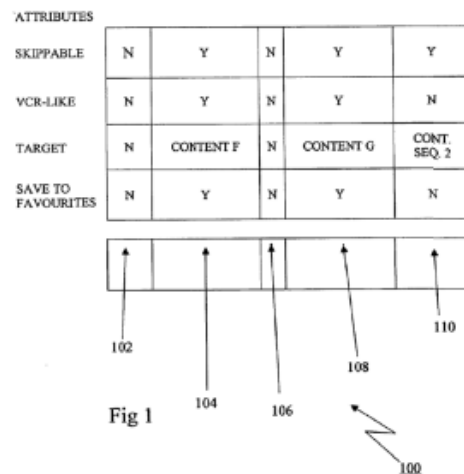
In another embodiment, if an item is for sale online, a menu would automatically be displayed along with options for purchasing the item. The item for sale may be pointed out by highlighting it. For instance, if a movie displays a person using a cell phone, and the cell phone is a featured item for sale, an automatic menu specific to the cell phone would appear. The menu could contain purchasing information, education information on how cell phones work, or specifications of the cell phone in the movie. In another embodiment, the featured item for sale may be highlighted in the screen and a user may click on the cell phone to view a menu specific to the cell phone.

Ex. 1007 at 4:52-5:3.

C. U.S. Patent Publication No. 2005/0188408 to Wallis (Ex. 1006)

102. Like Ackley, Wallis discloses a multimedia player that monitors the metadata of incoming content and, based on that metadata, populates an appropriate operation panel. Wallis does this by creating an attribute map as shown in Figure 1.

Ex. 1006 at ¶¶0002, 0024.



103. Wallis’s attributes include whether the content is skippable, “VCR-Like,” links to other content (“target”), or can be saved to favorites. Ex. 1006 at ¶¶0030-0034. The attribute metadata is stored in a service database and may also

indicate whether the fast forward, rewind, and pause keys should be active; whether a skip button should be active; whether a save to favorites button should be active; or whether a button allowing the user to jump to a linked/targeted video should be active. Ex. 1006 at ¶¶0057-0065.

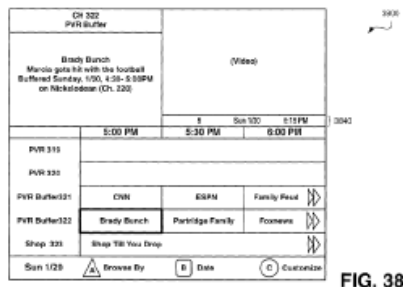
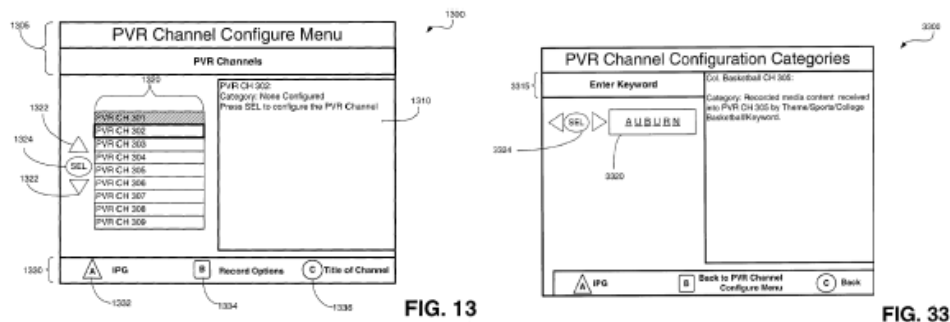
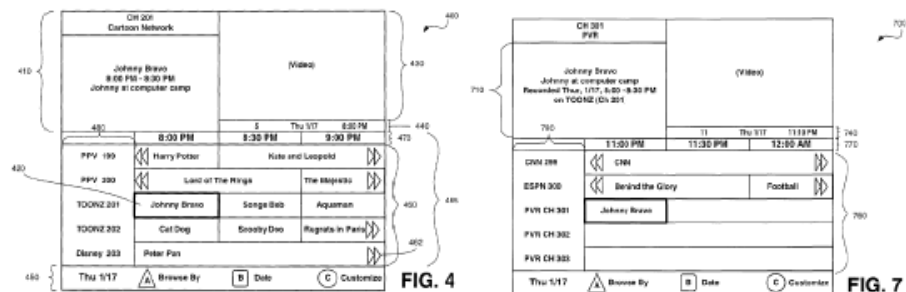
104. Wallis's metadata can be saved for "a specific item of content," series of content," "a TV channel," "a category of content," "a credit," "another VoD screen or service," "a product," or "quizzes, competitions and questionnaires." Ex. 1006 at ¶¶0068-0076; *see also id.* at ¶¶0077-0083.

D. U.S. Patent No. 8,181,205 to Russ (Ex. 1008).

105. Russ describes a set top box or digital home communication terminal (DHCT) that cooperates with a headend 11 to provide television services to an end user. These services may include broadcast television services, cable television services, premium television services, video-on-demand (VoD) services, and/or pay-per-view (PPV) services, among others. Ex. 1008 at 6:28-47. Russ provides other "interactive television services" such as a "media-on-demand (MoD) application, an e-mail application, a PVR [personal video recorder] application, and a web browser application." Ex. 1008 at 9:29-31.

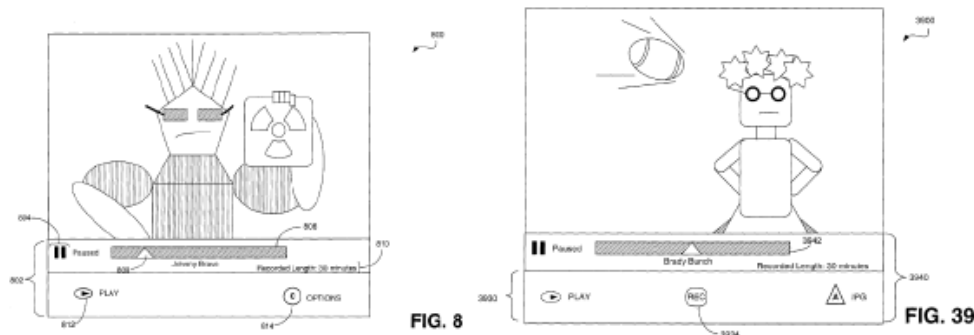
106. Some of Russ's interactive content screens are shown in the figures below. The interactive content operation panels include the buttons arranged at the bottom of Russ's screen, along with up/down and left/right scroll buttons. To one

of ordinary skill in the art, an operation panel is an organized presentation of user control buttons. The buttons needed not be contained within a specific border. These buttons allow the user to scroll through the displayed interactive content, select the next menu and, in this way, the user's interaction with Russ's operation panel drives the subsequent content that is displayed. Exemplary interactive content display screens are shown below in Figures 4, 7, 13, 33 and 38.



107. Figures 8 and 39 show exemplary linear content screens after a video is selected. These screens include an operation panel with an overlaid pause banner

802/3940 that allows the user to return to IPG, play, and record the media. The operation panel also includes a video status bar. Ex. 1008 at 17:30-18:23, 25:41-50. The operation panel may be invoked by pressing the pause button on a remote control device; however, in my opinion a person of ordinary skill in the art would have also known that the operation panel may be invoked without the video content being paused. This is because it is disclosed that pressing the pause button is only one way to display the pause banner. Ex. 1008 at 17:37-39. Furthermore, once the pause banner is displayed, the user can press the play button to start playing the video. Ex. 1008 at 18:10-12. That is, it may be shown on Russ's display even while the video is playing.

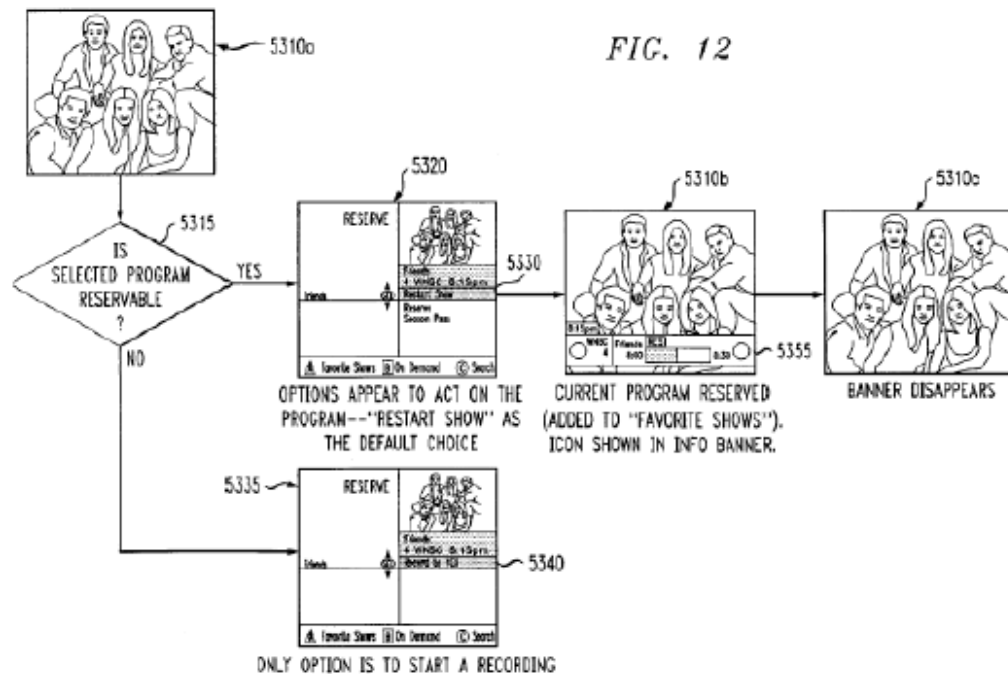


E. U.S. Patent No. 7,073,189 to McElhatten (Ex. 1009).

108. McElhatten discloses a processor that determines the type of digital content displayed to the user and provides the user with different operation panels based on the detected content.

109. For example, McElhatten presents the user with different GUIs based on whether the media content is reservable. If it is, and as shown in Figure 12, GUI

5320 is displayed providing the user with three options (5330): (1) restart the program, (2) reserve the program, or (3) select a season pass. If the content is not reservable, GUI 5335 is displayed indicating that the user has the option to record the selected program to a VCR or PVR. Ex. 1009 at 15:62-16:13.



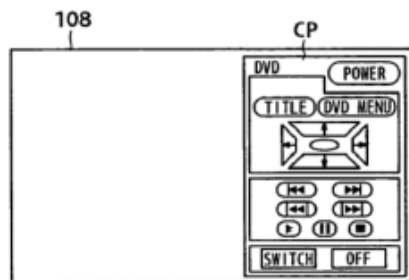
110. McElhatten also monitors the content reserved and viewed by the user so that a profile of the user's interest can be created for targeted advertising. Ex. 1009 at 34:63-35:35.

F. U.S. Patent No. 8,773,360 to Uchida (Ex. 1010).

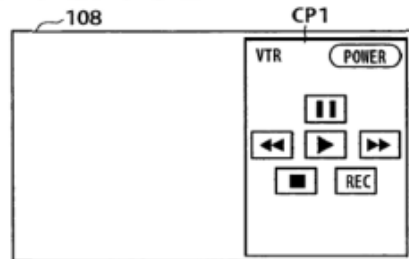
111. Uchida provides an example of the known window manager/tiled window layout concept in the context of TV displays. Recognizing the benefits of this technology, Uchida explains that when a single display is used for both content and the content's operation panel, "an image displayed on the entire display screen

of the display device may hide behind the operation display information to make it difficult to see important information....” Ex. 1010 at 1:47-57. This difficulty is overcome by using a window manager/tiled window layout where Uchida’s display 108 is divided into a dedicated content display area and a dedicated control panel (CP) or operational panel display area. Ex. 1010 at 21:36-22:7.

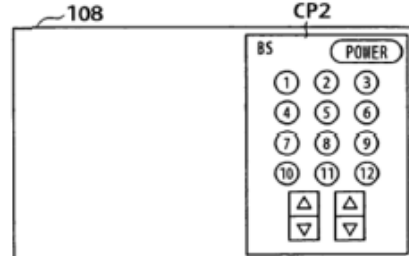
F I G. 1 0 A



F I G. 1 0 B



F I G. 1 0 C



112. As shown above, Uchida’s operation panel display area alternates between different operation panels depending on whether the content is being output

from a DVD (10A), a video tape recorder (10B), or a TV tuner (10C). Ex. 1010 at 21:54-67.

IX. Summary of Opinions Regarding Invalidity

113. The below table provides a summary of my opinions regarding the invalidity of the claims of the ‘394 patent.

Section	Claims	Basis	Reference or Combination
X	2, 4, 5, 7, 8	Anticipation	Phillips
XI	2, 4, 5, 7, 8	Obviousness	Phillips in view of Ackley
XII	2, 4, 5, 7, 8	Obviousness	Phillips in view of Wallis
XIII	3, 6, 9	Obviousness	Phillips in view of Uchida; Phillips in view of Ackley and Uchida; or Phillips in view of Wallis and Uchida
XIV	2, 4, 5, 7, 8	Obviousness	Russ in view of McElhatten
XV	3, 6, 9	Obviousness	Russ in view of McElhatten and Uchida

X. Claims 2, 4, 5, 7, and 8 are Anticipated by Phillips.

114. I have been asked whether Phillips discloses each and every element of claims 2, 4, 5, 7, and 8. As detailed below, it is my opinion that Phillips anticipates these claims.

115. I have provided an overview of Phillips above in paragraphs 95-98.

A. Claim 2 [Preamble]: A digital content reproducing apparatus, comprising:

116. Phillips discloses (Ex. 1005 at 6:51-63) a digital content reproducing apparatus that may, for example, receive and display television and music programming and other information from a television distribution facility:

Television distribution facility 14 may be connected to various user equipment devices 18. Such user equipment 18 may, for example, be located in the homes of users. User equipment 18 may include user television equipment 20 or user computer equipment 22.

The user equipment may receive television and music programming and other information from television distribution facility 14 over communications paths such as communications paths 26, 27, and 28. The user equipment may also transmit signals to television distribution facility 14 over paths 26, 27, and 28. Paths 26, 27, and 28 may be cables or other wired connections, free-space connections (e.g., for broadcast or other wireless signals), satellite links, etc.

Ex. 1005 at 6:51-63.

117. In my opinion, all of the functionality described by Phillips and depicted in its figures would have been understood by one of ordinary skill in the art as operating within a single embodiment of Phillips's set-top-box or digital content reproducing apparatus.

118. It is therefore my opinion that Phillips discloses each and every element of the claimed digital content reproducing apparatus.

B. Claim 2[a]: an input unit which inputs digital content;

119. Phillips's set-top box is an exemplary user-side input unit for the input of digital content. Phillips explains that its set top box may have input/output 58 "connected to communications paths such as paths 27 and 46. Input/output functions may be provided by one or more wires or communications paths, but are shown as a single path in FIG. 2 to avoid overcomplicating the drawing. Television programming and other information may be received using input/output 58.

Commands and requests and other information from the user may also be transmitted over input/output 58.” Ex. 1005 at 9:23-32. Phillips’s set-top box 66 (as shown in Figure 3) receives digital content via input/output 70. Ex. 1005 at 10:49-51.

20

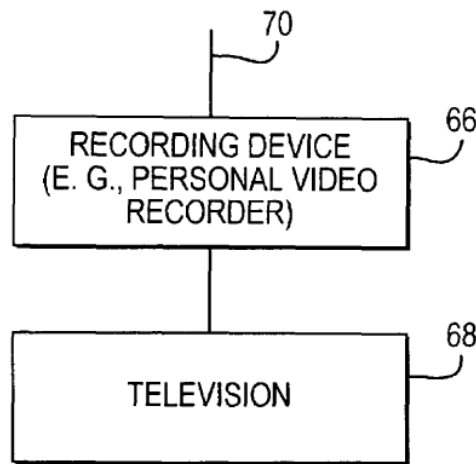


FIG. 3

120. Set-top box 66 contains analog and/or digital tuners and decoding circuitry for receiving digital television and music channels, which may be multiplexed. Ex. 1005 at 10:54-60. Additional communications circuitry in set-top box 66 is disclosed at 11:12-20. Set-top box 66 also contains a processor and random access memory for use when executing applications (Ex. 1005 at 10:60-64) and a hard disk or other storage that “may also be used to record video such as television programs or video-on-demand content or other content provided to recording device 66 over input/output 70.” Ex. 1005 at 11:1-5.

121. Phillips’s Figure 6 below is “a generalized diagram of illustrative user equipment” of Figure 3. Ex. 1005 at 5:3-4, 13:48-49. Figure 6 shows “control circuitry 106 [] connected to input/output 108.” Ex. 1005 at 13:50-51; *see also id.* at 13:52-14:23. And, more generally, Phillips’s end-user equipment contains a processor and random access memory for use when executing applications, along with analog and/or digital tuners and decoding circuitry for receiving digital television and music channels. Ex. 1005 at 9:33-58. Input/output 108 sends television and music programming to the display device. Ex. 1005 at 13:51-54.

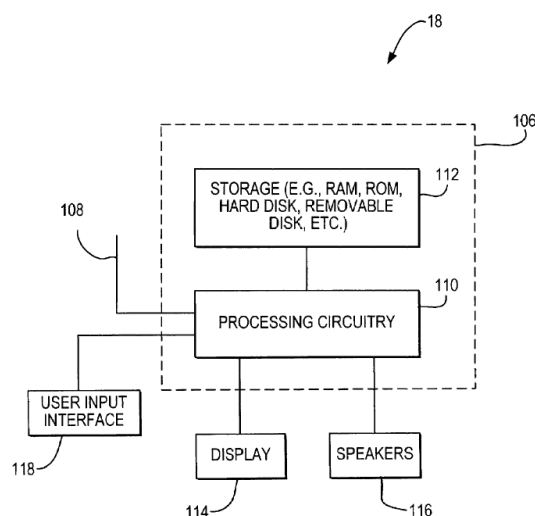


FIG. 6

122. Phillips also explains that “Control circuitry 106 may be based on any suitable processing circuitry 110 such as processing circuitry based on one or more microprocessors, microcontrollers, digital signal processors, programmable logic devices, etc. Memory (e.g., random-access memory and read-only memory), hard drives, DVD drives, CD drives, or any other suitable memory or storage devices may

be provided as storage 112 that is part of control circuitry 106. Tuning circuitry such as one or more analog tuners, one or more MPEG-2 decoders or other digital video circuitry, or any other suitable tuning or video circuits or combinations of such circuits may also be included as part of circuitry 106. Encoding circuitry (*e.g.*, for converting over-the-air or cable analog signals to MPEG signals for storage) may also be provided....” Ex. 1005 at 13:65-14:23. Furthermore, “digital decoding circuitry for receiving digital television and music channels” are used for inputting digital signals. Ex. 1005 at 9:36-38.

123. It is therefore my opinion that Phillips discloses the claimed “input unit which inputs digital content” including digital tuners and decoders. For the same reasons, if this term is construed as a means-plus-function term, it is my opinion that Phillips discloses the claimed structure (digital video circuitry including digital tuners and decoders) and function (inputting digital content).

C. Claim 2[b]: a reproducer which reproduces the inputted digital content;

124. Phillips’s digital content reproducing apparatus includes a reproducer that reproduces inputted digital content. Set-top box 66, as shown in Figure 3, includes a hard disk or other storage that may be used to record video “such as television programs or video-on-demand content or other content provided to recording device 66...” Ex. 1005 at 11:1-5, 10:40-47.

125. Set-top box 66 thus permits a user “to watch a previously-recorded program” stored on the hard disk. Ex. 1005 at 11:29-32.

126. Additionally, Phillips’s control circuitry 106 includes storage 112, which may house recording devices 62 and 66, and would be controlled by processing circuitry 110. Ex. 1005 at 13:50-14:23.

127. It is therefore my opinion that Phillips’s storage and associated control circuitry for video playback serve as a reproducer which reproduces inputted digital content.

D. Claim 2[c]: an output unit which outputs the reproduced digital content;

128. Phillips discloses an output unit that outputs the reproduced digital content. Set-top box 66 contains a processor and random access memory for use when executing applications (Ex. 1005 at 10:60-64), and outputs digital content to a television (Ex. 1005 at 10:47-48, 11:27-28 (“When the user presses play, the recorded video may be played back.”)). Phillips explains that its output may include that data stored by its recording devices 62/66 for display to the user. Ex. 1005 at 10:29-39.

129. Phillips’s control circuitry 106 includes “tuning and encoding circuitry [that] may be used by the user equipment to receive and display or play or record a particular television or music channel or other desired audio and video content (e.g., video-on-demand content or requested network-based or local video recorder

playback). Television programming and other video and on-screen options and information may be displayed on display 114. Display 114 may be a monitor, a television, or any other suitable equipment for displaying visual images....” Ex. 1005 at 14:5-23.

130. It is therefore my opinion that Phillips discloses an output unit that outputs reproduced digital content including tuning and encoding circuitry that can generate graphics, at least because (as explained above) it is responsible for processing video and other graphical content for display. If this term is construed as a means-plus-function term, Phillips discloses the claimed structure (circuitry that can generate graphics) and function (outputting digital content).

E. Claim 2[d]: a display which displays the outputted digital content together with an alternative display of either of a linear content operation panel allowing user-instruction regarding linear reproduction functions of the reproduced digital content or an interactive content operation panel allowing user-instruction of interactive functions to an outside of the digital content reproducing apparatus;

131. Phillips discloses a display 114 that displays the outputted digital content. Phillips explains that “[t]elevision programming and other video and on-screen options and information may be displayed on display 114.” Ex. 1005 at 14:16-18. In Figures 14-17, for example, Phillips displays interactive content, whereas linear content is displayed in Figure 18. Other interactive content screens are shown in Phillips’s Figures 19-20, Figures 22-26, and Figure 28. Other linear content

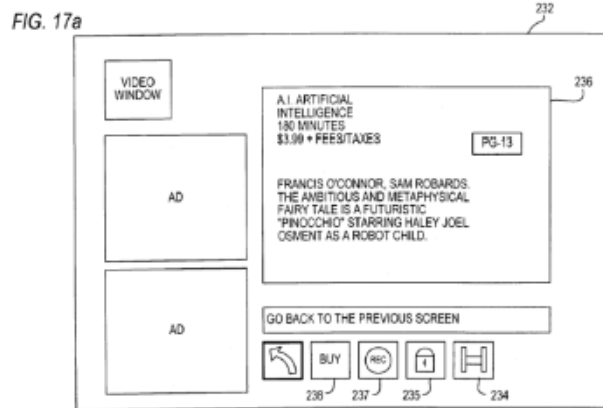
screens are shown in, for example, Phillips's Figure 21 (Ex. 1005 at 22:59-23:9) and Figure 27 (Ex. 1005 at 26:45-63).

132. Depending on the screen displayed, Phillips displays either a linear content operation panel allowing user-instruction regarding the linear reproduction functions, or an interactive content operation panel allowing user-instruction of interactive functions to an outside of the digital content reproducing apparatus.

133. I understand that the Patent Owner Maxell argued in connection with the Blackberry IPR that "linear content operation panel" should be construed to mean "A panel that provides at least functions of reproduce, stop, temporary stop, fast forward, fast backward, previous skip, next skip and similar linear reproduction functions" and that "interactive content operation panel" should be construed to mean "A panel that provides at least functions of numerical keys from 0 to 9, up/down/right/left keys, a decide key, blue/red/green/yellow keys and other keys providing similar interactive functions including allowing user instructions to an outside of the apparatus with the interactive content operation panel." Ex. 1020 at 9-10. I understand that the Board rejected these constructions in part because the '394 patent states that the functions of the interactive and linear content operations panels "are not limited to those described" specifically in the patent, "and may be increased or decreased in accordance with the apparatus function." Ex. 1020 at 9-10. Ex. 1001, 3:60-64. I agree that a person of ordinary skill in the art would not

necessarily understand the claimed linear content operation panel to be limited to the specific functions listed in the '394 patent. However, if the Board were limit a linear content operation panel to “linear reproduction functions” and an interactive content operation panel to “interactive functions,” Phillips discloses linear content operation panels with linear functions only, and interactive content operation panels with interactive functions only, as set forth with respect to this claim limitation and claim limitation 2[e] for example.

134. An exemplary interactive content screen displaying interactive VoD content is shown in Figure 17a. This screen includes an interactive content operation panel at its bottom with a back arrow to return to the previous screen, a buy button 238, a record button 237, a parental control button 235, and a preview button 234. Ex. 1005 at 19:30-57; *see also id.* at 17:50-52. Up/down scroll indicators 148/149 (shown in Figures 15 and 16, for example) allow the user to navigate through program listings. Ex. 1005 at 16:5-21. To one of ordinary skill in the art, an operation panel is an organized presentation of user control buttons. The buttons needed not be contained within a specific border. By using the operation panel buttons displayed below, the user’s interaction with Phillips’s operation panel drives the content subsequently displayed to the user.

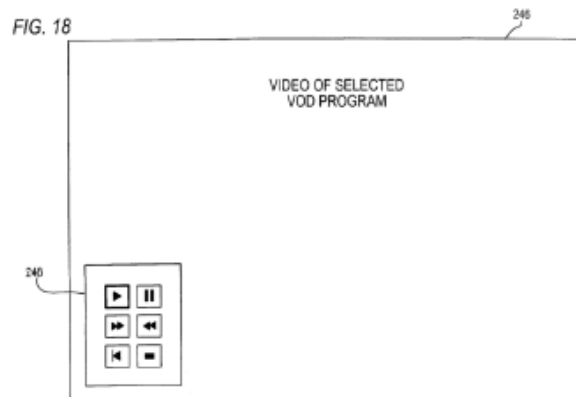


135. The selected instructions are transmitted to an outside of the digital content reproducing apparatus by informing server 36 or 56 that the user wishes to buy the video (button 238) or wishes to view a clip of the video (button 234):

- “Selectable options, such as options 234, 235, 237, and 238 may be provided as part of screen 232 to provide access to various interactive television application features. For example, option 238 may be selected to access options for ordering the selected video-on-demand content. Option 237 may be used to access options for recording the selected content, and option 235 may be used to access options for setting parental control locks for the selected content. If the user selects option 234, the interactive television application may display a video clip containing information on the video-on-demand content of interest (e.g., a promotional video such as a preview, a trailer, a review, etc.). *The video clip may be delivered to the user equipment 18 from a server such as server 36 or server 56 of FIG. 1 or from equipment at a service provider such a service provider 50.* The interactive television application may also provide the user with additional information on the video-on-demand content in response to the user selecting option 234. Other suitable selectable options may also be provided on screen 232 (e.g., a program package information and purchase option, options for searching program listings for related content, etc.).” Ex. 1005 at 19:37-57 (emphasis added).
- “In response to a user ordering selected content (e.g., by selecting an on-screen order option such as option 238 of 10 FIG. 17a, or by using remote control 72 or any other suitable input device 118 to order

content, etc.), the interactive television application may deliver the ordered video-on-demand content to the user equipment *from a server such as server 36 or server 56 or from a service provider such as 15 service provider 50*. The communications paths and communications network 34 of FIG. 1 may be used in delivering the requested content.” Ex. 1005, 20:8-17 (emphasis added).

136. As shown in Figure 18, below, linear VoD content is displayed to the user with a linear content operation panel 248. This operation panel allows “the user to rewind the video-on-demand content to the beginning, rewind, play, fast-forward, pause, stop delivery of the video-on-demand content, or perform other video playback options.” Ex. 1005 at 20:18-30.



137. It is therefore my opinion that Phillips discloses claim element 2[d].

F. Claim 2[e]: wherein the linear content operation panel and the interactive content operation panel are distinct panels from each other, which are not generated by a disabling of buttons; and

138. Phillips’s linear content operation panel and its interactive content operation panel provide distinct buttons from one another, with distinct functionality, which are not generated by the disabling of buttons. For example, in Figure 17a’s interactive control panel, button 238 enables the interactive television

application to display a video clip containing information on the video-on-demand content of interest; button 235 accesses options for setting parental controls; button 237 accesses options for recording the selected content; button 238 accesses options for ordering the selected video-on-demand content; and a previous screen button is also provided. Ex. 1005 at 19:40-48.

139. The buttons of Figure 18's linear content operation panel are entirely distinct, with separate functionality, and include play, rewind, fast-forward, pause, and stop functions. Ex. 1005 at 20:20-30. The buttons and functions of the operation panels of Figures 17a and 18 are all mutually different from each other.

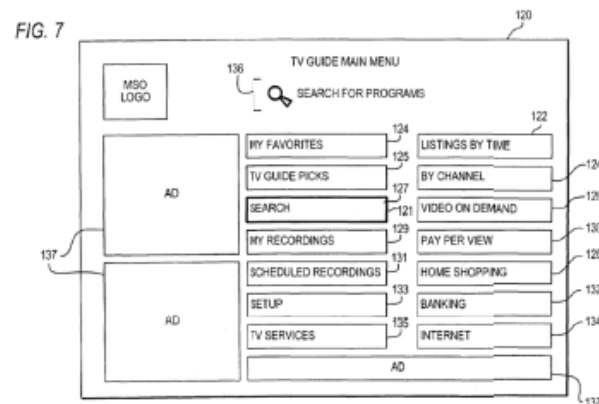
140. It is therefore my opinion that Phillips discloses claim element 2[e].

G. Claim 2[f]: a controller which controls the alternative display of either of the linear content operation panel or the interactive content operation panel, wherein only one of the linear content operation panel or the interactive content operation panel is displayed exclusively at any given time, together with the outputted digital content;

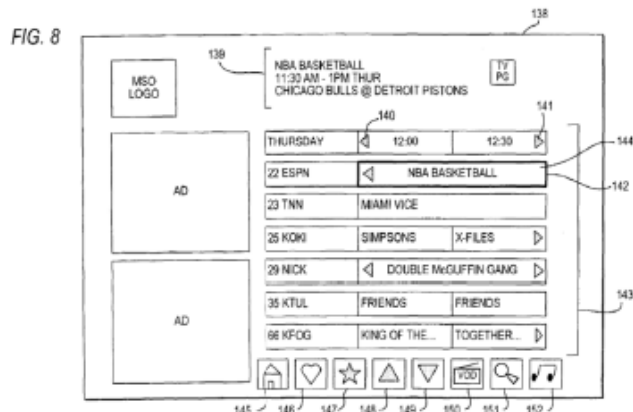
141. Phillips includes control circuitry 106 with tuning and encoding circuitry to receive and display the requested interactive and linear content. Ex. 1005 at 13:65-14:23. Control circuitry of Figure 6 and the circuitry of set-top box 66 contain a processor and random access memory for use when executing applications. Ex. 1005 at 13:65-14:5, 10:60-64. "Interactive television applications" run by the controller include the interactive program guide application and the video-on-demand application, among others. Ex. 1005 at 8:45-54. The applications may be

implemented locally. Ex. 1005 at 9:4-6. The control circuitry is controlled by the user with “user 25 input interface 118. The user input interface 118 may be any suitable user interface, such as a mouse, trackball, keypad, keyboard, touch screen, touch pad, voice recognition interface, remote control, etc.” Ex. 1005 at 14:24-28. Depending upon the user’s selection, the appropriate linear content or interactive content screen is displayed, along with the appropriate linear content or interactive content operation panel.

142. For example, as shown below in menu 120, Phillips “provide[s] the user with a number of selectable options.” Ex. 1005 at 14:29-33.



143. When option 122 is selected, Phillips’s control circuitry displays the interactive content “Listings by Time” menu to the user. This display includes an interactive content operation panel with buttons 145-152, allowing for the following functions, which will dictate the subsequently displayed content: main menu, favorites, recommended programs, scroll up and down, VoD services, search, and music services. Ex. 1005 at 15:14-16:21.



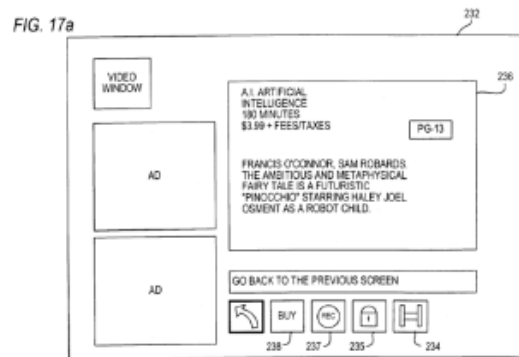
144. From here, selecting the VoD button 150 (like the Video on Demand button 128 in Figure 7), for example, instructs the control circuitry to display the interactive content video-on-demand screens of Figures 14-17, each having an interactive content operation panel. A user could also select Video on Demand button 128 of Figure 7. Ex. 1005 at 16:16-17, 18:65-67.

145. When a desired VoD video is purchased, Phillips's control circuitry displays the selected video/linear content, together with a linear operation control panel, as shown in Figure 18. Ex. 1005 at 20:8-30. And just as claim 2 requires, only one of Phillips's linear content operation panel or its interactive content operation panel is displayed, together with the outputted digital content, at any given time.

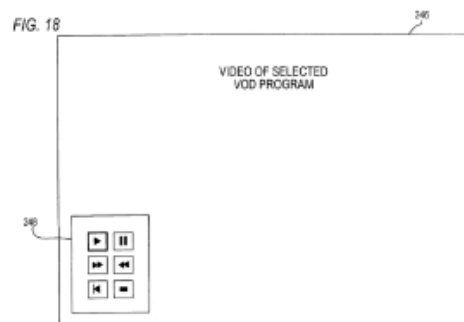
146. It is therefore my opinion that Phillips discloses claim element 2[f].

H. Claim 2[g]: wherein the outputted digital content together with either the linear content operation panel or the interactive content operation panel, are displayed concurrently in one screen.

147. In Phillips, the outputted digital content is displayed together with either the linear content operation panel or the interactive content operation panel, and in one screen. For example, in Figure 17a, the interactive content screen displaying interactive VoD content is displayed concurrently with the interactive content operation panel displayed along the bottom of the screen.



148. Similarly, in Figure 18, the linear content screen displaying the selected video is displayed concurrently with the linear content operation panel 248.



149. It is therefore my opinion that Phillips discloses claim element 2[g], and that Phillips anticipates the '394 patent's claim 2 in its entirety.

I. Claims 4, 5, 7, and 8.

150. As discussed above (*see* paragraphs 40-48), the limitations of claims 4 and 7 are identical to claim 2, the only difference being that instead of requiring the buttons of the “linear content operation panel and the interactive content operation panel [to be] distinct panels from each other, which are not generated by a disabling of buttons,” these claims recite:

- wherein buttons of the linear content operation panel are mutually different from buttons of the interactive content operation panel (claim 4);
- wherein buttons of the linear content operation panel producing mutually differing functions from functions of buttons of the interactive content operation panel (claim 7).

151. Similarly, claims 5 and 8 limit claims 4 and 7, respectively, by reciting the following:

- The digital content reproducing apparatus according to claim 4, wherein all the buttons are mutually different from each other (claim 5);
- The digital content reproducing apparatus according to claim 7, wherein all the buttons of the linear content operation panel and the interactive content operation panel, provide mutually differing functions from each other (claim 8).

152. While using slightly different language in each claim, claims 4, 5, 7, and 8 require the linear content operation panel and the interactive content operation panel to be distinct panels from each other, with mutually different buttons, that provide mutually different functions. This is disclosed by Phillips.

153. For example, in Phillips's Figure 17a's interactive content control panel, button 238 enables the interactive television application to display a video clip containing information on the video-on-demand content of interest; button 235 accesses options for setting parental controls; button 237 accesses options for recording the selected content; button 238 accesses options for ordering the selected video-on-demand content; and a previous screen button is also provided. Ex. 1005 at 19:40-48. Initiation of any one of these buttons on the interactive content operation panel drives the selection of the next content screen seen by the user.

154. The buttons of Figure 18's linear content operation panel, in contrast, are entirely distinct, which entirely separate functionality, and include play, rewind, fast-forward, pause, and stop functions. Ex. 1005 at 20:20-30. Thus, Phillips discloses that its linear content operation panel and its interactive content operation panel are distinct panels from each other, each with mutually different buttons, that provide mutually different functions.

155. It is my opinion that each and every limitation of claims 2, 4, 5, 7, and 8 are disclosed by Phillips.

XI. Claims 2, 4, 5, 7 and 8 are Rendered Obvious by Phillips and Ackley.

156. I have been asked to consider whether Phillips and Ackley disclose each limitation of claims 2, 4, 5, 7, and 8, and whether a person of ordinary skill in the art

would have combined the teachings of these references to arrive at the '394 patent's claims.

157. As detailed below, it is my opinion that Phillips in view of Ackley discloses each of the limitations set forth in claims 2, 4, 5, 7, and 8. It is also my opinion that one of ordinary skill in the art would have been motivated to combine these references and would have done so with a reasonable expectation of success. As such, it is my opinion that claims 2, 4, 5, 7, and 8 would have been obvious in view of Phillips and Ackley.

158. I have provided a general overview of Ackley at paragraphs 99-101.

159. As explained above, Phillips's control circuitry controls the alternative display of linear content operation panels and interactive content operation panels based on a programmed relationship of interactive content screens to corresponding interactive content operation panels, and linear content screens to corresponding linear content operation panels. Ackley, in contrast, monitors the content of the incoming data and, based upon that analysis, displays an appropriate operation panel. One of ordinary skill in the art would have found it obvious to incorporate Ackley's functionality into Phillips to render obvious claim 2[f],⁴ which recites "a controller

⁴ Claim elements 4[f] and 7[f] are identical to element 2[f] and, thus, my analysis herein applies equally to those claims.

which controls the alternative display of either of the linear content operation panel or the interactive content operation panel....”⁵

160. For example, if a displayed video in Ackley reaches a section of the movie that may take an alternate ending, or if there is an item shown on the display that could be purchased by the viewer, Ackley automatically populates an operation panel that would allow the viewer to select a desired ending or switch to a set of interactive screens/operation panels that would allow the viewer to purchase the item for sale:

In another embodiment, an automatic menu may also appear if the video is streaming a section where the movie may take an alternate ending, or an alternate plot. Once the section in the video with an alternate plot is showing, an automatic menu would be displayed showing the possible alternate endings. The streaming of the movie would continue unless the user selects one of the options.

In another embodiment, if an item is for sale online, a menu would automatically be displayed along with options for purchasing the item. The item for sale may be pointed out by highlighting it. For instance, if a movie displays a person using a cell phone, and the cell phone is a featured item for sale, an automatic menu specific to the cell phone would appear. The menu could contain purchasing information, education information on how cell phones work, or specifications of the cell phone in the movie. In another embodiment, the featured item for

⁵ This analysis is provided in the event that this limitation is interpreted to require display of alternative panels based on monitoring of incoming data, as disclosed in Ackley, Wallis, and McElhatten. In my opinion, the claims do not include such a requirement, and therefore are met by systems that employ a pre-programmed relationship between the content and the panels, as disclosed by Phillips and Russ, for example.

sale may be highlighted in the screen and a user may click on the cell phone to view a menu specific to the cell phone.

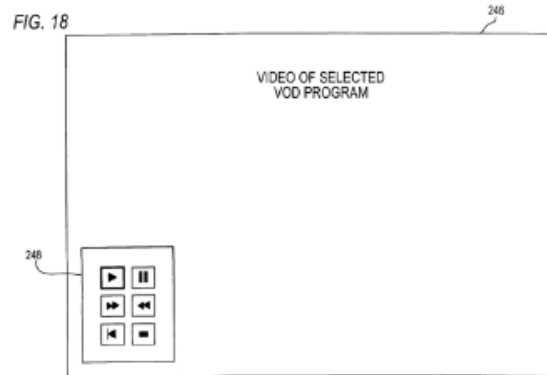
Ex. 1007 at 4:52-5:3.

161. It is my opinion that one of ordinary skill in the art would have been motivated to incorporate this functionality from Ackley into Phillips's digital content reproducing apparatus for a number of different reasons. First, this would provide Phillips with a more customized user experience, allowing the user to interact with displayed content to, for example, gain more information about the content, make purchases, view advertising, and the like. Second, by allowing the user to view advertisements and make purchases while viewing content, the content provider may generate additional revenue, providing another reason to incorporate Ackley's functionality with Phillips. Third, Phillips already provides a home shopping application. Ex. 1005 at 8:45-50. It is my opinion that one of ordinary skill in the art would have immediately recognized that this application could be enhanced in view of Ackley to provide particular operation panels and purchasing options tailored to the displayed content. Fourth, Phillips and Ackley are both concerned with user interface design and thus one of ordinary skill would be more inclined to combine them.

162. Fifth, incorporating Ackley's dynamic operation panel generation with Phillips would enable Phillips's software architecture to more naturally accommodate other, future, data types. That is, by associating the user interface with

data (Ackley) rather than coding to a specific screen (Phillips), this would have the benefit of having the decision of which content operation panel is displayed to be controlled by the content provider without having to explicitly coordinate with the viewer (*i.e.*, Phillips's controller). This "separation of concerns" is a standard software engineering principle. By separating the different components of a technical system and minimizing the coordination between them, each can be developed, tested, and updated separately from each other, which decreases cost and complexity while at the same time increasing reliability. More specifically, if a future data type was developed, and the controller was already able to make a decision about what interface to display based on metadata associated with the data content, then the controller would not have to be updated in order to have it work with the new data type. Instead, the content provider could just provide metadata associated with the new data type that would direct the controller to display the appropriate interface.

163. One of Phillips's linear content displays with linear content operation control panel 248 is shown below.



164. In my opinion, one of ordinary skill in the art would have understood that control panel 248 would be displayed until Phillips's control circuitry receives an input indicating that, for example, the displayed movie may take an alternate ending or an item displayed in the movie is for sale. Based on this metadata, Phillips's controller would alternate from the displayed linear content operation panel to an interactive content operation panel so that the user may select an alternate ending or navigate the various purchase options that may be associated with the item for sale. The user may also be directed to Phillips's home shopping application to purchase the item or view additional advertisements/information about the item for sale.

165. It is my opinion that one of ordinary skill in the art would have also been capable of incorporating Ackley's data monitoring technique into Phillips with a reasonable expectation of success. In particular, Ackley's metadata monitoring and subsequent operation panel generation would have been easily implemented in Phillips with an "if" programming statement. One of the most basic control

structures is a “condition statement”, written as an “if” statement in most programming languages. For example, if a programmer wants to add two numbers (2 and 3) and store the result in a variable named ‘result’ only when the value of a variable named ‘var’ is greater than 10, they might write the following three lines of code:

```
if (var > 10) {  
    result = 2 + 3;  
}
```

166. This kind of conditional statement is at the foundation of programming. In fact, I taught it to students myself in the third week of my introductory programming course for computer science majors in 2004 and 2010. An outline of my 2010 course is available on the web⁶ and shows that control structures were covered in the third week.

167. Applying this programming technique to the matter at hand, using Ackley’s data monitoring to Phillips’s decision-making process might look something like this:

```
datatype = determine_datatype_from_data(data);  
if (datatype == "video") {
```

6

<https://web.archive.org/web/20100610023921/http://www.cs.umd.edu:80/class/spring2010/cmsc131/LectureSlides/lectureSlides.shtml>

```
        display_linear_interface();  
    } else if (datatype == "for_sale") {  
        display_interactive_interface();  
    }
```

168. Of course, the actual details of the code for any particular, real-world implementation of Phillips and Ackley would be different, but the concept would be similar. The datatype would have to be determined from the metadata, as taught by Ackley, and this would dictate the appropriate operation panel. The structure of the data that informs that determination would have been formatted according to known techniques. It would have also been obvious to use a database, a more complex data structure instead of a single variable, or multiple elements with numerous values. I note that some languages may offer conditional statements that use words other than “if.” But in the end, one of ordinary skill in the art would have understood Ackley’s data monitoring to have been predictably implemented with a conditional statement linking certain metadata attributes to a particular operation panel.

169. Thus, changing Phillips’s existing decision-making process (based on user-interface screens) to a condition (based on Ackley’s data monitoring) would be a straightforward application of well-known programming techniques.

170. Because Phillips discloses each and every limitation of claims 2, 4, 5, 7, and 8, Phillips in combination with Ackley also discloses each and every

limitation of these claims. Accordingly, it is my opinion that claims 2, 4, 5, 7, and 8 are rendered obvious in view of the combination of Phillips and Ackley.

XII. Claims 2, 4, 5, 7 and 8 are Rendered Obvious by Phillips and Wallis.

171. I have been asked to consider whether Phillips and Wallis disclose each limitation of the claims 2, 4, 5, 7, and 8, and whether a person of ordinary skill in the art would have combined the teachings of these references to arrive at the '394 patent's claims.

172. As detailed below, it is my opinion that Phillips in view of Wallis discloses each of the limitations set forth in claims 2, 4, 5, 7, and 8. It is also my opinion that one of ordinary skill in the art would have been motivated to combine these references and would have done so with a reasonable expectation of success. As such, it is my opinion that claims 2, 4, 5, 7, and 8 would have been obvious in view of Phillips and Wallis.

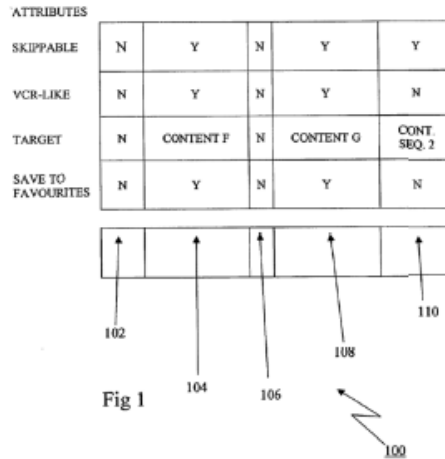
173. I have provided a general overview of Wallis at paragraphs 102-104.

174. As explained above, Phillips's control circuitry controls the alternative display of linear content operation panels and interactive content operation panels based on a programmed relationship of interactive content screens to corresponding interactive content operation panels, and linear content screens to corresponding linear content operation panels. Wallis, in contrast, monitors the metadata associated with incoming content and, based upon that metadata, displays an appropriate

operation panel. In my opinion, one of ordinary skill in the art would have found it obvious to incorporate Wallis's functionality into Phillips to render obvious claim 2[f],⁷ which recites "a controller which controls the alternative display of either of the linear content operation panel or the interactive content operation panel...."

175. Wallis discloses the well-known user interface control methodology in which the particular contents of a data stream, as indicated by its metadata, is used to populate an operation panel specific to that content. Specifically, Wallis's Figure 1 provides a metadata attribute mapping for digital VoD content, indicating whether the content is, for example, skippable, "VCR-Like," links to other content ("target"), or can be saved to favorites. Ex. 1006 at ¶¶0030-0035; *see also id.* at ¶¶0057-65. This data can be stored in a service database and be saved for "a specific item of content," "a series of content," "a TV channel," "a category of content," "a credit," "another VoD screen or service," "a product," or "quizzes, competitions and questionnaires." Ex. 1006 at ¶¶0068-0076; *see also id.* at ¶¶0077-0083.

⁷ Claim elements 4[f] and 7[f] are identical to element 2[f] and, thus, my analysis herein applies equally to those claims.



176. In one exemplary embodiment, Wallis explains that its system can be used to allow “a customer viewing a VoD entertainment channel [to be] presented with a promotion for a top-rated series (say, the Sopranos). A single button press during the run-time of this promotion will link the viewer directly to a list of episodes for the featured series. Another example might be a VoD music video service where the content sequence is a sequence of music video content item clips with targets attributes that are directed to the ‘full length’ music video content item.” Ex. 1006 at ¶0085.

177. In my opinion, one of ordinary skill in the art would have been motivated to incorporate Wallis’s functionality into Phillips’s digital content reproducing apparatus for a number of different reasons. First, by incorporating Wallis’s metadata-based attribute mapping of content features to operation panels, one of ordinary skill would have been able to program Phillips’s digital content reproducing apparatus to dynamically control whether an interactive content

operation panel or a linear content operation panel is displayed to the user and, within each type of control panel, what buttons to include. More specifically, rather than having a set operation panel that populates when a given VoD screen is displayed, or a set operation panel that populates when video or music is playing, Phillips's system as modified by Wallis allows for Phillips's operation panel display to dynamically populate a set of interactive content control buttons or linear content control buttons based on the attribute data associated with the digital content. This type of control methodology provides the user with a more customized and intuitive experience, where the specific operation panel displayed and the panel's buttons are specifically tailored to the content being displayed on the screen. Second, Phillips and Wallis are both concerned with user interface design and thus one of ordinary skill would be more inclined to combine them.

178. Third, incorporating Wallis's metadata attribute map and dynamic operation panel generation with Phillips would enable Phillips's software architecture to more naturally accommodate other, future, data types. That is, by associating the user interface with data (Wallis) rather than coding to a specific screen (Phillips), this would have the benefit of having the decision of which content operation panel is displayed to be controlled by the content provider without having to explicitly coordinate with the viewer (*i.e.*, Phillips's controller). By separating the different components of a technical system and minimizing the coordination

between them, each can be developed, tested, and updated separately from each other, which decreases cost and complexity while at the same time increasing reliability. More specifically, if a future data type was developed, and the controller was already able to make a decision about what interface to display based on metadata associated with the data content, then the controller would not have to be updated in order to have it work with the new data type. Instead, the content provider could just provide metadata associated with the new data type (as taught by Wallis) that would direct the controller to display the appropriate interface.

179. Fourth, future programming would not rely on a programmer having to create a new/discrete control panel for each new content screen. Instead, the appropriate control panel would be selected/populated simply by looking at the attribute values within Wallis's Figure 1.

180. In my opinion, one of ordinary skill in the art would have been capable of incorporating Wallis's metadata monitoring and attribute mapping into Phillips with a reasonable expectation of success. In particular, Wallis's metadata monitoring and attribute mapping would have been implement in Phillips with an "if" programming statement, just like in the Phillips/Ackley combination. Thus, changing Phillips's existing decision-making process (based on user-interface screens) to a condition (based on Wallis's metadata monitoring and attribute

mapping) would be a straightforward application of well-known programming techniques.

181. Moreover, the proposed combination of Phillips and Wallis does not rely on a disabling of buttons to disclose the claimed operation panels. Phillips's operation panels and their associated buttons, which are not changed by a disabling function, will be dynamically populated based on the attributes of the incoming interactive or linear content, as taught by Wallis. In my opinion, one of ordinary skill in the art would have also understood that Wallis is not limited to an alteration of operation panels based on the disabling of buttons. Instead, the reference more broadly describes and applies the well-known user interface control methodology that a given operation panel and its buttons can be dynamically displayed and tailored to the underlying content.

182. Because Phillips discloses each and every limitation of claims 2, 4, 5, 7, and 8, Phillips in combination with Wallis also discloses each and every limitation of these claims. Accordingly, it is my opinion that claims 2, 4, 5, 7, and 8 are rendered obvious in view of the combination of Phillips and Wallis.

XIII. Claims 3, 6, and 9 are Obvious Over Phillips and Uchida; Phillips, Ackley, and Uchida; and Phillips, Wallis, and Uchida.

183. Claim 3, which depends from claim 2, states that “the linear content operation panel and the interactive content operation panel are common in size, and [] alternatively switched between each other in a same panel rendering area of the

screen as alternative operation panels.” Claim 6, which depends from claim 4, and claim 9, which depends from claim 7, include the same limitation.

184. These claims split a display screen’s usable space between a content display area and an operation panel display area, which is precisely what is described by Uchida. Moreover, as explained above in paragraphs 111-112, Uchida is merely illustrative of the well-known window manager/tiled window layout concept, which is recited by claims 3, 6, and 9.

185. Specifically, Uchida includes a display 108 that is divided into a dedicated content display area and a dedicated control panel (CP) display area, or operation panel display area (Ex. 1010 at 21:36-22:7), such that “an image displayed on the entire display screen of the display device [does not] hide behind the operation display information [thereby making] it difficult to see important information....” Ex. 1010 at 1:47-57.

186. This is shown in Figures 10A-10C where the left side of Uchida’s display 108 is dedicated for content, and the right side of Uchida’s display is dedicated for Uchida’s operation panel.

FIG. 10A

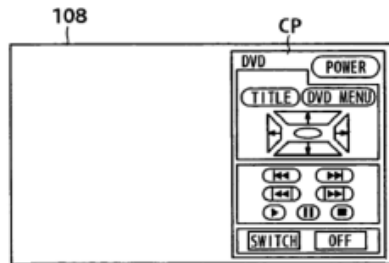


FIG. 10B

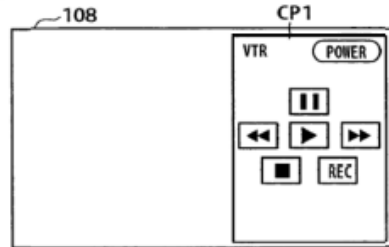
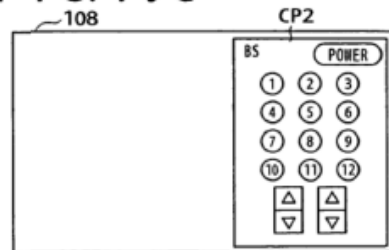


FIG. 10C



187. In Figure 10A, there is a control panel for DVD controls. In contrast, Uchida's operation panel changes in Figures 10B and 10C to accommodate the output from a video tape recorder (10B) or a TV tuner (10C). Ex. 1010 at 21:54-67.

188. By way of additional example, portable handheld devices typically use Uchida's split display technique. U.S. Patent No. 7,667,123 to Phillips explains that a "predetermined portion of the touch-sensitive display" shown in Figure 4 below will contain the devices operation panel and "programmable control buttons." Ex. 1011 at 6:14-32.

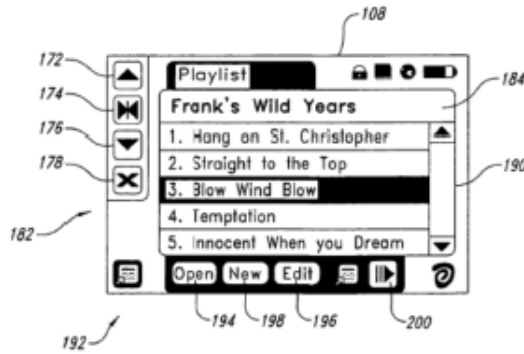


Fig. 4

189. As shown in Figure 5, the operation panel and control buttons may be “reprogrammed” to show different buttons depending on the content displayed. Ex. 1011 at 7:4-26. In Figure 5, the buttons have changed to include linear controls for music, as opposed to the Figure 4 operation panel containing “open,” “new,” and “edit” buttons.

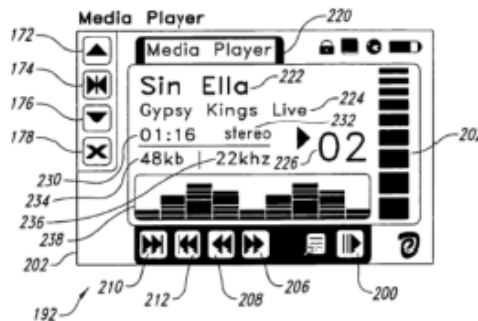


Fig. 5

190. In my opinion, one of ordinary skill in the art would have been motivated to incorporate Uchida’s split display with Phillips to achieve Uchida’s benefits of ensuring that the displayed content is not blocked or obstructed by a control GUI. In my opinion, one of ordinary skill in the art would have been motivated to incorporate Uchida with Phillips regardless of whether Ackley or

Wallis was also part of the proposed combination because neither Phillips, Ackley, nor Wallis demand that the depicted control GUI be displayed in any particular area. One of ordinary skill in the art would have understood that no matter how the references are combined, the user's control GUI or operation panel could be placed where desired, and Uchida teaches a known split-display technique that would have been beneficially adapted to Phillips's device, the Phillips/Ackley device, or the Phillips/Wallis device. Moreover, Phillips explains that rather than overlaying its operation panels on the displayed content, "the video for the current channel may be reduced in size and the flip information ... may be displayed at a location on the periphery of the reduced-sized video (*e.g.*, at the bottom, side, or top of the reduced-sized video)." Ex. 1005 at 16:45-50. Hence, Phillips already recognized the applicability of Uchida's split-screen display technique to Phillips's device/system.

191. Again, Uchida's split display concept is a very common display technique known as a tiled window layout used by well-known window managers since at least the 1980s. In fact, the ARIB TR-B14 Technical Report cited by the '394 patent acknowledged that this technique is "common in browsers on PCs": "Browsers should not display anything that may possibly cover up the presentation that contents intend to be. This is a restriction to avoid missing a part of contents with display by browser features such as buttons for users to control the browser and/or the URL frame, which are common in browsers on PCs." Ex. 1017 at p. 62

(3-38 in original pagination). Two exemplary split-screen displays are depicted in the report. *Id.* at 63 (3-39 in original pagination).⁸



Figure 1-7 Display when the data broadcasting resolution is 960x540



Figure 1-8 Display when the data broadcasting resolution is 720x480(16:9, 4:3)

192. Utilizing this type of display avoids any potential need for the user to have to reposition an overlapping panel, and thus effort and user time would be saved. In addition, a split screen avoids having the panel occlude any portion of the

⁸ The ARIB TR-B 14 Technical Report is the exact type of document that one of ordinary skill would reasonably rely on in forming their opinion, not only because it is discussed in the '394 patent, but also because its contents are (more generally) directly relevant to the subject matter of the patent. And although version 2.8 of the report is from May 2006, which is after the August 30, 2005 foreign priority date of the '394 patent, the definitions of the various hardware components associated with the described set top box or receiver unit would not have changed. Additionally, I have reviewed the report's amendment/revision history (Ex. 1018) and, with respect to the contents of the report that I have considered and cited to throughout this declaration, I have found nothing to indicate a change between the May 2005 version 2.4 report (just prior to the '394 patent's foreign filing) and the May 2006 version 2.8 report.

content. Further still, because Uchida's operation panel display is in its own dedicated area, the operation panel included in that area can be modified and changed without negatively impacting the content display area. This would have made it easier to accommodate future content types and operation panel controls, providing yet another reason that one of ordinary skill in the art would have been motivated to combine Uchida with the Phillips-based grounds.

193. Uchida's split screen display would have easily, and with a reasonable expectation of success, been integrated into the Phillips-based grounds. It would be a simple matter of setting the position and size of the content area and the panel of Phillips based on the non-overlapping position and size shown in Uchida. All two-dimensional GUIs that I am aware of, including television user interfaces, are created by specifying the position and size of each element (directly or indirectly through a layout algorithm). Performing the calculations to create a non-overlapping split-screen layout such as the kind disclosed by Uchida was well-known since at least the 1980's, as summarized in Exhibit 1017, and would involve nothing more than basic arithmetic and computer programming, which would have been straightforward and familiar to one of ordinary skill in the art at the time of the '394 patent.

194. Thus, it is my opinion that claims 3, 6, and 9 are rendered obvious by: the combination of Phillips and Uchida; the combination of Phillips, Ackley, and Uchida; or the combination of Phillips, Wallis, and Uchida.

XIV. Claims 2, 4, 5, 7, and 8 are Obvious in view of Russ and McElhatten.

195. I have been asked whether Russ and McElhatten disclose each and every element of claims 2, 4, 5, 7, and 8, and whether one of ordinary skill in the art would have been motivated to combine these references with a reasonable expectation of success. As detailed below, it is my opinion that Russ and McElhatten render these claims obvious.

196. I have provided an overview of Russ and McElhatten above in paragraphs 105-107 and 108-110.

A. Claim 2 [Preamble]: A digital content reproducing apparatus, comprising:

197. Russ discloses an end-user, digital content reproducing apparatus that receives television, music, and other information from a headend 11:

The DHCT 16 [(digital home communication terminal), *i.e.*, set-top box,] receives signals (video, audio and/or other data) from the headend 11 through the network 18.... Ex.1008, 6:28-31.

The headend 11 may include one or more server devices [] for providing video and/or audio and/or data to media client devices such as the DHCT 16. The headend 11 and the DHCT 16 cooperate to provide a user with television services via the television []. The television services may include, for example, broadcast television services, cable television services, premium television services, video-on-demand (VOD) services, and/or pay-per-view (PPV) services, among others.

Ex. 1008 at 6:38-47.

198. Russ therefore discloses a digital content reproducing apparatus.

B. Claim 2[a]: an input unit which inputs digital content;

199. Russ DHCT/set-top box is an exemplary user-side input unit that interfaces with network 18 via a network interface connected to tuners and signal processors:

FIG. 1 is a block diagram depicting a non-limiting example of a subscriber television system (STS) 10. In this example, the STS 10 includes a headend 11 and a digital home communication terminal (DHCT) 16 that are coupled via a communications network 18...Subscriber television systems also included within the scope of the preferred embodiments of the invention include systems not utilizing physical structured cabling for transmission, such as, but not limited to, satellite systems. Ex. 1008 at 6:6-22.

200. “DHCT 16 preferably includes a communications interface 342 for receiving signals (video, audio and/or other data) from the headend 11 through the network 18 and for providing any reverse information to the headend 11 through the network 18.” Ex. 1008 at 7:37-41.

201. DHCT/set-top-box 16 is shown below in Figure 3A and includes a communication interface 342, which is connected to tuner system 345 and signal processor 314.

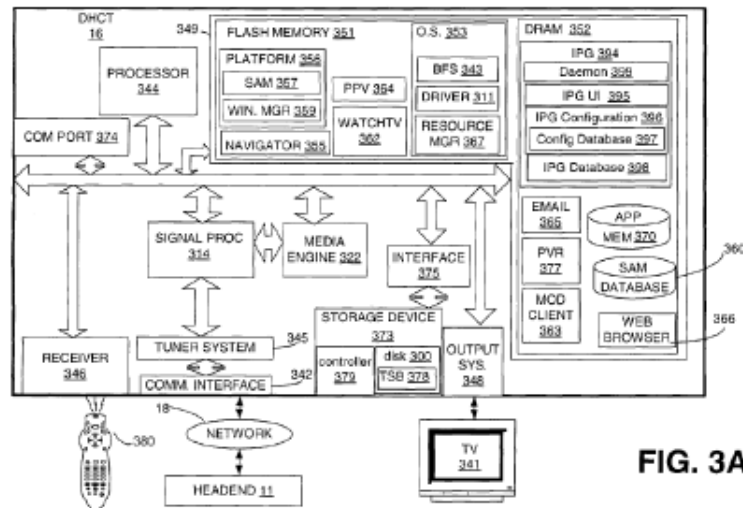


FIG. 3A

202. Russ further explains that:

[T]he DHCT 16 preferably includes one or more processors, such as processor 344, for controlling operations of the DHCT 16, an output system 348 for driving the television display 341, and at least one tuner system 345 for tuning into a particular television channel or frequency to display media content and for sending and receiving various types of data or media content to and from the headend 11. The DHCT 16 may include, in other embodiments, multiple tuners for receiving downloaded (or transmitted) media content. The tuner system 345 enables the DHCT 16 to tune to downstream media and data transmissions, thereby allowing a user to receive digital and/or analog media content delivered in the downstream transmission via the subscriber television system. The tuner system 345 includes, in one implementation, an out-of-band tuner for bidirectional QPSK data communication and one or more QAM tuners (in band) for receiving television signals. Additionally, a receiver 346 receives externally generated information, such as user inputs or commands from an input device, such as remote control device 380, or other devices.

The DHCT 16 processes analog and/or digital transmission signals for storage in the storage device 373, and/or for display to the television 341. The DHCT 16 preferably includes a signal processing system 314 and a media engine 322....

Ex. 1008 at 7:42-8:26. Russ's processor 344, in concert with device driver 311, storage device controller 379, and the signal processing system 314, also "effect retrieval of compressed video streams, compressed audio streams, and data streams corresponding to one or more media content instances from the storage device 373."

Ex. 1008 at 10:51-65.

203. It is therefore my opinion that Russ discloses the claimed input unit that inputs digital content, including digital video circuitry including network interfaces, tuners and decoders. If this term is construed as a means-plus-function term, Russ discloses the claimed structure (digital video circuitry including network interfaces, digital tuners and decoders) and function (inputting digital content).

C. Claim 2[b]: a reproducer which reproduces the inputted digital content;

204. Russ's storage device 373 "comprises storage for media content and/or data that can be written to for storage and later read from for retrieval for presentation," and constitutes the claimed reproducer along with associated control circuitry. Ex. 1008 at 10:15-17. Similarly, Russ's personal video recording (PVR) application 377 "provides for media content recording functionality by enabling the temporary writing to, and if requested, more permanent recording (*i.e.*, relatively permanent) to the storage device 373." Ex. 1008 at 10:66-11:2.

205. By storing and then processing the inputted digital content for eventual display, Russ's storage and associated control circuitry for video playback discloses a reproducer which reproduces the inputted digital content:

In one implementation, the processor 344, in communication generally with the device driver 311 and the storage device controller 379 and the signal processing system 314, effect retrieval of compressed video streams, compressed audio streams, and data streams corresponding to one or more media content instances from the storage device 373. *Retrieved streams are deposited in an output cache in the storage device 373 and transferred to DRAM 352, and then processed for playback according to mechanisms well known to those having ordinary skill in the art.* In some embodiments, one or more media content instances are retrieved and routed from the hard disk 300 to the media engine 322 for video and audio decoding simultaneously, and *then further processed for eventual presentation on a display device or other device.* Ex. 1008 at 10:51-65 (emphasis added).

206. It is my opinion that Russ discloses claim element 2[b].

D. Claim 2[c]: an output unit which outputs the reproduced digital content;

207. Russ's digital content reproducing apparatus includes an output system 348 for driving the television display 341. The media content that is received via the communication interface 342 from the headend 11, which may be reproduced in Russ's storage device 373, is output to a user's television via output system 348. Ex. 1008 at 7:42-50; *id.* at 10:51-65. Russ includes one or more processors 344 for controlling operations of the DHCT, which preferably includes a signal processing system 314 and a media engine 322. (EX1008, 7:61-8:10). The signal processing system 314 outputs packetized streams for storage in the storage device 373, and

may also input into the media engine 322 for display through output systems 348, which drives the television 341. (EX1008, 7:42-45, 8:11-16, Figure 3A). Russ's content may also be stored/reproduced in storage device 373 before being output through output system 348. (EX1008, 10:11-17, 10:37-65). If an output unit is limited to the image processing circuitry like that in the '394 Patent under a means-plus-function analysis, in my opinion a person of ordinary skill would understand that the processing circuitry of Russ includes such circuitry or its equivalent, at least because (as set forth above) it is responsible for processing video and other graphical content for display.

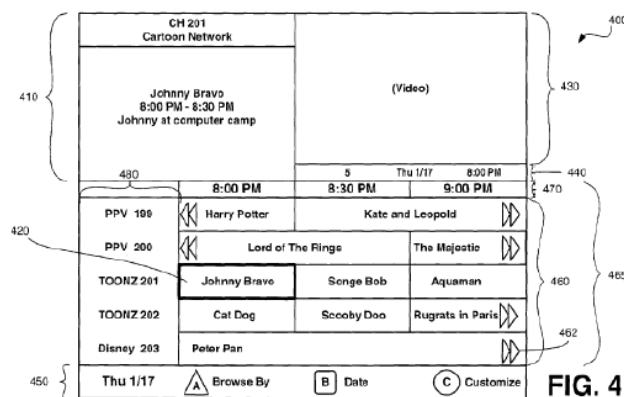
208. It is therefore my opinion that Russ thus discloses an output unit that outputs reproduced digital content including circuitry that can generate graphics and an output system from driving the display. If this term is construed as a means-plus-function term, Russ discloses the claimed structure (circuitry that can generate graphics) and function (outputting digital content).

E. Claim 2[d]: a display which displays the outputted digital content together with an alternative display of either of a linear content operation panel allowing user-instruction regarding linear reproduction functions of the reproduced digital content or an interactive content operation panel allowing user-instruction of interactive functions to an outside of the digital content reproducing apparatus;

209. Russ discloses TV 341, which displays the outputted digital content from output system 348. *See, e.g.*, Ex. 1008 at Figures 4, 7, 8, 38, and 39.

210. Russ displays both interactive content, as shown in the interactive program guide (IPG) screens of Figures 4, 7, 13, and 38, and linear content, as shown in the video display of Figures 8 and 39. Ex. 1008 at 13:6-14:40; 16:4--18:23, 19:4-60, and 25:1-50. An interactive content operation panel or a linear content operation panel is alternatively displayed depending on the content.

211. For example, as shown below in Figure 4, an interactive content operation panel 450 is shown at the bottom of the screen that includes functions: A “Browse By,” B “Date,” and C “Customize.” Ex. 1008 at 14:12-23.



212. Another interactive content screen is shown in Figure 13’s interactive PVR channel configuration menu screen. This includes an interactive content operation panel 1330 at the bottom of the screen with buttons/functions A “IPG,” B “Record Options,” and C “Title of Channel.” Ex. 1008 at 19:4-8; 45-60.

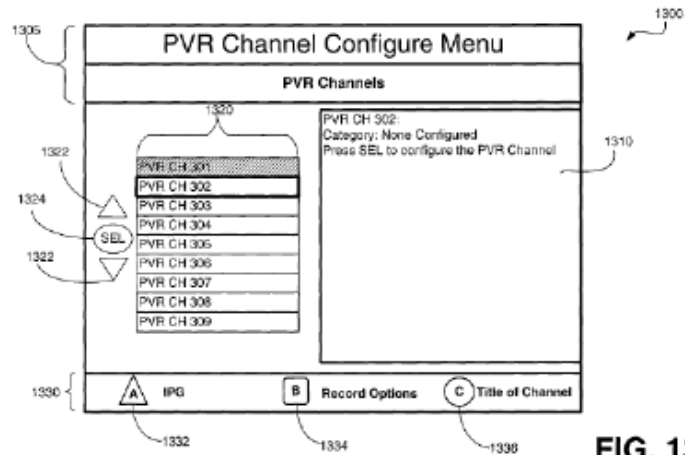


FIG. 13

213. Up/down navigation arrow icons 1322 and select button 1324 are also provided to interact with the displayed and scrollable interactive content. Ex. 1008 at 19:45-60. Left/right navigation arrows are also provided at an operation panel location when interactive text input is allowed, as show in Figure 33. Ex. 1008 at 23:58-24:3.

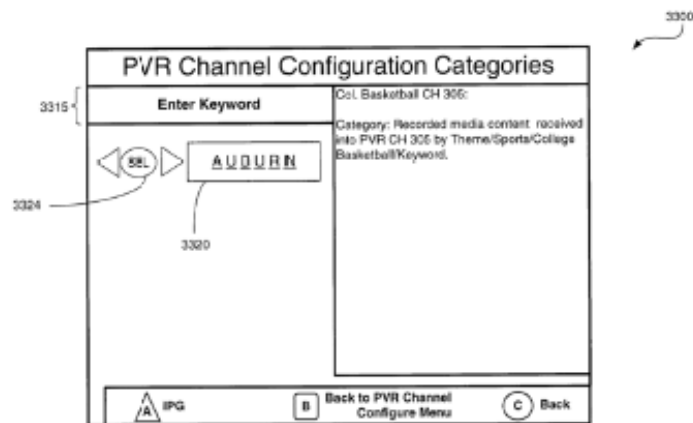


FIG. 33

To one of ordinary skill in the art, an operation panel is a displayed menu of user interface elements such as buttons. The buttons need not be placed within the displayed menu, but can be scrolled so only the ones within the bounds of the menu

are visible. Thus, in my opinion one of ordinary skill in the art would have viewed Russ's interactive content operation panel to be the bottom tool bar (alone), as well as the bottom tool bar in combination with Russ's navigation arrows. Further still, it would have been an obvious and trivial variation to include Russ's navigation arrows within the bottom tool bar by simply specifying the position of the arrows to be within the bottom tool bar. As previously described in paragraph 194, in essentially all GUIs, the user interface elements are placed within an interface by specifying their size and position. In fact, this is exactly how Phillips locates its navigation arrows. Ex. 1005 at Fig. 8. Placing Russ's navigation arrows within the bottom tool bar would have also increased the speed at which a user could interact with the system.

214. Further still, "by selecting the record options button icon 1334, the user is presented with a record options screen" or selecting "the title channel button icon 1336 enables a user to change the title of the PVR channel from, for example, PVR channel 302, to a title preferred by the user, such as a title more descriptive of the category of media content channel mapped to the particular PVR channel." Ex. 1008 at 19:60-67. These are additional interactive options controlled by Russ's interactive operation panels.

215. Russ describes a variety of other interactive content screens including interactive content operation panels in Figures 6, 9, 11-12, 14-16, 18-33, and 35-37. Ex. 1008 at 15:31-16:3, 18:24-19:8, 20:8-21:26, and 21:33-24:67.

216. In Figures 7 and 38, an exemplary interactive IPG screen for stored PVR media content is provided with an interactive content operational panel at the bottom of the screen including buttons for A “Browse By”; B “Date”; and C “Customize.” Ex. 1008 at 16:4-6, 25:1-4.

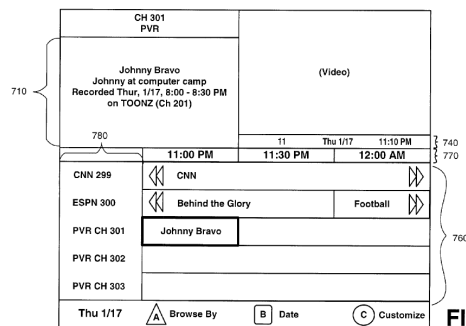


FIG. 7

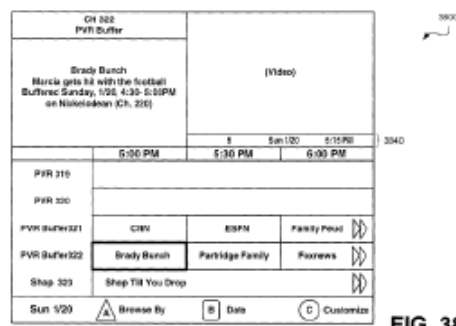
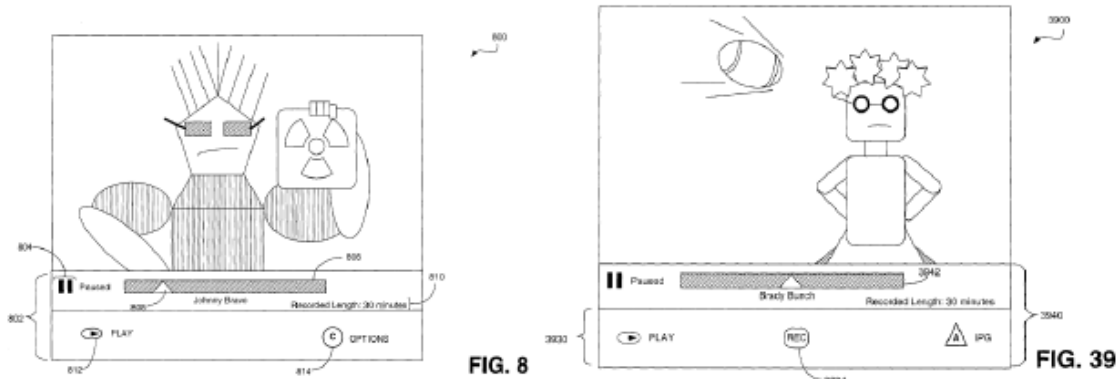


FIG. 38

217. Russ also discloses allowing user-instruction of interactive functions to an outside of the digital content reproducing apparatus. “DHCT 16 preferably includes a communications interface 342 for receiving signals (video, audio and/or other data) from the headend 11 through the network 18 and for providing any reverse information to the headend 11 through the network 18.” Ex. 1008 at 7:37-41. Russ discloses that applications (including the PVR application 377 and IPG application 394 (*see* Ex. 1008 at Fig. 3A, 9:27-31; 12:34-36) typically include a client part and a server counterpart “that cooperate to provide the complete

functionality of the application.” Ex. 1008 at 8:27-31. Russ also discloses that when a user selects the IPG button shown, for example, in Fig. 13, the IPG user interface uses the windows manager and other graphics utilities to render an IPG on the screen, and that the electronic program guide application contains a daemon that collects IPG data from the headend, outside the device. Ex. 1008 at 12:34-13:13, 20:62-63. In my opinion, a person of ordinary skill in the art would understand based on these disclosures that Russ would allow the IPG request to be directed to an outside of the digital content reproducing apparatus, including to headend servers (Ex. 1008 at 6:38-41).

218. When linear content such as PVR CH 301 Johnny Bravo in Fig. 7 or PVR Buffer322 Brady Bunch in Fig. 38 is selected for viewing, a new screen is displayed, as depicted in Figures 8 and 39. These figures depict the presentation of linear content with a pause banner 802/3940. Ex. 1008 at 17:35-39, 25:40-45. Pause banner 802/3940 also includes playback bar 806 or progress bar 3942, header 3930, and various icon buttons 812, 814, 3934. Ex. 1008 at 17:45-52, 18:3-4, 25:41-47. Russ thus discloses this element.



219. It is my opinion that Russ discloses claim element 2[d].

F. Claim 2[e]: wherein the linear content operation panel and the interactive content operation panel are distinct panels from each other, which are not generated by a disabling of buttons; and

220. Russ’s linear content operation panel and the interactive content operation panel are distinct control panels, with distinct buttons and functionality, which are not generated by the disabling of buttons.

221. For example, in the interactive content operation panel shown in Figure 7 and Figure 38, there are buttons for A “Browse By,” B “Date,” and C “Customize.” As explained above and as shown in Figures 13 and 33, other interactive content operation panels provided by Russ include navigation arrows to control scrollable content or to allow for text input. In contrast, Figure 39 includes a progress bar 3942 and play, record, and IPG buttons. Figure 8 includes a playback bar 806 as well as play and options buttons. Thus, Russ’s operation panels, particularly as shown by comparing Figures 7 and 8, and 38 and 39, are distinct panels that are not generated by the disabling of buttons. For the same reasons, Russ discloses linear content

operation panels and interactive content operation panels in which all buttons and functions are mutually different.

222. It is my opinion that Russ discloses claim element 2[e]

G. Claim 2[f]: a controller which controls the alternative display of either of the linear content operation panel or the interactive content operation panel, wherein only one of the linear content operation panel or the interactive content operation panel is displayed exclusively at any given time, together with the outputted digital content;

223. Russ includes control circuitry and components, *e.g.*, processor 344, receiver 346, tuner system 345, signal processor 314, media engine 322, flash memory 351, and DRAM 352, that enable the DHCT 16 to receive and display the requested interactive content, such as IPG/PVR screens, or the requested linear content, such as a television program, selected video, or digital music. Ex. 1008 at 7:27-13:5. This functionality involve applications including a PVR application and an IPG application. *See* claim 2[a]-2[c]. Applications stored in flash memory “are executed by the processor 344 (*e.g.*, a central processing unit or digital signal processor) under the auspices of the operating system 353.” Ex. 1008 at 8:33-36.

224. More specifically, and as shown in Figures 7 and 8, Russ’s IPG application 394 generates a window to display on a device, and Russ’s IPG user interface module 395 registers with the window manager 359 for particular user input commands that may be required for selecting options provided by the newly-created window. Ex. 1008 at 12:34-67.

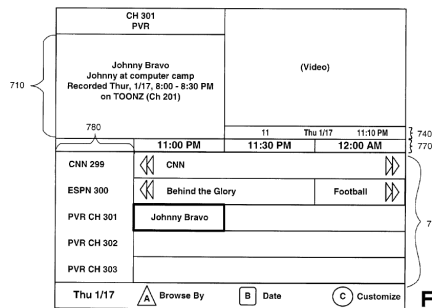


FIG. 7

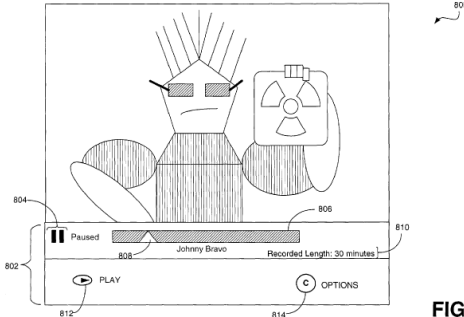


FIG. 8

225. Figure 7 includes an interactive content operational panel at the bottom of the screen with buttons A “Browse By”; B “Date”; C “Customize.” When the PVR CH 301 Johnny Bravo is selected Figure 8 is displayed, depicting a different linear content operation panel including playback bar 806 along with a play button. Ex. 1008 at 17:30-18:23; *see also id.* at 25:30-50. PVR application 377 generates the pause banner/operation panel and manages execution of functions in the pause banner. Ex. 1008 at 17:39-45.

226. Russ’s controller thus generates an appropriate operation panel based upon a programmed relationship between interactive content screens and their appropriate interactive content operation panels, as well as linear content screens and their appropriate linear content operation panels. And as shown in the examples above, only one of the linear content operation panel or the interactive content operation panel is displayed exclusively at any given time, together with the outputted digital content.

227. If this claim element is interpreted to require assessment of the displayed data to determine the appropriate interface to display, in my opinion one

of ordinary skill in the art would have been motivated to enhance Russ's controller functionality as taught by McElhatten. In particular, McElhatten discloses a dynamic alteration of displayed content based on an assessment of the displayed data:

When a media processor 119 receives a command to reserve a selected program, processor 119 determines whether the selected program is reservable (5315).

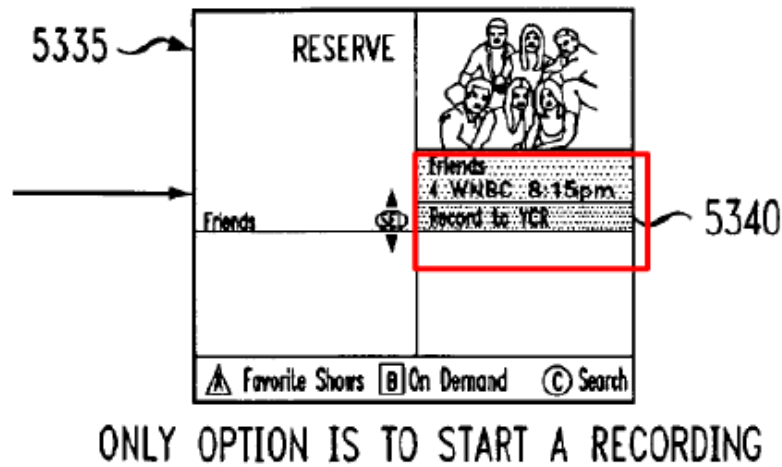
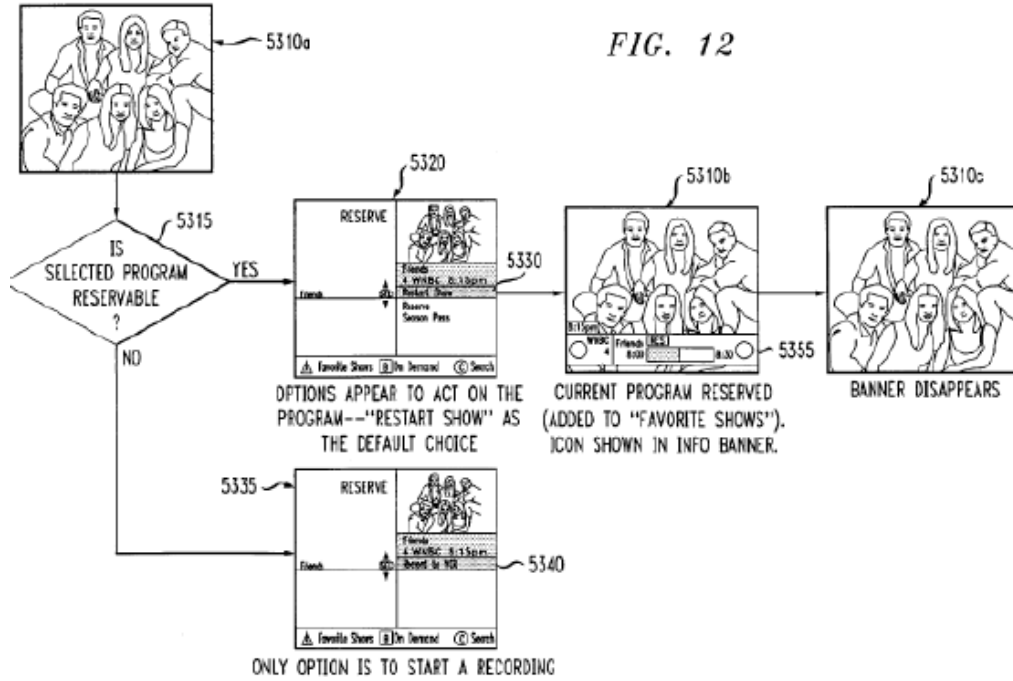
Ex. 1009 at 15:62-66.

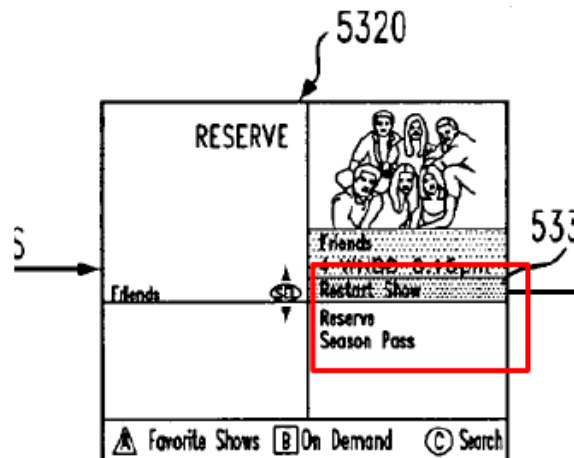
If the selected program is non-reservable, then Reserve GUI 5335 is displayed indicating that the user has the option to record the selected program to a VCR (alternatively PVR, DVD player or other local recording device)(5340). If however, the program is deemed reservable, Reserve GUI 5320 is displayed providing the user with three Reserve options (5330): (1) restart the program, (2) reserve the program, or (3) select a season pass.

Id. at 16:6-13.

228. As shown in Figure 12, and specifically by comparing GUI 5320 with GUI 5335, Russ's operation panels 5330 and 5340 include different selectable options depending on whether the displayed content is reservable. If the selected program is not reservable, the only option presented is to record to VCR. But if the program is reservable, the user is presented with "restart show," "reserve," "season pass." Ex. 1009 at 15:62-16:21.

FIG. 12





OPTIONS APPEAR TO ACT ON THE
PROGRAM--"RESTART SHOW" AS
THE DEFAULT CHOICE

229. McElhatten also monitors the content reserved and viewed by a user so that a profile of user's interest can be created for targeted advertising (Ex. 1009 at 34:63-67):

[A] media processor 119 recognizes that a commercial has been presented by detecting tones that are embedded in the reserved program. These tones are embedded at the beginning and at the end of the commercial so that the monitoring functionality of media processor 119 can be automatically powered on and off as a commercial begins and ends.

Ex. 1009 at 35:24-30.

...

When a commercial is broadcast and the monitoring functionality is turned on, media processor 119 detects if the entire commercial is played by the user [], a portion of the commercial is played or whether the commercial has not been played at all [].

Ex. 1009 at 35:31-35.

230. By combining McElhatten's data monitoring with Russ, the devices linear and interactive operation panels will be generated/altered based on an assessment of the displayed data. For example, Russ's system would provide the digital content to a user, the linear content operation panels, and the interactive content operation panels. McElhatten's data monitoring would be incorporated with Russ's system to determine the attributes of the content being displayed in the same way that McElhatten's system determines if the digital content is reservable or non-reservable. It is my opinion that one of ordinary skill in the art would have found it obvious to monitor, for example, whether the incoming data is interactive (PVR screen) or linear (TV/video), such that an appropriate control panel is displayed, as well data indicating whether one of Russ's PVR screens includes scrollable content (Figures 5, 6, 10-15, 17-22, 24-32, 34-38) or text input (Figure 33), such that corresponding up/down and left/right navigation arrows are provided. Russ's device would then display a linear content operation panel or an interactive content operation panel with buttons corresponding to the displayed content.

231. In my opinion, one of ordinary skill in the art would have been motivated to make this combination for a number of different reasons. First, one of ordinary skill in the art would have been motivated to provide Russ's device with the flexibility afforded by McElhatten's data monitoring technique, which does not rely only on a programmed relationship between a particular content screen and

operation panel, but allows for the displayed operation panel (and its associated buttons) to be selected based on the metadata associated with the content. Programming Russ's systems in this way would thus provide a more customized experience for the user, tailored to the particular digital content being displayed.

232. Second, by associating the user interface with metadata from the media content (McElhatten) rather than coding to a specific screen (Russ), the software architecture would more naturally accommodate other, future, data types. As explained above, this has the benefit of having the decision of which content operation panel is displayed to be controlled by the content provider without having to explicitly coordinate with the viewer (*i.e.*, Russ's controller). If a future data type was developed, and the controller was already able to make a decision about what interface to display based on metadata associated with the data content, then the controller would not have to be updated in order to have it work with the new data type. Instead, the content provider could just provide metadata associated with the new data type that would direct the controller to display the appropriate interface.

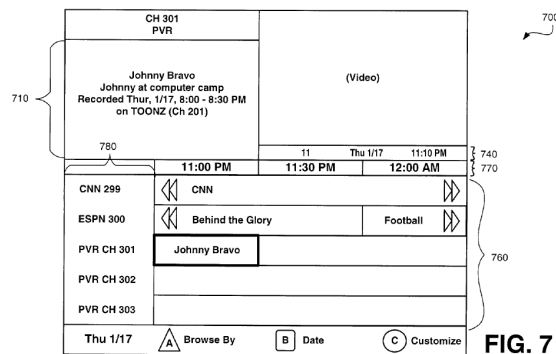
233. McElhatten's data monitoring technique could also easily be integrated into Russ as a simple and predictable outcome of a condition in an "if" programming statement (as explained with respect to the Phillips-based grounds). It is therefore my opinion that one of ordinary skill in the art would have arrived at the Russ/McElhatten combination with a reasonable expectation of success.

234. It is my opinion that Russ or Russ in combination with McElhatten discloses and renders obvious claim element 2[h].

H. Claim 2[g]: wherein the outputted digital content together with either the linear content operation panel or the interactive content operation panel, are displayed concurrently in one screen.

235. Russ’s outputted digital content is displayed concurrently on the same screen with the selected operation panel. Depending on the screen displayed, Russ either shows a linear content operation panel allowing user-instruction regarding the linear reproduction functions, or an interactive content operation panel allowing user-instruction of interactive functions.

236. As shown in Figure 7’s interactive content screen displaying IPG content, the interactive content operation panel provides buttons A “Browse By,” B “Date,” and C “Customize.”



237. As shown in Figure 8, Russ’s linear content video is displayed concurrently in one screen with a linear content operation panel.

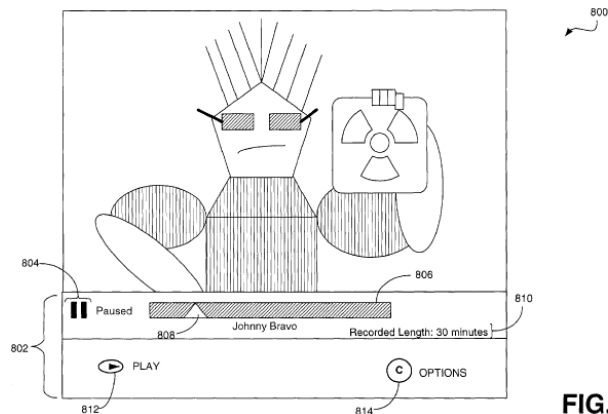


FIG. 8

238. Accordingly, it is my opinion that Russ in combination with McElhatten discloses each and every limitation of claim 2 and, thus, renders claim 2 obvious.

I. Claims 4, 5, 7, and 8.

239. As discussed above (see paragraphs 40-48), the limitations of claims 4 and 7 are identical to claim 2, the only difference being that instead of requiring the buttons of the “linear content operation panel and the interactive content operation panel [to be] distinct panels from each other, which are not generated by a disabling of buttons,” these claims recite:

- wherein buttons of the linear content operation panel are mutually different from buttons of the interactive content operation panel (claim 4);
- wherein buttons of the linear content operation panel producing mutually differing functions from functions of buttons of the interactive content operation panel (claim 7).

240. Similarly, claims 5 and 8 limit claims 4 and 7, respectively, by reciting the following:

- The digital content reproducing apparatus according to claim 4, wherein all the buttons are mutually different from each other (claim 5);
- The digital content reproducing apparatus according to claim 7, wherein all the buttons of the linear content operation panel and the interactive content operation panel, provide mutually differing functions from each other (claim 8).

241. While using slightly different language in each claim, claims 4, 5, 7, and 8 require the linear content operation panel and the interactive content operation panel to be distinct panels from each other, with mutually different buttons, that provide mutually different functions. This is disclosed by Russ.

242. As explained above with respect to claim 2, in Russ's Figure 7, for example, the interactive content operation panel has buttons for A "Browse By," B "Date," and C "Customize." And as shown in Figures 13 and 33, other interactive content operation panels provided by Russ include navigation arrows to control scrollable content or to allow for text input. In contrast, Figure 7's operation panel includes a progress bar and play and options buttons. Thus, Russ discloses that its linear content operation panel and its interactive content operation panel are distinct panels from each other, each with mutually different buttons, that provide mutually different functions.

243. Accordingly, each and every limitation of claims 2, 4, 5, 7, and 8 are disclosed by Russ in combination with McElhatten. And because one of ordinary

skill in the art would have combined these references, it is my opinion that claims 2, 4, 5, 7, and 8 are obvious.

XV. Claims 3, 6, and 9 are Obvious Over Russ, McElhatten, and Uchida.

244. Claims 3, 6, and 9 limit independent claims 2, 4, and 7, respectively, by requiring “the linear content operation panel and the interactive content operation panel [to be] common in size, and [] alternatively switched between each other in a same panel rendering area of the screen as alternative operation panels.” As explained above (paragraphs 185-192), this type of window managers/tiled window layout applied to a TV display is disclosed and taught by Uchida.

245. In my opinion, one of ordinary skill in the art would have been motivated to incorporate Uchida’s split display with Russ and McElhatten to achieve Uchida’s benefits of ensuring that the displayed content is not blocked or obstructed by a control GUI. Indeed, this is precisely why tiled window layouts are sometimes used by window managers. Second, utilizing Uchida’s split screen display would have also avoided any potential need for the user to have to reposition an overlapping panel, and thus effort and user time would be saved. Third, because Uchida’s operation panel display is in its own dedicated area, the operation panel included in that area can be modified and changed without worry about negatively impacting the content display area. This would have made it easier to accommodate future content types and operation panel controls in the Russ/McElhatten system, providing yet

another reason that one of ordinary skill in the art would have been motivated to combine Uchida with Russ and McElhatten. Fourth, incorporating Uchida with Russ/McElhatten would provide the benefit of combining Russ's up/down and left/right navigation keys with the other bottom-side buttons of Russ's operation panel, allowing the user to more quickly interact with Russ's system.

246. Fifth, and as shown in Russ's Figures 4-11, 13-16, 18-33, and 35-39, Russ already locates its operation panels at the bottom of the displayed screen, naturally lending itself to the tiled window/split screen display of Uchida. This combination would have been a simple matter of setting the position and size of the content area and the operation panel of Russ based on the non-overlapping position and size shown in Uchida. This type of programming would have been straightforward and familiar to one of ordinary skill in the art at the time of the '394 patent.

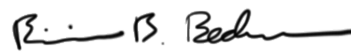
247. It is therefore my opinion that one of ordinary skill in the art would have been motivated to combine Uchida with Russ and McElhatten. And because Russ/McElhatten discloses each and every limitation of claims 2, 4, and 7, Uchida in combination with Russ/McElhatten also discloses each and every limitation of claims 2, 4, and 7. Thus, it is my opinion that claims 3, 6, and 9 are rendered obvious in view of Russ, McElhatten, and Uchida.

XVI. CONCLUSION

248. I recognize that I may be subject to cross-examination in this proceeding.

249. I hereby declare that all statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true. Further, I am aware that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001, and with the knowledge that such willful false statements may jeopardize the results of these proceedings. I declare under penalty of perjury that the foregoing is true and correct.

Executed on 3/3/23 in New York, NY.



Benjamin B. Bederson