

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LG ELECTRONICS, INC.,
Petitioner

U.S. Patent No. 9,055,254

**DECLARATION OF ANDREW LIPPMAN,
UNDER 37 C.F.R. § 1.68 IN SUPPORT OF PETITION FOR
INTER PARTES REVIEW**

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I, Andrew Lippman, do hereby declare as follows:

I. INTRODUCTION

1. I am making this declaration at the request of LG Electronics, Inc. in the matter of the *Inter Partes* Review of U.S. Patent No. 9,055,254 (“the ’254 patent”) to Selim.

2. I am being compensated for my work in this matter at my standard hourly rate. I am also being reimbursed for reasonable and customary expenses associated with my work and testimony in this investigation. My compensation is not contingent on the outcome of this matter or the specifics of my testimony.

3. I have been asked to provide my opinions regarding whether claims 1-4, 6, 8-10, 12-17, and 19 (“the Challenged Claims”) of the ’254 patent are unpatentable as they would have been obvious to a person having ordinary skill in the art (“POSITA”) at the time of the alleged invention, in light of the prior art. It is my opinion that all of the limitations of the Challenged Claims would have been obvious to a POSITA.

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

- a. the ’254 patent, Ex.1001;
- b. the prosecution history of the ’254 patent (“’254 File History”), Ex.1002;
- c. U.S. Patent Publication No. 2012/0054794 (“Kim”), Ex.1005;

- d. WD TV Live Hub User Manual (“WD-Manual”), Ex.1006;
 - e. KR Publication No. 2010-0134423 (“Bae”), Ex.1006, as translated, Ex.1007; and
 - f. U.S. Patent Publication No. 2010/0079681 (“Coburn”), Ex.1009.
5. In forming the opinions expressed below, I have considered: the documents listed above; the relevant legal standards, including the standard for obviousness; and my own knowledge and experience based upon my work in the field of televisions as described below, and any additional authoritative documents as cited in the body of this declaration.

6. Unless otherwise noted, all emphasis in any quoted material has been added.

II. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

7. My complete qualifications and professional experience are described in my *Curriculum Vitae*, a copy of which can be found in Exhibit 1004. The following is a brief summary of my relevant qualifications and professional experience.

8. I earned my undergraduate degree in Electrical Engineering from MIT in 1971. I earned a Master of Science degree in Computer Graphics from MIT in 1978. I earned a Ph.D. in Electrical Engineering from the École Polytechnique Fédérale de Lausanne (Switzerland) in 1995. My thesis was on scalable video, a

technique for representing visual data in a fluid and variable networking and processing environment, similar to what we call streaming today.

9. I am currently a Senior Research Scientist at the Massachusetts Institute of Technology (“MIT”) and Associate Director of the MIT Media Laboratory, an approximately \$80 million per year research and teaching facility at MIT, which I helped establish in the early 1980s.

10. At MIT, I have supervised over 50 Masters and Ph.D. theses in the Media Arts and Sciences program and have taught courses such as Digital Video and MIT’s freshman physics seminar. Through the course of my career, I have directed and served as principal investigator of research projects supported by the Defense Advanced Research Projects Agency (DARPA), the Office of Naval Research (ONR), The National Science Foundation (NSF), and over 50 industrial companies. I have never precisely calculated my net research volume, but it is in excess of \$50 million.

11. I am named as an inventor on six patents in the area of video and digital processing and have served on the advisory boards for technology companies in fields ranging from video conferencing to music analysis. I have authored or coauthored over 65 published papers in the fields of interactivity, communications, video coding, and television. I served on the editorial board of the Image Communication Journal between 1989 and 2003. I have served as an

expert witness in patent cases since 2001, addressing diverse features of interactive television, electronic program guides, and user interaction.

12. I have worked generally on video interaction systems since the 1970s. In the early 1970s, I developed font representations that permitted high quality display of text on standard broadcast television receivers. In 1978, I directed a DARPA-funded project called the “Movie-Map” that used computing and optical video and image storage to create an “experiential map” that featured “surrogate travel,” the ability to recreate the visual experience of traveling through a real place, a city. This is similar to Google’s Street-View and mapping systems.

13. In the 1980s, I was principal investigator of Office of Naval Research funded programs in video and graphics computer systems for interactive learning dedicated to maintenance and repair. I also developed networked video communications systems that included scripting languages for specifying audiovisual content and representing it on various monitoring terminals.

14. In 1991, I created the “Media Bank” program at MIT, the purpose of which was to allow a diverse set of networked devices to access appropriate forms of content for which they had the bandwidth and processing power to display. This entailed maintaining state information about terminal devices at a server and using that to determine the best representation of the audiovisual material to deliver to them. In addition, it included and developed cryptographic distribution methods

that ensured secure delivery of information on the network. Related to this work, I also supervised Masters theses on networked distribution of video and coding specifically for diverse uses on the Internet. My colleagues and I created demonstrations of interactive television systems for news that combined the evening newscast with additional data from print sources so the viewer could learn more about the story than was available in the live broadcast.

15. Also in 1991, I created the Television of Tomorrow program at MIT. This program addressed the digital representation and delivery of video at diverse scales and through diverse networks. This program built on work on scalable representations of images that were standards-independent and interactive.

16. In 1993, I was invited to be a member of Robert Kahn's "Cross Industry Working Group" the goal of which was to develop the ideas for a National Information Infrastructure. At DARPA, Kahn had initiated the research to develop the Arpanet and the Internet. Throughout this period, my students and I worked on distributed interactive systems for consumer use (television, electronic newspapers, learning) including the basic technology of the network and the client-server interactions.

17. I was a member of the Motion Picture Experts Groups, an ISO standards committee effort that defined the standards for common distribution of "MP3" music and storage and distribution of "MPEG Video." I co-wrote the paper

defining the requirements for the MPEG-2 standard with Okubo and McCann in 1995. MPEG standards remain the predominant encoding for distribution of digital video to this day. I was also the principal investigator on industry-funded programs addressing digital motion pictures — the “Movies of the Future” program at MIT, and high definition television, “Television of Tomorrow.” At MIT, I created the “Digital Life” consortium, the purpose of which was to explore and develop ideas relevant to an Internet-connected society.

III. LEVEL OF ORDINARY SKILL IN THE ART

18. I understand there are multiple factors relevant to determining the level of ordinary skill in the pertinent art, including (1) the levels of education and experience of persons working in the field at the time of the invention; (2) the sophistication of the technology; (3) the types of problems encountered in the field; and (4) the prior art solutions to those problems.

19. A person of ordinary skill in the art (“POSITA”) in the field of the ’254 patent, as of its earliest possible filing date of August 17, 2012, would have been someone knowledgeable about and familiar with the television display technology that is pertinent to the ’254 patent. A POSITA would have had a bachelor’s degree in Electrical Engineering, Software Engineering, or Computer Engineering, or equivalent training, and approximately two years of experience working in the field of television systems and networking, human-computer

interaction, or related technologies. Lack of work experience can be remedied by additional education, and vice versa.

20. For purposes of this Declaration, in general, and unless otherwise noted, my statements and opinions, such as those regarding my experience and the understanding of a POSITA generally (and specifically related to the references I consulted herein), reflect the knowledge that existed in the field as of the priority date of the '254 patent. Unless otherwise stated, when I provide my understanding and analysis below, it is consistent with the level of a POSITA prior to the priority date of the '254 patent.

IV. RELEVANT LEGAL STANDARDS

21. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the '254 patent, I am relying on certain basic legal principles that counsel have explained to me. These principles are discussed below.

22. I understand that prior art to the '254 patent includes patents and printed publications in the relevant art that predate the priority date of the alleged invention recited in the '254 patent. For purposes of this Declaration, I am applying August 17, 2012 as the earliest possible priority date of the '254 patent.

23. I have been informed that a claimed invention is unpatentable under 35 U.S.C. § 103 if the differences between the invention and the prior art are such

that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. I have also been informed by counsel that the obviousness analysis takes into account factual inquiries including the level of ordinary skill in the art, the scope and content of the prior art, and the differences between the prior art and the claimed subject matter.

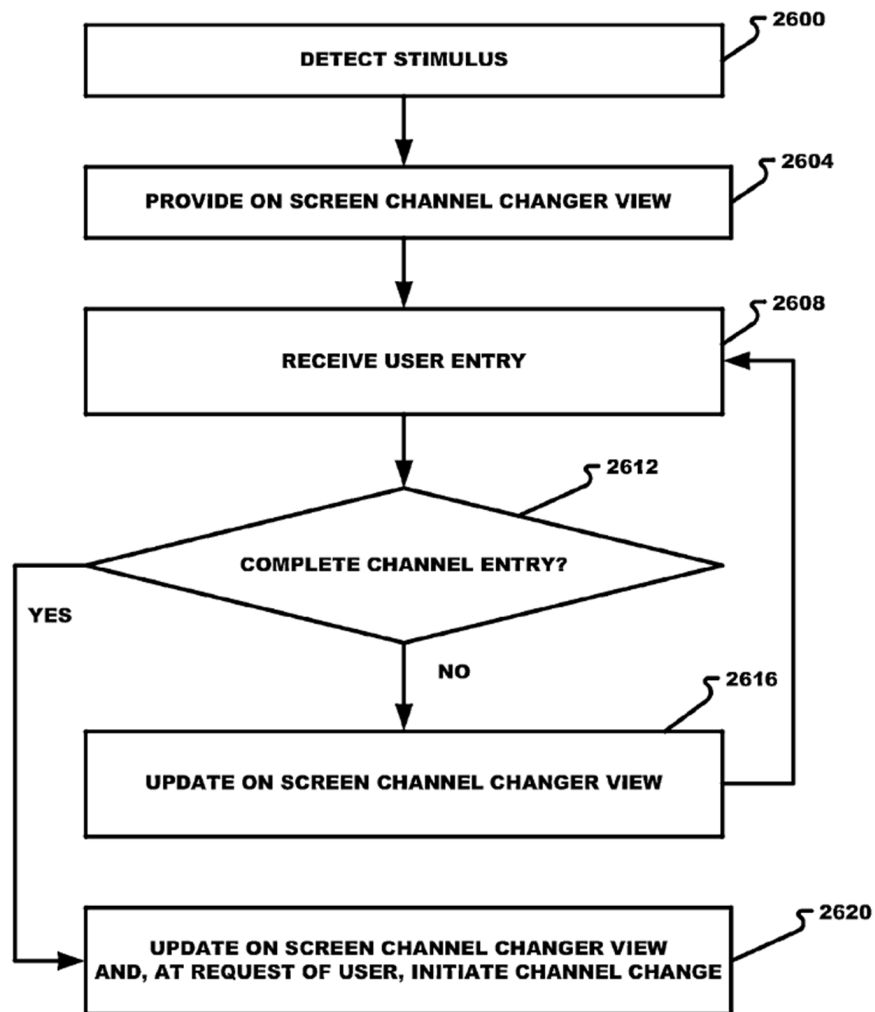
24. I have been informed by counsel that the Supreme Court has recognized several rationales for combining references or modifying a reference to show obviousness of claimed subject matter. Some of these rationales include the following: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of a known technique to improve a similar device (method, or product) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (f) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

V. THE '254 PATENT**A. Overview of the '254 Patent**

25. The '254 patent is directed to the purported need for a “TV with intuitive user interfaces” and “seamless user interaction.” '254 patent, 1:65-66. The solution to this purported need is a user interface that has an “on screen channel changer” that depicts the digits “0 to 9” and a remote control that has four buttons: “a media center button,” an “application center button,” an “application panel button,” and a “global panel button.” Claim 1 of the '254 patent is shown below with colored highlighting.

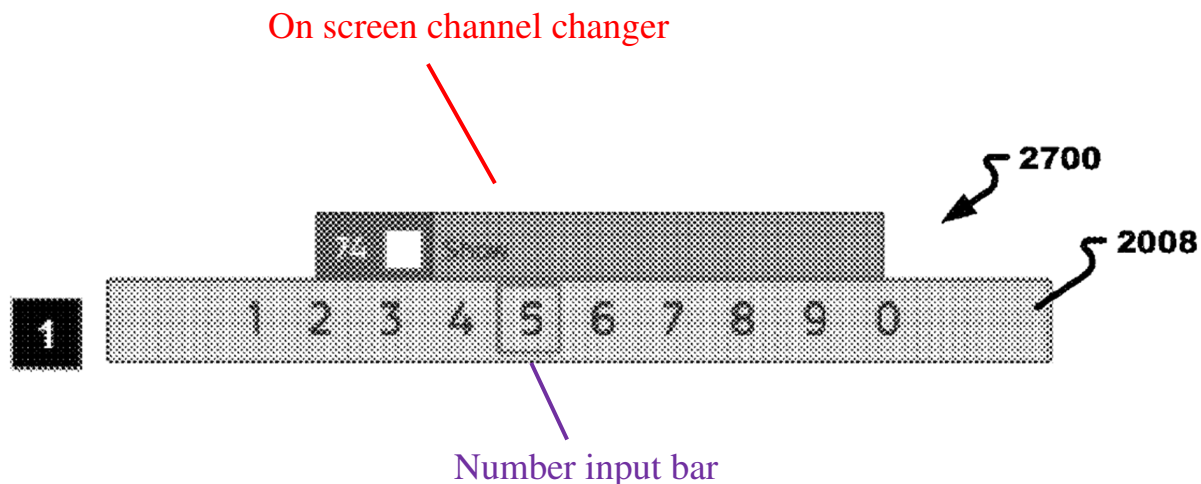
1. A method, comprising:
receiving, wirelessly by at least one of an infrared and radio frequency module of a television and from a remote control, a request to change a programming channel;
displaying, by a microprocessor executable application framework and on a television screen, an on screen channel changer, the displayed on screen channel changer comprising electronic program guide (“EPG”) information and a number input bar comprising digits, wherein the digits range from 0 to 9;
receiving, by the application framework and from the remote control, a channel selection based on digits selected by a user using the remote control and the number input bar of the on screen channel changer, wherein the user selects the digits using non-numeric keys of the remote control; and
changing, by the application framework, to the selected channel, wherein the remote control comprises:
a media center button that, when selected, provides, by the television screen, displayed information regarding one or more of groupings of music, groupings of videos, groupings of photographs, and internal and external computational devices, the computational devices comprising one or more of personal computers, laptops, tablet computers, wireless phones, and removable computer readable media;
an application center button that, when selected, provides, by the television screen, displayed information regarding pre-installed and downloaded software applications, wherein the downloaded software applications comprise one or more of a web browser, settings control, and content search algorithms;
an application panel button that, when selected, displays, by the television screen, an application panel, wherein the application panel comprises an information panel regarding a selected (pre-installed or previously downloaded) application icon; and
a global panel button that, when selected, provides the user, via one or more panels or windows displayed by the television screen, with access to one or more of silos, notifications, a web browser system settings, and information associated therewith.

26. An example flowchart of the operation of the on screen channel changer is described with reference to Figure 26, shown below.

**FIG. 26**

'254 patent, Fig. 26.

27. At step 2604, the on screen channel changer is displayed on the television screen. An example of the on screen channel changer is shown in Figure 27. The number input bar 2008 includes numbers that can be selected to identify a channel. '254 patent, 32:58-60. The user uses the remote control to move left and right through the number input bar. '254 patent, 33:1-8.



'254 patent, Fig. 27 (partial and annotated).

28. In operation, at step 2608, the user provides “a number selection.” '254 patent, 36:33-34. For example, the “user used the D-Pad to select the number ‘2,’” as part of the desired channel. '254 patent, 36:38-39. At step 2612, the process determines whether the “user has entered a complete channel entry.” If not, then the on screen channel changer is updated to reflect the selected number. The updated display includes an electronic program guide (“EPG”) showing channels that begin the with digits entered by the user. '254 patent, 36:50-52. The process then repeats as the user selects the next number. '254 patent, 36:55-64. If the user selects a channel from the EPG listing, the system then changes the channel and dismisses the on screen channel changer. '254 patent, 36:61-64.

29. The remote control is described with reference to Figure 7. '254 patent, 22:56-23:65. In particular, the remote control has a “**media center button**”

736 (to activate or select the media center application or silo, which access various types of media such as music, TV programming, videos, and the like), **an application center button 740** (to activate or select the application center application or silo), **a global panel button 744**, [and] **an application panel button 748**.” ’254:23:3-8.

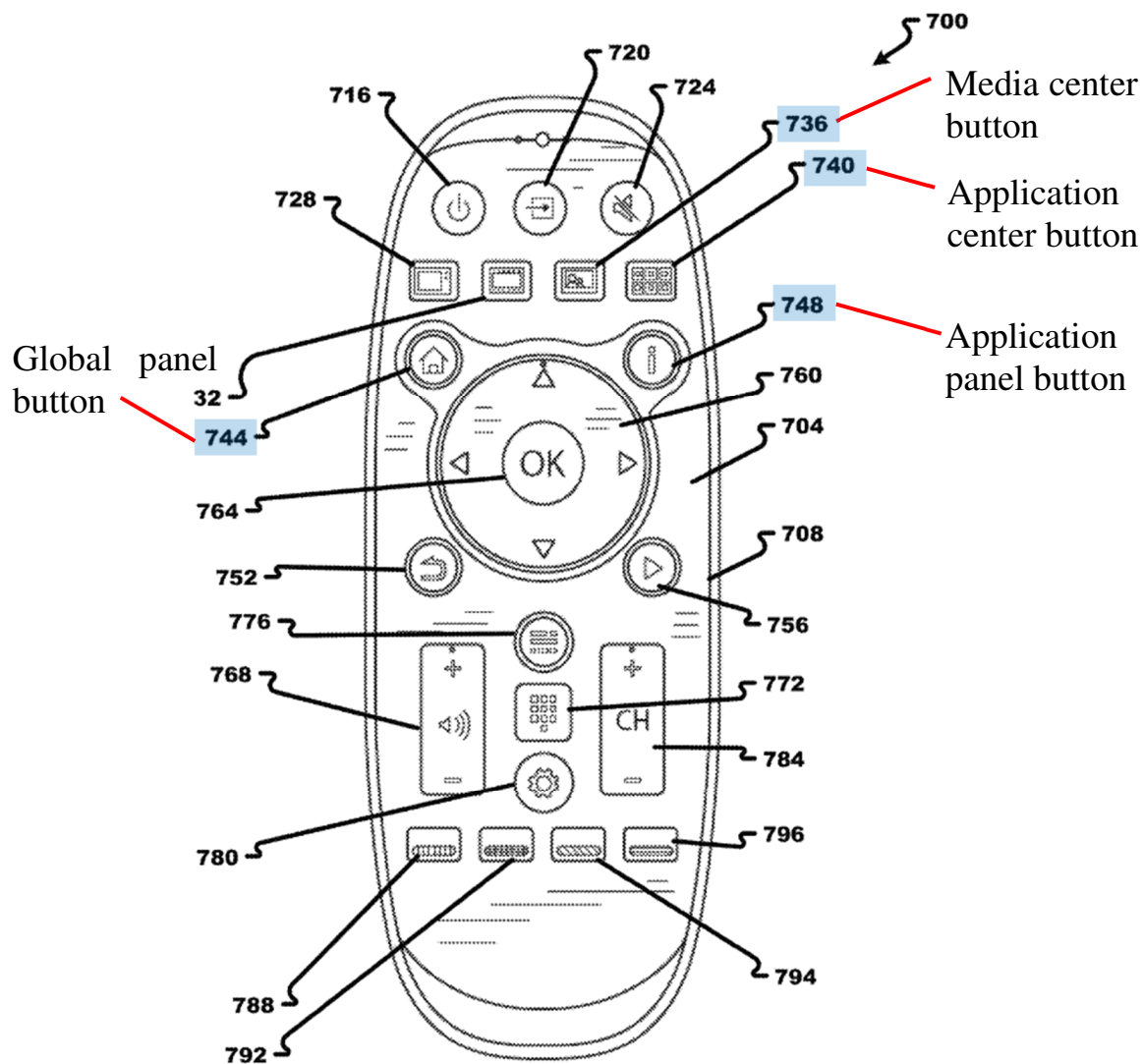


Fig. 7

'254 patent, Fig. 7 (annotated).

30. When selected, the “media center button” causes the television screen to provide “information regarding music, videos, photographs, collections or groupings of music, videos, and/or photographs, and internal and external computational devices”:

The media center button 736, when selected, can provide information regarding music, videos, photographs, collections or groupings of music, videos, and/or photographs, and internal and external computational devices (such as personal computers, laptops, tablet computers, wireless phones, removable computer readable media, and the like), which can be grouped in a selected manner (such as favorites, most recently viewed, most watched or viewed, and most recently added). The information can include previews (which can include selected portions of the media content, duration, file size, date created, date last watched, times watched or viewed, and audio and/or video format information).

'254 patent, 24:5-16.

31. When selected, the “application center button” causes the television screen to provide “information regarding pre-installed and downloaded applications”:

The application center button 740, when selected, may provide information regarding pre-installed and downloaded applications. Unlike downloaded applications, pre-installed applications cannot be removed by the user or manually updated. Exemplary pre-installed applications include web browser, settings control, and content search algorithms. By way of illustration, the application center button 740 can provide a

scrollable graphical grid of icons (each icon being associated with an application) currently available in the application center.

'254 patent, 24:17:26.

32. When selected, the “application panel button” causes the television screen to display “an information panel regarding a selected (pre-installed or previously downloaded) application icon” on the television:

The application panel button 748, when selected, can display an application window or panel. One application panel may be an information panel regarding a selected (pre-installed or previously downloaded) application icon. The information panel can one or more of identify the selected application, provide a description of the functionality (including application developer and/or vendor, version, release, and/or last update date and a category or type of application based on the application's functionality) and user ratings and/or degree of other user downloading of the application (e.g., a star rating assigned based on one or more of the foregoing inputs), provide the option to launch, remove, update, and add to favorites the identified application, and provide a listing of selectable links of other (not yet downloaded) recommended applications that provide similar functionality to the identified application. The latter listing can, in turn, provide a description of the functionality (including application developer and/or vendor, version, release, and/or last update date and a category or type of application based on the application's functionality) and user ratings and/or degree of other user downloading of the application (e.g., a star rating assigned based on one or more of the foregoing inputs).

'254 patent, 24:56-25:10.

33. When selected, the “global panel button” causes the television screen

to provide “panels” that provide access to “silos, notifications, a web browser, system settings, and/or information associated therewith”:

The global panel button 744, when selected, can provide the user, via one or more panels or windows, with access to one or more of, but not limited to, silos, notifications, a web browser, system settings, and/or information associated therewith. For example, the global panel button 744 can enable the user to determine what external devices are currently connected to and/or disconnected from the Intelligent TV 100, determine what inputs (e.g., HDMI ports) are currently available for connecting to external devices, determine a connection and/or operational status of a selected external device and/or network (e.g., WiFi connected, Ethernet connected, and offline), assign a custom (or user selected) name to each input source, determine what content is currently being offered on Live TV, on demand, the media center, and/or the application center, access vendor messages and notifications to the user (e.g., system and/or application updates are available), activate the Internet browser, and/or access shortcuts on a displayed shortcut bar to more frequently used and desired applications. Common shortcuts are Internet browser (e.g., Internet search engine), system settings, and notifications. The common types of panels are for information (which is typically information related to a currently displayed image and/or content (e.g., title, date/time, audio/visual indicator, rating, and genre), browse requests, and/or search requests (such as search term field)). Each of the panel types may include a panel navigation bar, detailed information or relevant content to the panel function, operation and/or purpose, and a hotkey bar (defining currently enabled functional associations of hotkeys).

'254 patent, 24:27-55.

34. However, as I will explain below, the concept of changing a channel

by selecting digits from a number input bar and a remote control with a media center button, an application center button, an application panel button, and a global panel button was already known as of the time the '254 patent was filed.

VI. CLAIM CONSTRUCTION

35. It is my understanding that in order to properly evaluate the '254 patent, the terms of the claims must first be interpreted. It is my understanding that for the purposes of this *inter partes* review, the claims are to be construed under the so-called *Phillips* standard, under which claim terms are given their ordinary and customary meaning as would be understood by one of ordinary skill in the art in light of the specification and prosecution history, unless the inventor has set forth a special meaning for a term. I have also been informed that claim terms only need to be construed to the extent necessary to resolve the obviousness inquiry.

36. I have reviewed the entirety of the '254 patent, as well as its prosecution history. In my opinion, for purposes of applying the prior art presented herein to evaluate patentability, the claim terms do not require express construction.

37. I have applied the so-called *Phillips* standard, which requires that claim terms are given their ordinary and customary meaning as would have been understood by a POSITA in light of the specification and prosecution history, unless the inventor has set forth a special meaning for a term.

38. In fact, the '254 patent provides explicit definitions for various terms and phrases, including various claim terms of the Challenged Claims. For example, from column 3, line 25 to column 10, line 15, the '254 patent lists certain terms and provides explicit definitions and context for these terms, which include various claim terms of the Challenged Claims. My analysis of the prior art presented herein takes into account and is consistent with the definitions and context provided in the '254 patent for terms in the Challenged Claims.

39. Two examples of claim term definitions are described below:

A. “one or more”

40. Claims 1, 3, 8, 9, 13, 14, and 16 each recite the phrase “one or more.”

The '254 patent expressly defines the term “one or more”:

The phrases “at least one”, “one or more”, and “and/or” are open-ended expressions that are both conjunctive and disjunctive in operation. For example, each of the expressions “at least one of A, B and C”, “at least one of A, B, or C”, “one or more of A, B, and C”, “one or more of A, B, or C” and “A, B, and/or C” means A alone, B alone, C alone, A and B together, A and C together, B and C together, or A, B and C together.

'254 patent, 3:27-34.

41. Accordingly, in view of the express definition provided in the '254 patent, a claim limitation that recites a list of “*one or more*” items is met by teaching any item in that list alone or together with any other items in that same list.

B. “silo”

42. Claims 1, 8, and 14 each recite the term “silo.” The ’254 patent expressly defines the term “silo:”

The term “silo,” as used herein, can be a logical representation of an input, source, or application. An input can be a device or devices (e.g., DVD, VCR, etc.) electrically connected to the television through a port (e.g., HDMI, video/audio inputs, etc.) or through a network (e.g., LAN WAN, etc.). Rather than a device or devices, the input could be configured as an electrical or physical connection to one or more devices. A source, particularly a content source, can be a data service that provides content (e.g., a media center, a file system, etc.). An application can be a software service that provides a particular type of function (e.g., Live TV, Video on Demand, User Applications, photograph display, etc.). The silo, as a logical representation, can have an associated definition or property, such as a setting, feature, or other characteristic

’254 patent, 5:56-6:3.

43. Accordingly, in view of the express definition provided in the ’254 patent, a “silo” can be a logical representation of an input, source, or application.

VII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

44. I have been asked to provide my opinion as to whether the Challenged Claims of the ’254 Patent would have been obvious in view of the prior art. The discussion below provides a detailed analysis of how the prior art references identified below teach the limitations of the Challenged Claims of the ’254 patent. As part of my analysis, I have considered the scope and content of the prior art and

any differences between the alleged invention and the prior art. I describe in detail below the scope and content of the prior art, as well as any differences between the alleged invention and the prior art, on an element-by-element basis for each Challenged Claims of the '254 patent.

45. As described in detail below, the alleged invention of the Challenged Claims would have been obvious in view of the teachings of the identified prior art references as well as the knowledge of a POSITA. I rely on various documents to show the background knowledge of a POSITA. Such documents include:

- a. U.S. Patent 8,146,128 (“Tanaka”), Ex.1010;
- b. Excerpts from Newton’s Telecom Dictionary, 26th Edition, Ex.1011;
- c. U.S. Patent Publication No. 2011/0219419 (“Reisman”), Ex.1013;
- d. Internet Archive capture of Apple.com, Ex.1014;
- e. Infringement Contentions in related litigation, Ex.1015;
- f. U.S. Patent Publication No. 2013/0155172 (“Mock”), Ex.1016;
- g. U.S. Patent Publication No. 2006/0192753 (“Fukuhara”), Ex.1017; and
- h. Excerpts from Webster’s College Dictionary, Ex.1018; and
- i. U.S. Patent No. 9,071,418 (“Rajapakse”), Ex.1019.

A. Ground 1: Claims 1-4, 8-10, and 13-17 are obvious under 35 U.S.C. § 103(a) over Kim, Bae and WD-Manual.

1. Summary of Kim

46. Like the '254 patent, Kim relates to “[a] multifunctional display

device and a method of controlling the same” for providing “an interactive content service.” Ex.1005, Abstract, [0037]. Kim describes controlling the content of an image display apparatus, such as a television:

The image display apparatus 100 may be, for example, a network TV, a smart TV, an HbbTV, or another appropriate multifunctional display device. The image display apparatus 100 may include, for example, a broadcast interface 101, a section filter 102, an Application Information Table (AIT) filter 103, an application data processor 104, a broadcast data processor 111, a media player 106, an IP processor 107, an Internet interface 108, and a runtime module 109. The image display apparatus 100 may receive AIT data, real-time broadcast content, application data, and stream events through the broadcast interface 101. The realtime broadcast content may be referred to as a linear Audio/Video (A/V) content.

Ex.1005, [0038]; *see also id.* at [0031], [0053], [0060].

47. Kim describes a “controller 170 [that] may control the image display apparatus 100 according to a user command received through the user input interface 150.” Ex.1005, [0090], Fig. 6. Kim further describes controlling the content of the image display apparatus 100 based on user input entered via a remote control (remote controller 200) that communicates wirelessly (e.g., via radiofrequency (RF) and infrared (IR)) with the controller 170:

The user input interface 150 transmits a signal received from the user to the controller 170 or transmits a signal received from the controller 170 to the user. For example, the user input interface 150 may receive various user input signals such as a power-on/off signal, a channel selection signal, and a screen setting

signal from a remote controller 200 or may transmit a signal received from the controller 170 to the remote controller 200, according to various communication schemes, for example, RF communication and IR communication.

Ex.1005, [0086].

For example, the user input interface 150 may provide the controller 170 with user input signals or control signals received from local keys, such as inputs of a power key, a channel key, and a volume key, and setting values. Also, the user input interface 150 may transmit a control signal received from a sensor that senses a user gesture to the controller 170 or transmit a signal received from the controller 170 to the sensor. The sensor may include a touch sensor, a voice sensor, a position sensor, a motion sensor, or another appropriate type of sensor.

Ex.1005, [0087].

The remote controller 200 may transmit a user input to the user input interface 150. For transmission of user input, the remote controller 200 may use various communication techniques such as Bluetooth, RF communication, IR communication, UWB, ZigBee, or another appropriate communication protocol.

Ex.1005, [0112].

48. Kim's television displays "a Graphical User Interface (GUI) in the form of an OSD [On Screen Display]." Ex.1005, [0060]. A variety of information and content can be displayed on this OSD:

The OSD generator 340 may generate an OSD signal autonomously or based on to user input. For example, the OSD generator 340 may generate signals by which a variety of information is displayed as images or text on the display 180,

according to control signals received from the user input interface 150. The OSD signal may include various data such as a UI, a variety of menu screens, widgets, icons, etc. For example, the OSD generator 340 may generate a signal by which subtitles are displayed with a broadcast image or Electronic Program Guide (EPG)-based broadcasting information.

Ex.1005, [0137].

FIG. 10 is a block diagram of the controller of FIG. 6. Referring to FIG. 10, the controller 170 may include a DEMUX 310, a video processor 320, an OSD generator 340, a mixer 350, a Frame Rate Converter (FRC) 355, and a formatter 360. The controller 170 may further include an audio processor and a data processor.

Ex.1005, [0133].

49. Further, Kim describes a remote control that can interact with the OSD by transmitting “various user input signals such as a power-on/off signal, a channel selection signal, and a screen setting signal from [the] remote controller 200” to a “user input interface 150.” Ex.1005, [0086]. For example, Kim explains that the “user input interface 263 may receive various control signals such as a power on/off signal, an operation input signal, or a setting input signal through activation of a local key or the remote controller 200.” Ex.1005, [0122]. Thus, Kim’s remote control can be used to control or change the information displayed on the OSD. Ex.1005, [0192] (describing a home key for displaying a home screen), [0193]-[0217] (describing using the remote control key to select and display various card objects that include or can access different types of content).

50. For example, Kim's remote control can be used to access, and cause to be displayed on the television, a home screen (global panel) with different types of information and content. Ex.1005, [0094], [0192], Fig. 19. As another example, Kim describes how its remote control can access one or more user interface objects to cause different types of information pertaining to media content and/or media devices to be displayed on the television. Ex.1005, [0192], [0196], [0205], [0209], [0210], [0085], [0123], Fig. 19. As a further example, Kim describes how its remote control can be used to access pre-installed software applications (e.g., "user-undeletable applications") and downloaded software applications (e.g., "user-deletable applications"). Ex.1005, [0163]. And still further, Kim describes that its remote control can be used to display to view information within an application panel. Ex.1005, [0247], Fig. 28.

2. Summary of WD-Manual

51. Like the '254 patent, WD-Manual relates to a media center device (e.g., the "WD TV Live Hub Media Center," which is a type of set top box) that provides access to media content via a user interface that is displayed on a television and a physical remote control for communicating with the user interface and media center device. Ex.1006, pgs. 5-6, 11-12, 25-26. WD-Manual describes using the remote control and media center device to display various types of movies, TV programming, personal media, and Internet content on the television.

Ex.1006, pgs. 5-6.

52. WD-Manual explains how to use its remote control to navigate various display screens on the television, including how to “navigate the Home Screen, browse for media files, enable playback options, and customize [] system settings.” Ex.1006, pg. 25. Further, WD-Manual explains how its remote control includes various buttons and “shortcut/function keys” for navigating the content displayed on the television, activating and displaying different menus, and changing the content displayed on the television. Ex.1006, pgs. 25-26.

Remote Control



CAUTION: Do not expose the batteries or the remote control with batteries installed to excessive heat (direct sunlight, fire, etc.).

1. Infrared transmitter
2. POWER
3. Subtitle
4. PREV (track), STOP, NEXT (track)
5. Back (last screen)
6. Navigation buttons, OK
7. Previous Page
8. MUTE
9. Alpha-numeric keys
10. SEARCH
11. HOME
12. Audio
13. REV, PAUSE/PLAY, FF
14. Options
15. Next Page
16. Setup
17. Shortcut/function keys
18. EJECT (safe removal of attached storage)



Arrow keys,
shortcut/function
keys, navigation
keys, etc.

Ex.1006, pg. 11 (partial and annotated).

3. Summary of Bae

53. Like the '254 patent, Bae relates to “a video display device, and particularly to a channel searching method of the video display device,” such as a television. Ex.1007-8, [0001], [0002] (“displays include televisions”). Bae provides a “method that allows users to easily search for and select a plurality of

broadcasting channels.” Ex.1007-8, [0006].

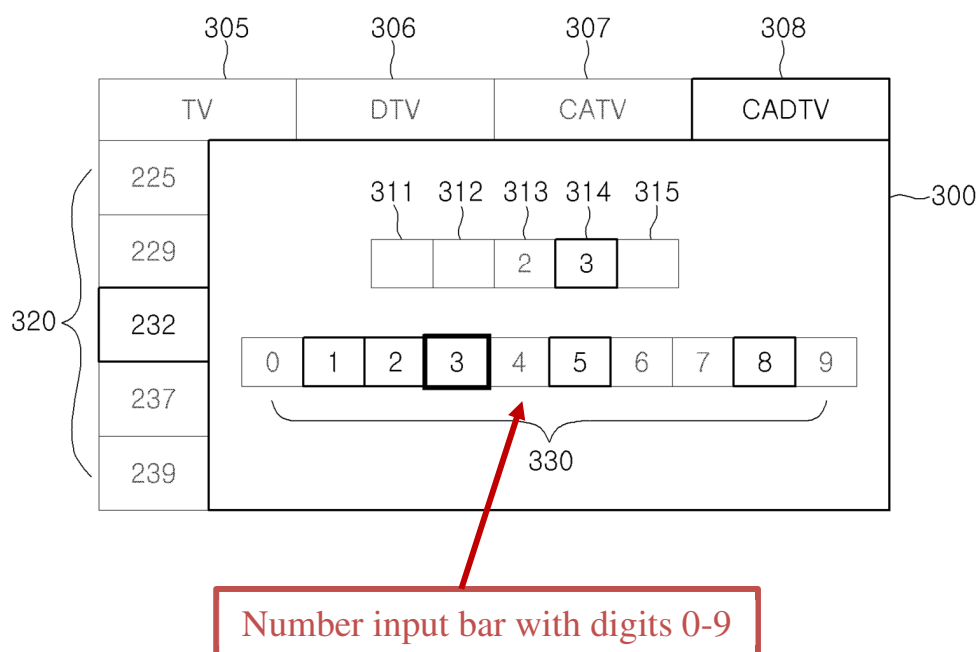
54. Further, Bae describes that its television can receive various commands from a user via a “user input unit,” where the various commands can include, for example, “channel search commands, channel change commands, volume up/down commands, etc.” Ex.1007-8, [0011], [0017]. With respect to channel changing, Bae teaches techniques for allowing a user to enter a channel number to control the television to change the channel from a current channel to the channel of the user-selected channel number:

In order to solve the above-stated problem, the present invention is configured by a tuner unit that receives broadcast signals for each channel from the outside; an OSD processing unit that generates at least one channel number selection window through which a channel number for a broadcast signal received through the tuner unit can be selected, and a channel number display window displaying the selected channel number; a display unit that displays a channel number input window generated by the OSD processing unit, and a channel number display window that displays the channel input through the channel number input window; a user interface unit that sequentially receives input from the channel of the highest unit according to the displayed channel number input screen; and a control unit that controls to activate and display a selectable next-priority channel number comprising the channel number input through the user interface unit, and to perform channel switching to the selected channel.

Ex.1007-8, [0007].

55. For example, Bae describes displaying on the television “ the numbers 0 to 9 are displayed in the channel number selection window 330,” where the

channel number selection window “ comprises a channel number display window 310 that displays the number for each digit of the channel selected in the channel number selection window 330.” Ex.1007-8, [0023], [0024]. In other words, Bae describes displaying on the television a number input bar, with digits 0-9, to enable a user to change the channel:



Ex.1007-8, Fig. 3 (annotated).

4. Reasons to Combine

a) Analogous Art

56. A POSITA would have been motivated to combine the teachings of Kim, WD-Manual, and Bae because each of these references is prior art that is analogous to the '254 patent. A POSITA considering the problem purportedly solved by the '254 patent would have looked to the analogous teachings of Kim,

WD-Manual, and Bae.

57. Problem(s) Purportedly Solved the '254 patent: The '254 patent purports to provide a solution to the need for “intuitive user interfaces . . . with seamless user interaction capability” for televisions. '254 patent, 1:65-66. The '254 patent enables this user interaction “via one or more physical or electrical controls, such as buttons, switches, touch sensitive screens/regions (e.g., capacitive touch, resistive touch, etc.)” where “the one or more controls may be associated with a remote control.” '254 patent, 11:48-64. Additionally, the '254 patent uses an “on screen channel changer” that includes a number input bar with numbers that can be selected by a remote control to purportedly improve user interaction with the television. '254 patent, 32:51- 33:8.

58. Kim: Kim is analogous prior art to the '254 patent because a POSITA would understand Kim to be from the same field of endeavor as the '254 patent, or at the very least, reasonably pertinent to the problem faced by the inventor of the '254 patent. As previously discussed above, Kim expressly states that its “image display apparatus and the method of controlling the same, as embodied and broadly described [t]herein, may increase user convenience and overall effectiveness of the user interface (UI) by providing a more intuitive graphical interface.” Ex.1005, [00282]. Accordingly, in my opinion, a POSITA would understand that Kim is prior art that is analogous to the '254 patent.

59. WD-Manual: WD-Manual is analogous prior art to the '254 patent because a POSITA would understand WD-Manual to be from the same field of endeavor as the '254 patent, or at the very least, reasonably pertinent to the problem faced by the inventor of the '254 patent. WD-Manual describes using a remote control with various buttons and keys to communicate with an interface displayed on a television that provides the user with easy access to various types of media content. Ex.1006, pgs. 25-26; *see also id.* at 5-8, 11. Accordingly, in my opinion, a POSITA would understand that WD-Manual is prior art that is analogous to the '254 patent.

60. Bae: Bae is analogous prior art to the '254 patent because a POSITA would understand Bae to be from the same field of endeavor as the '254 patent, or at the very least, reasonably pertinent to the problem faced by the inventor of the '254 patent. Similarly, Bae uses a channel number selection window (number input bar) that allows a user to easily change the channel. Accordingly, in my opinion, a POSITA would understand that Bae is prior art that is analogous to the '254 patent.

61. Accordingly, a POSITA would understand that each of Kim, WD-Manual, and Bae is analogous to the '254 patent.

b) Kim with WD-Manual

62. A POSITA would have been motivated to combine the teachings of

WD-Manual with Kim to produce numerous predictable and beneficial results.

63. First, a POSITA would have been motivated to combine the teachings of WD-Manual with the teachings of Kim because WD-Manual discloses the functionality media center device (e.g., the “WD TV Live Hub Media Center,” a type of set-top box) and remote control that is intended to be used to provide access to multimedia content in a television, and Kim discloses a television and remote control system designed to display multimedia content.

64. Specifically, a POSITA would have been motivated to apply WD-Manual’s techniques for displaying and accessing multimedia content to Kim’s television. For example, Kim notes that various components of its image display apparatus 100 shown in Figure 6 can be implemented in different ways including, via, for example, with the addition of new components, incorporation of certain components into other components, and the separation of one component into multiple:

The block diagram of the image display apparatus 100 illustrated in FIG. 6 is purely exemplary. Depending upon the specifications of the image display apparatus 100 in actual implementation, the components of the image display apparatus 100 may be combined or omitted or new components may be added. That is, two or more components are incorporated into one component or one component may be configured as separate components, as needed.

Ex.1005, [0115]

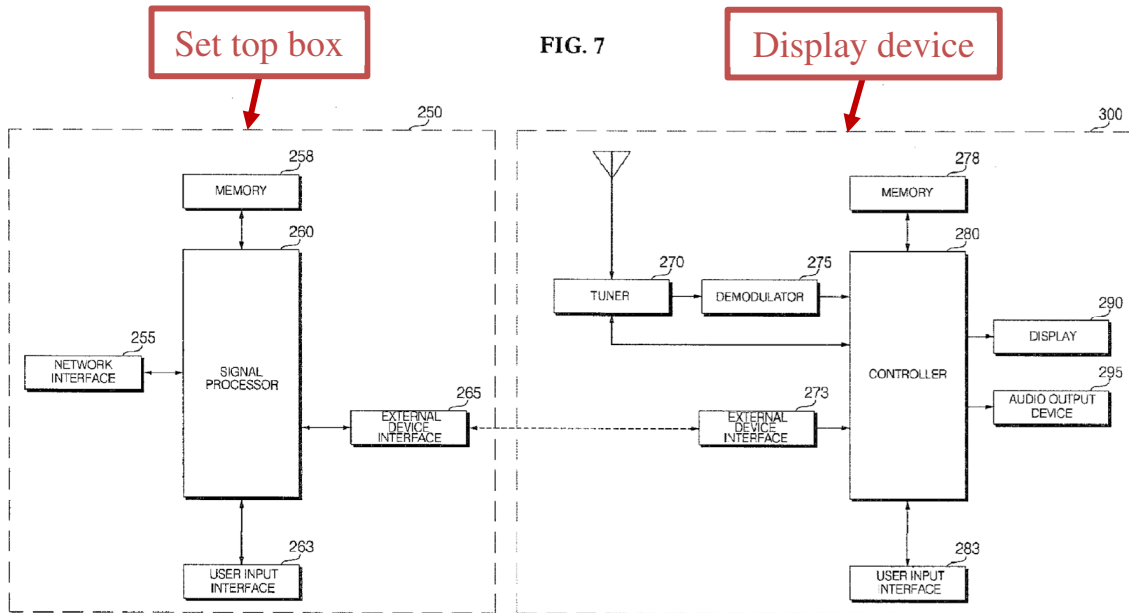
65. Kim also describes, for example, that the functions of the image display apparatus 100 could be separated into a display device and a separate set-top box:

The image display apparatus 100 is an example of image signal processing apparatus that processes a stored image or an input image. Other examples of the image signal processing apparatus include a set-top box without the display 180 and the audio output device 185, a DVD player, a Blu-ray player, a game console, a computer, or another appropriate device that processes image signals. The set-top box is described in further detail hereinbelow with reference to FIGS. 7 and 8.

Ex.1005, [0117].

FIGS. 7 and 8 are block diagrams showing the image display apparatus configured separately as a set-top box and a display device. Referring to FIG. 7, a set-top box 250 and a display device 300 may transmit or receive data wirelessly or by wire. The set-top box 250 may include a network interface 255, a memory 258, a signal processor 260, a user input interface 263, and an external device interface 265.

Ex.1005, [0118].



Ex.1005, Fig. 7 (annotated).

66. Further, Kim explains that the physical implementation and arrangement of its multimedia functions and techniques can be done in any manner because its system is “freely modifiable” and various components may be configured in different ways:

The block diagram of the image display apparatus 100 illustrated in FIG. 6 is purely exemplary. Depending upon the specifications of the image display apparatus 100 in actual implementation, the components of the image display apparatus 100 may be combined or omitted or new components may be added. That is, two or more components are incorporated into one component or one component may be configured as separate components, as needed.

Ex.1005, [0115].

Various applications may be freely added to or deleted from, for example, a general-purpose OS kernel in the image display

apparatus. Hence, the image display apparatus may be configured as a network TV, a Hybrid broadcast broadband TV (HbbTV), a smart TV, or another appropriate type of networked display device. Moreover, the image display apparatus may be implemented on a smart phone, as needed.

Ex.1005, [0283].

67. Accordingly, a POSITA reading Kim would understand that the television configuration for Kim's image display apparatus could include functionality that would be found in a separate set-top box.

68. WD-Manual describes known functionality of a set-top box, controllable via remote control, to access multimedia functionality on display devices. Ex.1006, pgs. 5-6. Given the express teachings in Kim, a POSITA would have found it obvious to combine the known functionality of WD-Manual's set-top box within the television configuration of Kim's image display apparatus. *See also* Ex.1019, 2:37-44 (describing "the integration of the internet and Web features into modern television sets" and "the technological convergence between computers and these televisions sets/set-top boxes").

69. Kim further describes a ready-to-be-modified remote control that could "include various input tools other than those set forth herein, such as a scroll key, a jog wheel, or another appropriate user input device." Ex.1005, [0175]. WD-Manual provides examples of input tool features, including different dedicated and customizable remote control buttons, for controlling a television's

multimedia functionality via a set-top box. Ex.1006, pgs. 11, 25-26, 138-39.

Along with combining the known functionality of WD-Manual's set-top box within the television configuration of Kim's image display apparatus, a POSITA would have found it obvious that Kim's remote control could be implemented using functionality as taught in WD-Manual with respect to WD-Manual's set-top box.

70. Second, a POSITA would have found the combination of Kim and WD-Manual predictable and would have had a reasonable expectation of success. First, Kim and WD-Manual are similar systems, in that both systems provide the functionality to display and access multimedia content on a television. For example, Kim discloses providing access to broadcast television, a tv guide, media, external devices, phones, an app store, and internet content providers. Ex.1005, [0192]-[202]. Similarly, WD-Manual discloses providing access to movies, television, media, and internet content. Ex.1006, pg. 5.

71. Second, as discussed above, Kim expressly contemplates incorporating the functionality of a set-top box into its television. The WD-Manual discloses the known functionality of a set-top box. Ex.1006, pg. 5.

72. Kim's television would benefit from incorporating WD-Manual's functionality for displaying and accessing multimedia content. Kim already teaches the fundamentals of a user interface for accessing multimedia content. *See*

Ex.1005, Fig. 19 and related discussion. Kim also contemplates using a remote control to access the multimedia content. *See, e.g.*, Ex.1005, [0192]-[0217]. WD-Manual provides enhanced teachings regarding the functionality of the remote control so that the user can “customize [their] media experience” with “customizable screens, themes and favorites” to “personalize the media experience.” Ex.1006, pg. 7.

73. Accordingly, combining the teachings of WD-Manual with the teachings of Kim would have simply been combining the prior art functionality of WD-Manual’s media center device with Kim’s image display apparatus according to known methods to yield the predictable result of an image display apparatus that incorporates multimedia functionality that could otherwise be separately implemented in a set-top box.

74. Additionally, such a combination would have merely been the application of a known technique (e.g., the functionality of WD-Manual’s media center device or set-top box) to a known device (e.g., Kim’s image display apparatus or television), which as Kim itself noted (*see e.g.*, Ex.1005, [0115], [0118], [0283]) was ready for improvement, to yield the predictable result of an image display apparatus that incorporates multimedia functionality that could otherwise be separately implemented in a set-top box. Further, this type of combination would have been well within the capability of one of ordinary skill in

the art.

c) Kim and/or Kim-WD-Manual with Bae

75. In my opinion, a POSITA would have been motivated to combine the teachings of Bae with the teachings of Kim because Kim discloses a television that enables a user to change channels and Bae discloses a technique for displaying an on screen channel changer to change channels.

76. A POSITA would have been motivated to combine the teachings of Bae with Kim (as modified per the WD-Manual) to produce numerous predictable and beneficial results.

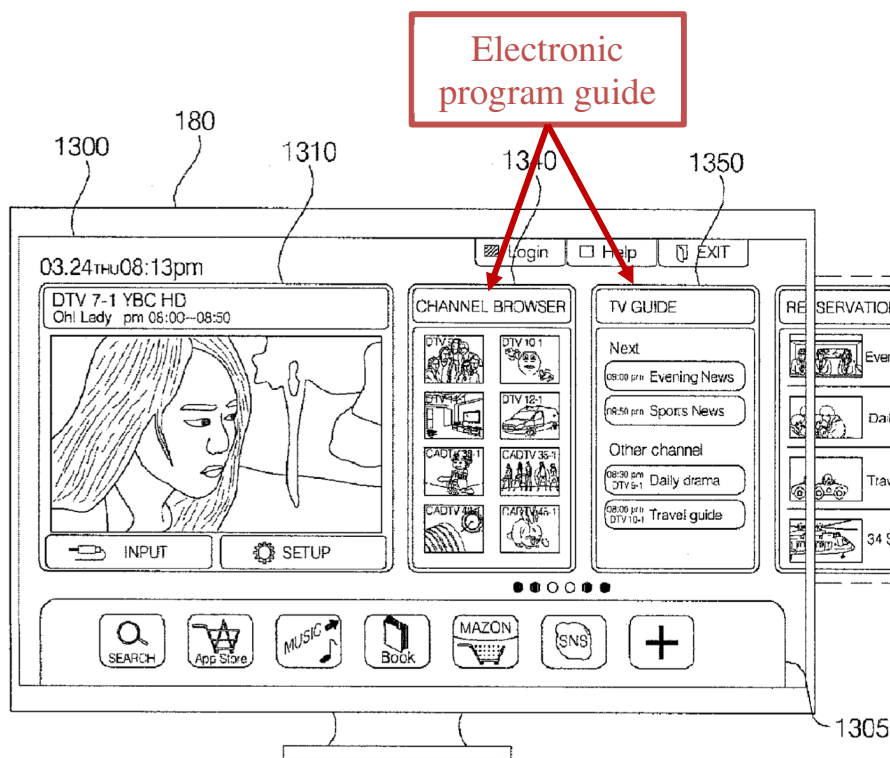
77. Specifically, a POSITA would have been motivated to apply Bae's techniques for changing a channel to Kim's television. For example, Kim describes that "the remote controller 200 may transmit commands such as a . . . a channel switch command . . . to the image display apparatus 100." Ex.1005, [0174]. Kim discloses that a "key input signal regarding channel selection" can be received from the user. Ex.1005, [0060], [0086] (receiving a "channel selection signal" from the user), [0090] (receiving a "specific channel selection command" through the user input interface), [0127].

78. Further, Kim teaches an on screen channel changer that displays electronic program guide information that allows a user to search for and switch to a desired program or channel via a remote control, such as a "a CHANNEL

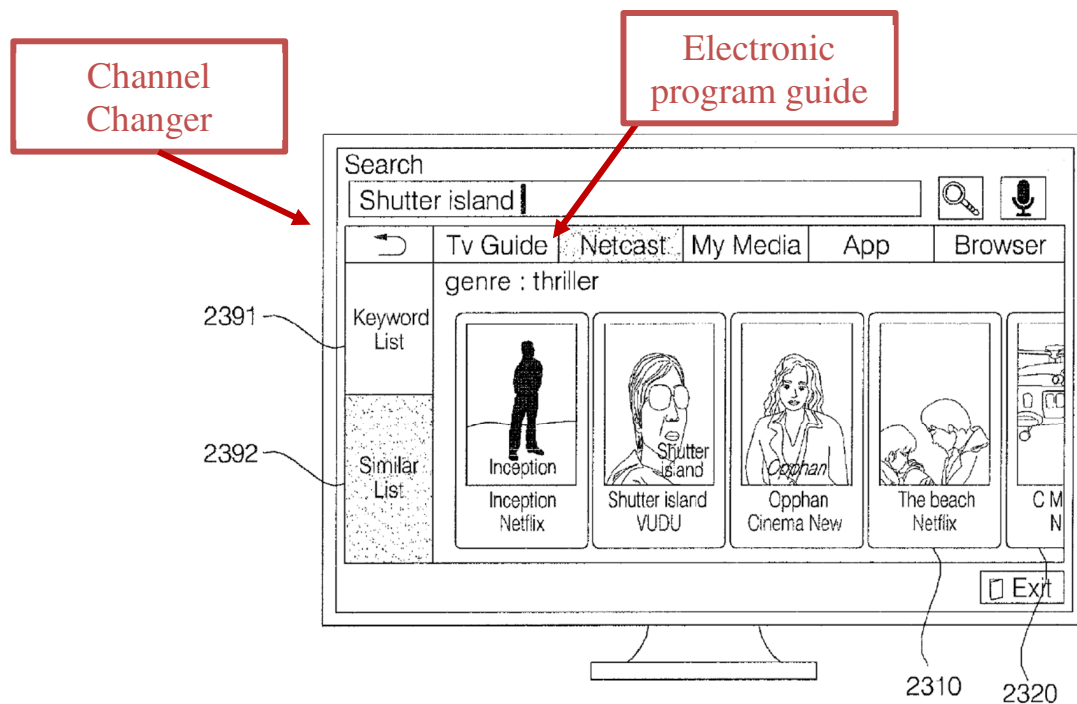
BROWSER card object 1340 which may provide a thumbnail list of broadcast channels [and] a TV GUIDE card object 1350 which may provide a program list.”

Other card objects may be arranged in a hidden area 1301. The card objects in the hidden area 1301 may be hidden from view on the display 180. These hidden card objects may be shifted or scrolled onto the display 180 to replace the displayed card objects. The hidden card objects, as shown in FIG. 19, may include a CHANNEL BROWSER card object 1340 which may provide a thumbnail list of broadcast channels, a TV GUIDE card object 1350 which may provide a program list.

Ex.1005, [0196]



Ex.1005, Fig. 22, partial (annotated).



Ex.1005, Fig. 38 (annotated).

79. Kim, however, does not otherwise expand on how channel switch commands or channel selection commands may be entered into its on screen channel changer via the remote control, leaving the implementation details to a POSITA.

80. Bae discloses a known technique for receiving channel selection commands from a remote control. In Bae, “the numbers 0 to 9 are displayed in the channel number selection window 330 for channel search in each category; for each number, only selectable numbers are activated and displayed so that the user can input the corresponding number using the left and right keys or number keys.” Ex.1007-8, [0023]. Accordingly, Bae describes a known technique for a user

sequentially selecting, via a remote control, numbers displayed on the screen that correspond to the user's desired channel.

81. A POSITA would have been motivated to combine Bae's channel selection technique with Kim's on screen channel changer because Bae's channel selection technique enables a user to identify a specific channel number without searching or scrolling through an electronic program guide (EPG). Bae's technique also enables certain functionality contemplated in Kim. For example, Kim's remote control can have input tools "other than" a keypad. Ex.1005, [0175]. If a user uses a remote control without a keypad, applying Bae's channel selection technique nevertheless allows the user to identify a specific channel.

82. Thus, applying Bae's known technique (e.g., a channel number selection window or number input bar) to Kim's known system (e.g., television and remote control system), which was ready for improvement, would have yielded the predictable result of having an on screen channel changer that allows channel searching (e.g., via a channel search field) but also includes a number input bar, so that a user can switch channels on Kim's television by identifying a specific channel number and without regard to the remote control inputs, including one without a keypad. Thus, this combination allows the user to switch channels on Kim's television with different types of remote controls, including those without numeric keys. This result would have been predictable because Bae's

channel number input bar was specifically being used as a method for selecting and changing channels. Further, this result would have the added benefit of enabling the user to directly identify a desired channel number rather than searching using the text field of Kim.

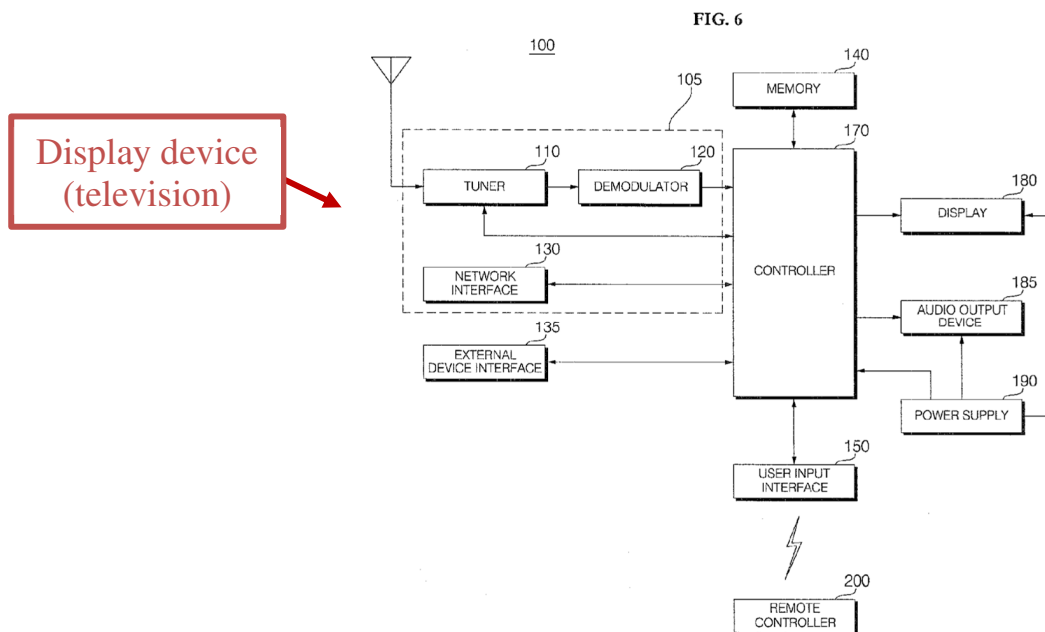
83. A POSITA would have had a reasonable expectation of success in combining Bae's channel number input bar with Kim's on screen channel changer because such a combination predictably uses Bae's number input bar for its intended purpose of allowing a user to easily change channels on a television via a user interface, which is the desired functionality in Kim.

5. Claim 1

[1.0]. *A method, comprising:*

84. To the extent limiting, the combination of Kim, Bae and WD-Manual render obvious the preamble.

85. Kim teaches a "display device and a method of controlling the same." Ex.1005, Abstract.



Ex.1005, Fig. 6 (annotated).

86. Bae discloses “a channel search device and method in a video display device.” Ex.1007-8, [0009].

87. WD-Manual “provides step-by-step instructions for installing and using your new media center.” WD-Manual, pg. 4.

88. Further, a POSITA would have been motivated to combine the teachings of Kim, WD-Manual, and Bae as analyzed above. *See supra* Section VII.A.4 (*Reasons to Combine*).

89. Accordingly, to the extent the preamble is limiting, Kim, WD-Manual, and Bae, alone or in any combination, render obvious a “*method*.”

[1.1] receiving, wirelessly by at least one of an infrared and radio frequency module of a television and from a remote control, a request to change a programming channel;

90. Kim discloses an image display apparatus, such as a television:

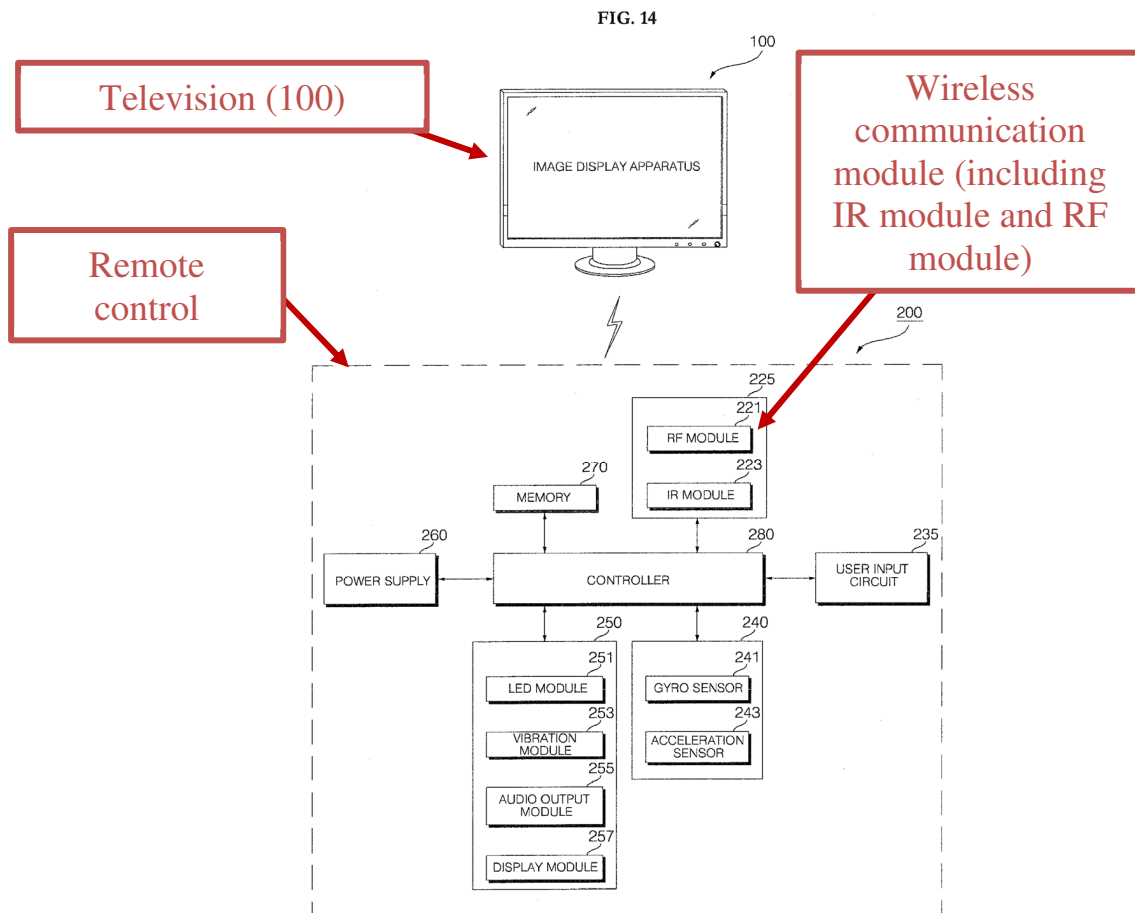
The **image display apparatus 100 may be**, for example, a network TV, **a smart TV**, an HbbTV, **or another appropriate multifunctional display device**. The image display apparatus 100 may include, for example, a broadcast interface 101, a section filter 102, an Application Information Table (AIT) filter 103, an application data processor 104, a broadcast data processor 111, a media player 106, an IP processor 107, an Internet interface 108, and a runtime module 109. The image display apparatus 100 may receive AIT data, real-time broadcast content, application data, and stream events through the broadcast interface 101. The realtime broadcast content may be referred to as a linear Audio/Video (A/V) content.

Ex.1005, [0038].

91. Kim discloses using a remote control to communicate with the television via a wireless communication module:

FIG. 14 is a block diagram of the remote controller in the image display apparatus according to an embodiment of the present disclosure. Referring to FIG. 14, **the remote controller 200 may include a wireless communication module 225**, a user input device 235, a sensor 240, an output device 250, a power supply 260, a memory 270, a controller 280, or another appropriate component based on the application or desired functionality of the display device.

Ex.1005, [0172].



Ex.1005, Fig. 14 (annotated).

92. Kim discloses that the remote control uses “an RF [*radiofrequency*] module” for transmitting “RF signals” to the television and “an IR [*infrared*] module” for transmitting “IR signals” to the television:

The wireless communication module 225 may transmit signals to and/or receives signals from the image display apparatus 100 as disclosed herein. The wireless communication module 225 may include an RF module 221 for transmitting RF signals to and/or receiving RF signals from the image display apparatus 100 according to an RF communication standard. The wireless communication module 225 may also include an IR module 223 for transmitting IR signals to and/or receiving IR signals from

the image display apparatus 100 according to an IR communication standard.

Ex.1005, [0173].

93. Thus, Kim teaches that its television wirelessly signals from the remote control via a wireless communication module that includes either (or both) a radio frequency module or an infrared module:

94. Kim further teaches that the wireless communication module of the remote control communicates with a module (user input interface 150) of the television:

The **remote controller 200 may transmit a user input to the user input interface 150**. For transmission of user input, the remote controller 200 may use various communication techniques such as Bluetooth, **RF communication, IR communication**, UWB, ZigBee, or another appropriate communication protocol.

Ex.1005, [0012].

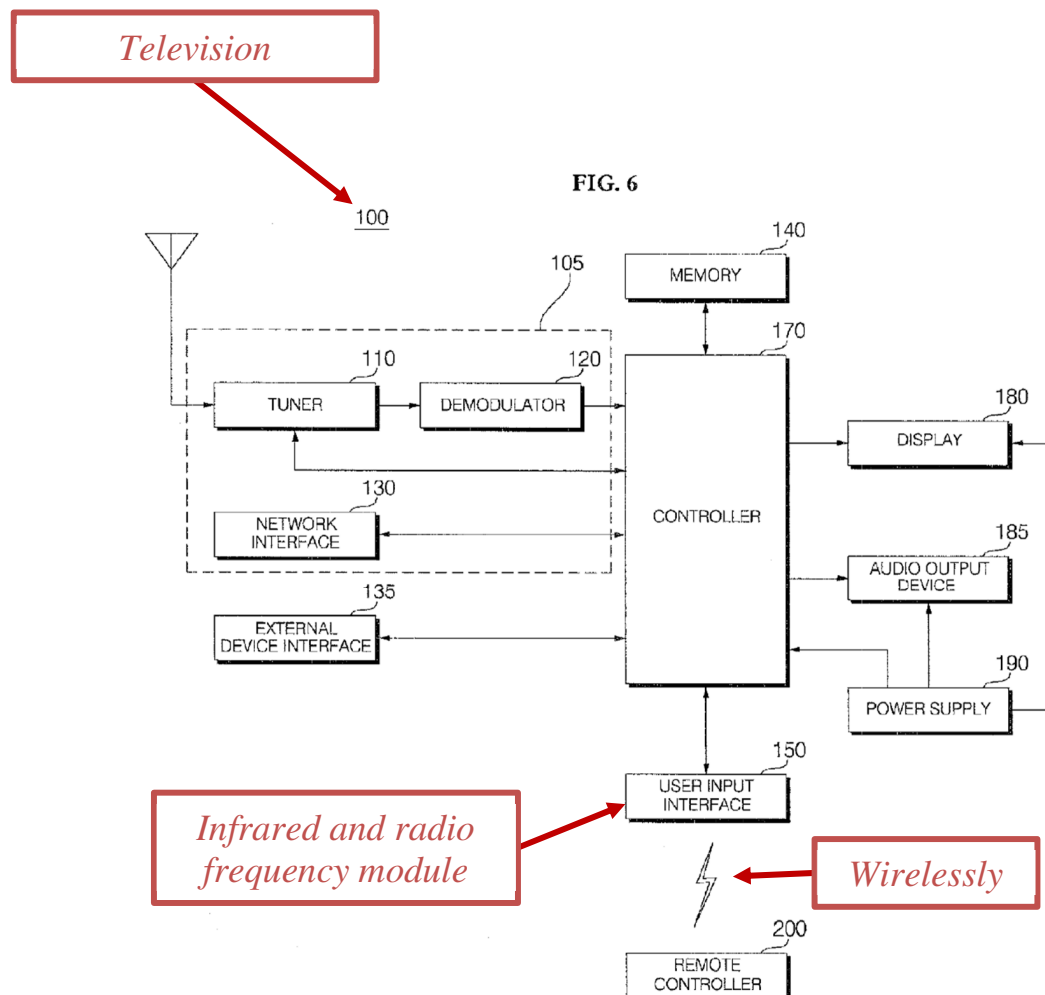
The user input interface 150 transmits a signal received from the user to the controller 170 or transmits a signal received from the controller 170 to the user. For example, **the user input interface 150 may receive various user input signals such as** a power-on/off signal, **a channel selection signal**, and a screen setting signal **from a remote controller 200** or may transmit a signal received from the controller 170 to the remote controller 200, **according to various communication schemes, for example, RF communication and IR communication.**

Ex.1005, [0086].

For example, the user input interface 150 may provide the controller 170 with user input signals or control signals received from local keys, such as inputs of a power key, a channel key, and a volume key, and setting values. Also, the user input interface 150 may transmit a control signal received from a sensor that senses a user gesture to the controller 170 or transmit a signal received from the controller 170 to the sensor. The sensor may include a touch sensor, a voice sensor, a position sensor, a motion sensor, or another appropriate type of sensor.

Ex.1005, [0087].

95. Thus, the user input interface 150 of the television that receives communication signals from the remote control using radio frequency (“RF”) and infrared (“IR”) communication teaches *an infrared and radio frequency module of a television*.



Ex.1005, Fig. 6 (annotated).

96. Kim further teaches that one of the commands that can be wirelessly sent from the remote control to the television includes a “channel switch command”:

As needed, the remote controller 200 may transmit commands such as a power on/off command, a channel switch command, or a volume change command to the image display apparatus 100 through the IR module 223. In certain embodiments, the command signals may also be transmitted through the RF module 221.

Ex.1005, [0174].

97. Similarly, Bae teaches a television that has “ a user input unit 130 for receiving a request command from the user.” Ex.1007-8, [0011]. Bae further teaches that one of the commands from the user is to change channels:

The user input unit 130 is a means for receiving request commands from the user, and receives channel search commands, **channel change commands**, volume up/down commands, etc. input from the user and transmits them to the control unit 160. In particular, the user input unit 130 according to an embodiment of the present invention performs a function of sequentially receiving the channel to be input from the user, starting from the upper number.

Ex.1007-8, [0017].

98. Accordingly, Kim’s teaching of a television that has a module (user input interface 150) that wirelessly receives a channel switch command from a remote control (having a wireless communication module that may include an RF module and may include n IR module) using radio frequency or infrared communication, further in view of Bae’s teaching of receiving a channel change command from a user, renders obvious “*receiving, wirelessly by at least one of an infrared and radio frequency module of a television and from a remote control, a request to change a programming channel.*”

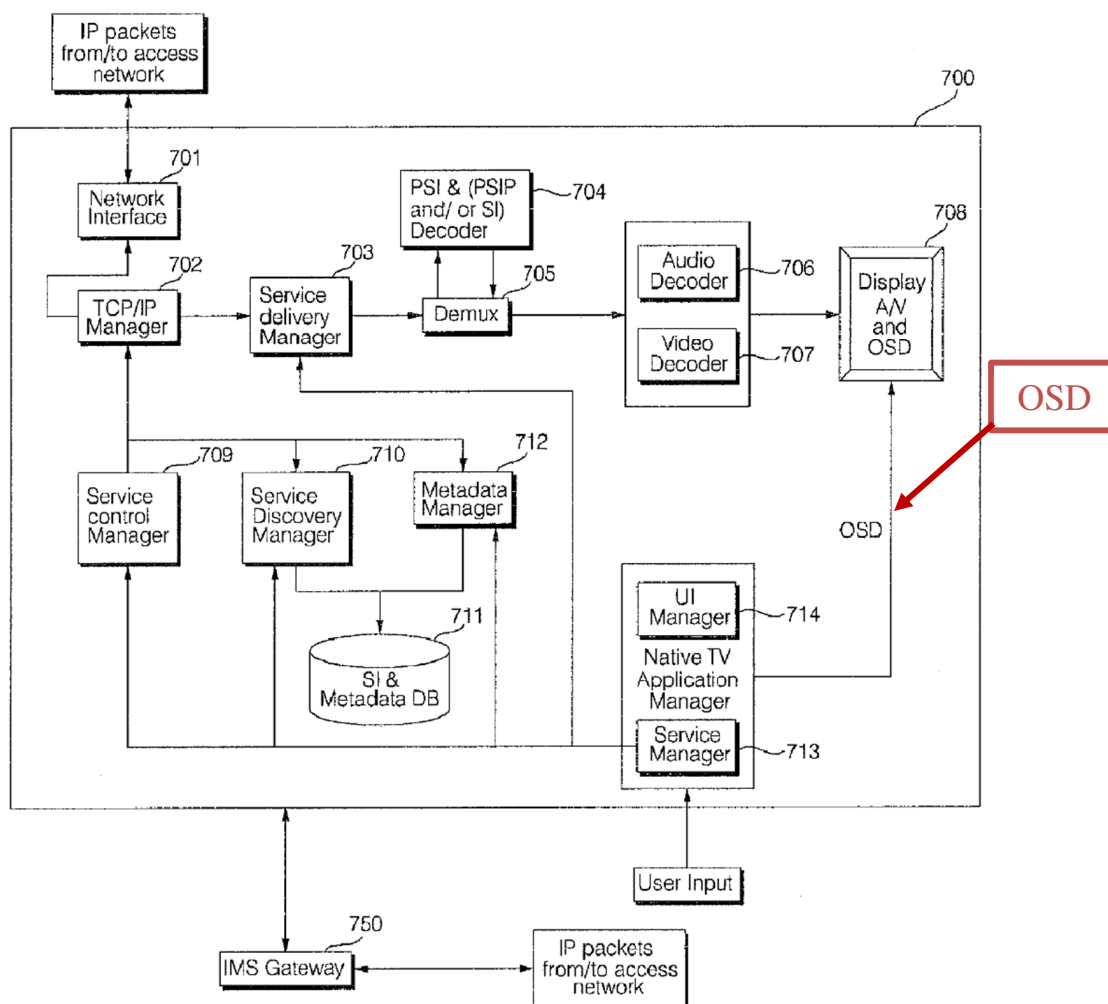
[1.2] displaying, by a microprocessor executable application framework and on a television screen, an on screen channel changer, the displayed on screen channel changer comprising electronic program guide (“EPG”) information and a number input bar comprising digits, wherein the digits range from 0 to 9;

“displaying...an on screen channel changer”

99. First, Kim discloses displaying “a Graphical User Interface (GUI) in the form of an **OSD** [On Screen Display]”:

The UI manager 714 and the service manager 713 may manage the overall state of the image display apparatus 700, provide UIs, and manage other managers. **The UI manager 714 may provide a Graphical User Interface (GUI) in the form of an OSD and may perform a reception operation corresponding to a key input received from the user.** For example, upon receipt of a key input signal regarding channel selection from the user, the UI manager 714 may transmit the key input signal to the service manager 713.

Ex.1005, [0060].



Ex.1005, Fig. 5 (annotated).

100. Kim explains that the OSD is controlled by an OSD generator of the controller to display various types of information on the television:

Referring to FIG. 19, a card object area may be defined in a home screen 1300. The card object area may include a plurality of card objects 1310, 1320 and 1330 which may be classified based on the source or a type of content. The image display apparatus may include a card object generator which generates and displays the card object. In certain embodiments, the card object generator may be an OSD generator 340 or a

functional module included in the controller or another component of the display apparatus 100.

Ex.1005, [0193].

The OSD generator 340 may generate an OSD signal autonomously or **based on to user input**. For example, **the OSD generator 340 may generate signals by which a variety of information is displayed** as images or text on the display 180, according to control signals received from the user input interface 150. The OSD signal may include various data such as a UI, a variety of menu screens, widgets, icons, etc. For example, **the OSD generator 340 may generate** a signal by which subtitles are displayed with a broadcast image or **Electronic Program Guide (EPG)-based broadcasting information**.

Ex.1005, [0137].

FIG. 10 is a block diagram of the controller of FIG. 6. Referring to FIG. 10, the controller 170 may include a DEMUX 310, a video processor 320, **an OSD generator 340**, a mixer 350, a Frame Rate Converter (FRC) 355, and a formatter 360. The controller 170 may further include an audio processor and a data processor.

Ex.1005, [0133].

101. Second, Kim discloses that the OSD generator may generate and display card objects within a “card object area” of Kim’s home screen.

The image display apparatus according to the embodiment of the present disclosure may include a card object generator that generates and displays the card object. In one embodiment, the

card object generator may be an OSD generator 340 or a functional part included in the controller or another component.

Ex.1005, [0095].

Referring to FIG. 19, **a card object area may be defined in a home screen 1300. The card object area may include a plurality of card objects 1310, 1320 and 1330** which may be classified based on the source or a type of content. The image display apparatus may include a card object generator which generates and displays the card object. In certain embodiments, **the card object generator may be an OSD generator 340 or a functional module included in the controller** or another component of the display apparatus 100.

Ex.1005, [0193].

The controller or the card object generator may store and manage (e.g., sort and arrange a display order of the card objects), and display the card objects. The controller or the card object generator may set a virtual hidden area on one side of the screen so as to manage a sort and display order of the card objects. The controller or the card object generator may also control scrolling of the card objects, for example, to shift a displayed card objects to be hidden and to shift a hidden card object to be displayed on the display apparatus 100.

Ex.1005, [0213].

102. The card object area of Kim's home screen displays a "CHANNEL BROWSER" object that includes "a thumbnail list of broadcast channels 1345," the thumbnails being selectable to cause a broadcast program to be displayed:

The card object 1340 may represent a list of broadcast channels. **This card object 1340 may include a card object name 1342 (CHANNEL BROWSER) and a thumbnail list of broadcast**

channels 1345. A plurality of broadcast channels may be represented as thumbnail images, as shown in FIG. 19. The thumbnail images may include still images or moving pictures. The thumbnail list 1345 may include information related to the channels as well as the thumbnail images for the channels such that the broadcast programs of the channels may be readily identified.

Ex.1005, [0205].

In one embodiment, upon receipt of a go-to-home screen input, the controller 170 may control display of the home screen on the display 180. The home screen may include a plurality of card objects classified according to content sources. The card objects may include at least one card object representing a thumbnail list of broadcast channels, a card object representing a broadcast program guide, a card object representing a program reservation list or a program recording list, or a card object representing a media list of a device connected to the image display apparatus 100. The card objects may further include at least one of a card object representing a list of connected external devices or a card object representing a call-associated list. The home screen may further include an application menu with at least one application that can be executed.

Ex.1005, [0094].

The image display apparatus 100 may further include **a channel browsing processor configured to generate thumbnail images corresponding to channel signals or external input signals**. The channel browsing processor may extract some of the video frames of each of stream signals TS received from the demodulator 120 or stream signals received from the external device interface 135 and display the extracted video frames on the display 180 as thumbnail images. The thumbnail images may

be directly output to the controller 170 or may be output after being encoded.

Ex.1005, [0104].

Also, it is possible to encode the thumbnail images into a stream and output the stream to the controller 170. The controller 170 may **display a thumbnail list including a plurality of received thumbnail images on the display 180**. The thumbnail images may be updated sequentially or simultaneously in the thumbnail list. Therefore, **the user can readily identify the content of broadcast programs received through a plurality of channels**.

Ex.1005, [0105].

Moreover, the thumbnail images may correspond to pre-stored user channels (e.g., favorite list) or to channel numbers relative to the channel being displayed in the card object 1310 (e.g., channels which are numbered higher or lower than the displayed channel). Although eight channel thumbnail images are displayed in FIG. 9, many other configurations may be possible. The arrangement and selection of the displayed thumbnail images may be updated in the thumbnail list 1345. **Upon selection of a thumbnail image from the thumbnail list 1345, a broadcast program from the selected channel may be displayed on the display 180.**

Ex.1005, [0206].

Other card objects may be arranged in a hidden area 1301. The card objects in the hidden area 1301 may be hidden from view on the display 180. **These hidden card objects may be shifted or scrolled onto the display 180 to replace the displayed card objects. The hidden card objects, as shown in FIG. 19, may include a CHANNEL BROWSER card object 1340 which may provide a thumbnail list of broadcast channels,** a TV

GUIDE card object 1350 which may provide a program list, a RESERVATION/REC card object 1360 which may provide a reserved or recorded program list, a MY MEDIA card object 1370 which may provide a list of multimedia files which are available on the image display apparatus 100 or on a device connected to the image display apparatus 100, an EXTERNAL DEVICE card object 1380 which may provide a list of external devices which may be connected to the image display apparatus 100, and a PHONE card object 1390 which may provide a list of call-related items.

Ex.1005, [0196].

103. The card object area of Kim's home screen displays a "TV GUIDE" card object having a "program list" in which the programs are selectable to cause a broadcast image of the program to be displayed:

The card object 1350 which represents a program list may contain a card object name 1352 (TV GUIDE) and a program list 1355. The program list 1355 may list broadcast programs for the currently displayed channel or broadcast programs for one or more different channels. If a program is selected from the program list 1355, a broadcast image of the selected program (e.g., currently being broadcast) or broadcasting information related to the selected program (e.g., future broadcasts) may be displayed on the display 180.

Ex.1005, [0207].

Other card objects may be arranged in a hidden area 1301. The card objects in the hidden area 1301 may be hidden from view on the display 180. **These hidden card objects may be shifted or scrolled onto the display 180 to replace the displayed card objects. The hidden card objects, as shown in FIG. 19, may include** a CHANNEL BROWSER card object 1340 which may

provide a thumbnail list of broadcast channels, **a TV GUIDE card object 1350 which may provide a program list**, a RESERVATION/REC card object 1360 which may provide a reserved or recorded program list, a MY MEDIA card object 1370 which may provide a list of multimedia files which are available on the image display apparatus 100 or on a device connected to the image display apparatus 100, an EXTERNAL DEVICE card object 1380 which may provide a list of external devices which may be connected to the image display apparatus 100, and a PHONE card object 1390 which may provide a list of call-related items.

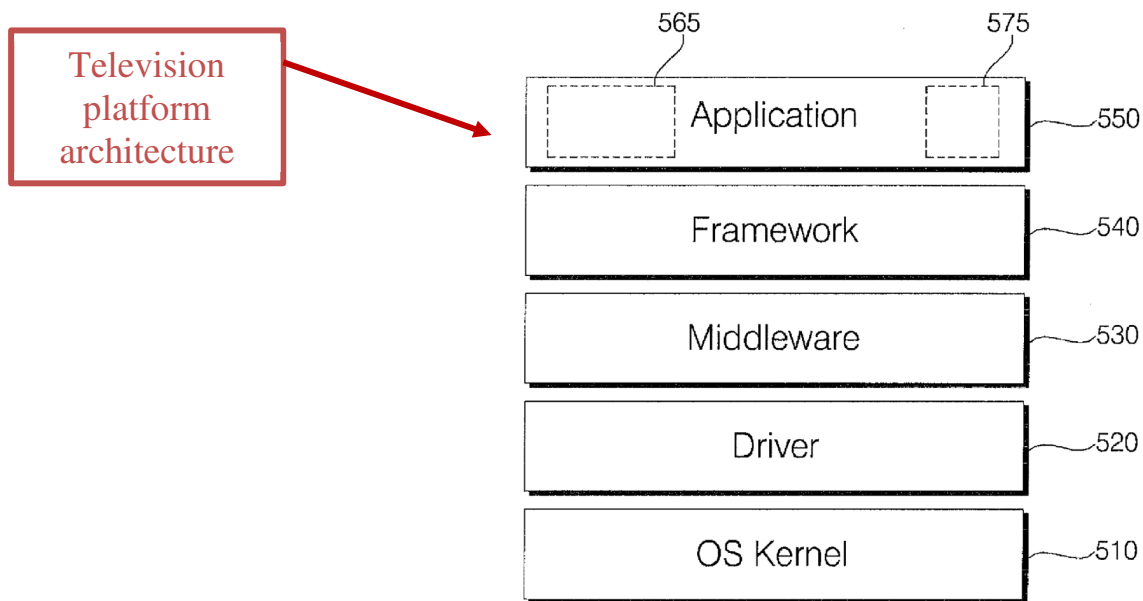
Ex.1005, [0196].

104. Thus, Kim's card object area that displays either or both of a CHANNEL BROWSER card object and TV GUIDE card object teaches an on screen channel changer.

"by a microprocessor executable application framework and on a television screen"

105. First, Kim discloses that its television includes a software "platform architecture" having certain layers (application, framework, middleware, driver and OS kernel), thereby teaching an *application framework*:

FIG. 11 illustrates a platform architecture implemented in the image display apparatus according to one embodiment, and **FIG. 12 illustrates another platform architecture implemented in the image display apparatus according to another embodiment**. Ex.1005, [0144].



Ex.1005, Fig. 12 (annotated).

106. The layers of Kim's platform architecture aligns with the layers described for the software platform described in the '254 patent:

An embodiment of the software system components and modules 400 is shown in FIG. 4. The software system 400 may comprise one or more layers including, but not limited to, an operating system kernel 404, one or more libraries 408, an application framework 412, and one or more applications 416. The one or more layers 404-416 can communicate with each other to perform functions for the Intelligent TV 100.

'254 patent, 18:7-13.

107. Kim describes that the applications of the application layer are based on the framework and that the framework supports the applications:

In the smart system platform 405, **the framework 440 may include programs on which applications of the application layer 455 are based. The framework 440 may be compatible with any application and may allow component reuse,**

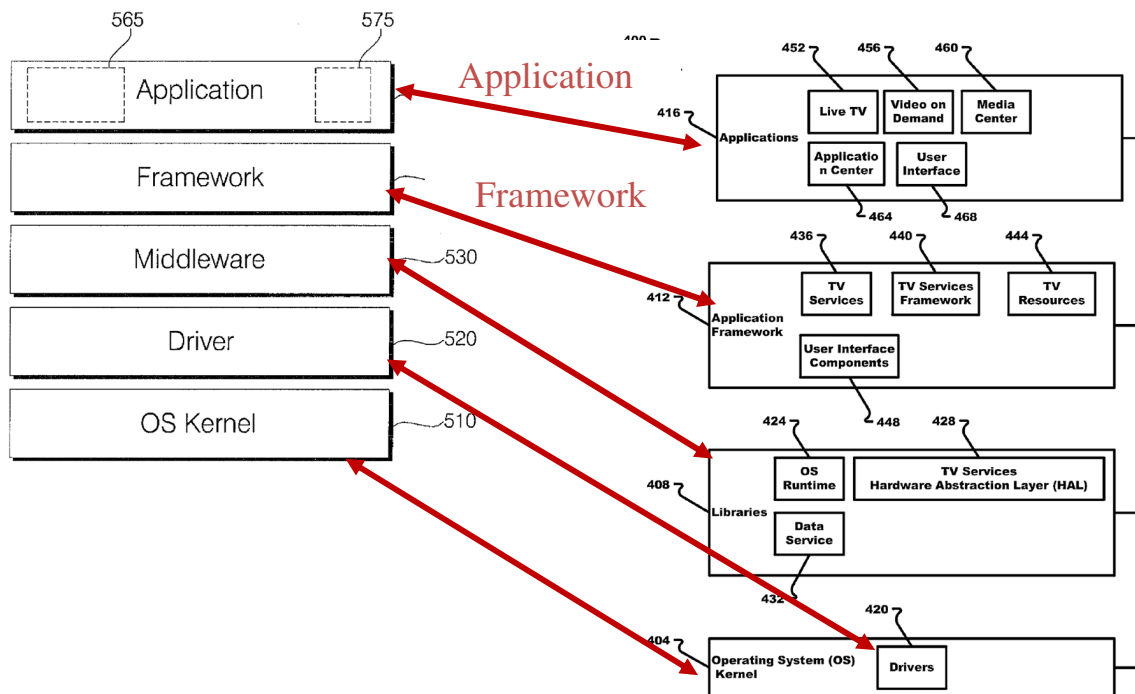
movement, or exchange. The framework 440 may include supporting programs and programs for interconnecting different software components. For example, the framework 440 may include an activity manager related to activities of applications, a notification manager, and/or a CP for abstracting common information between applications. This framework 440 may be written in Java.

Ex.1005, [0156]; *see also id.* at [0160].

108. Kim's description of its framework 440 aligns with the description of the '254 patent's application framework below:

The application framework 412 can include a general abstraction for providing functionality that can be selected by one or more application 416 to provide specific application functions or Software for those applications. Thus, the framework 412 can include one or more different services, or other applications, that can be accessed by the applications 416 to provide general functions across two or more applications.

'254 patent, 18:58-65.



'254 patent, Fig. 4 versus Ex.1005, Fig. 12 (annotated).

109. Second, Kim discloses different types of platform architectures, one of which includes “framework 440” and another that includes “framework 540” that is part of an “integrated platform,” but Kim explains that its description for “framework 540” applies to “framework 440”:

Referring to FIG. 12, a **platform for the image display apparatus according to another embodiment may be an integrated type.** The **integrated platform may include an OS kernel 510, a driver 520, middleware 530, a framework 540,** and an application layer 550. Compared to the separate-type platform, as illustrated in FIG. 11, the integrated-type platform is characterized by the absence of the library 435. Moreover, in this embodiment, the application layer 550 may be an integrated layer. **The driver 520 and the framework 540 correspond to the driver 420 and the framework 440 of FIG. [11],**

respectively.

Ex.1005, [0160]¹.

110. Thus, similar to how “framework 540” is included within an “integrated platform” architecture, “framework 440” also may be included within an “integrated platform” architecture that includes an integrated “application layer 550.” Ex.1005, [0160]. Further, because Kim discloses that the application layer 550 can include “a menu-related application, a TV guide application, a reservation application, etc.”:

The application layer 550 may include a menu-related application, a TV guide application, a reservation application, etc. as legacy system applications. The application layer 550 may also include an e-mail, SMS, a calendar, a map, and/or a browser as image display system applications.

Ex.1005, [0162].

111. Third, Kim discloses that the platform architectures described in its Figs. 11-12 may be “stored or loaded in the memory 140, the controller 170, or any other processor.” Ex.1005, [0166]. Kim describes that the controller 170 controls

¹ Paragraph [0160] of Kim refers to “the driver 420 and the framework 440 of FIG. 5,” but a POSITA would recognize that this reference to FIG. 5 is a typographical error because driver 420 and framework 440 are shown in and described with reference to FIG. 11, and not FIG. 5.

the television:

The controller 170 may include a DEMUX and a video processor. In addition, **the controller 170 may provide overall control to the image display apparatus 100.** For example, the controller 170 may control the tuner 110 to select an RF broadcast signal corresponding to a user-selected channel or a pre-stored channel.

Ex.1005, [0089].

112. Further, Kim teaches that the controller can be implemented in any number of ways:

The controller 170 as embodied and broadly described herein is not limited to the configuration as illustrated in the block diagram of FIG. 10. Depending upon the specifications of the controller 170, the components of the controller 170 may be combined, omitted, or additional components may be added to the controller 170.

Ex.1005, [0143].

113. For example, Kim describes that its controller 170 may be implemented using different types of and combinations of processors:

The controller 170 may include **a DEMUX and a video processor.** In addition, **the controller 170 may provide overall control to the image display apparatus 100.** For example, the controller 170 may control the tuner 110 to select an RF broadcast signal corresponding to a user-selected channel or a pre-stored channel.

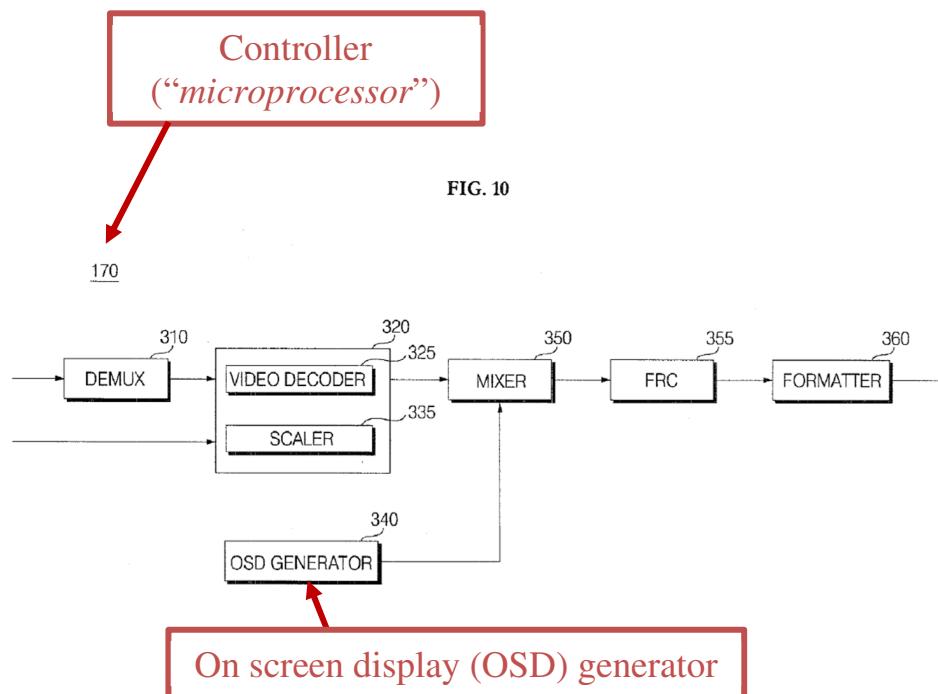
Ex.1005, [0089].

FIG. 10 is a block diagram of the controller of FIG. 6. Referring to FIG. 10, **the controller 170 may include a DEMUX 310, a video processor 320, an OSD generator 340**, a mixer 350, a Frame Rate Converter (FRC) 355, and a formatter 360. The controller 170 may further include **an audio processor and a data processor**.

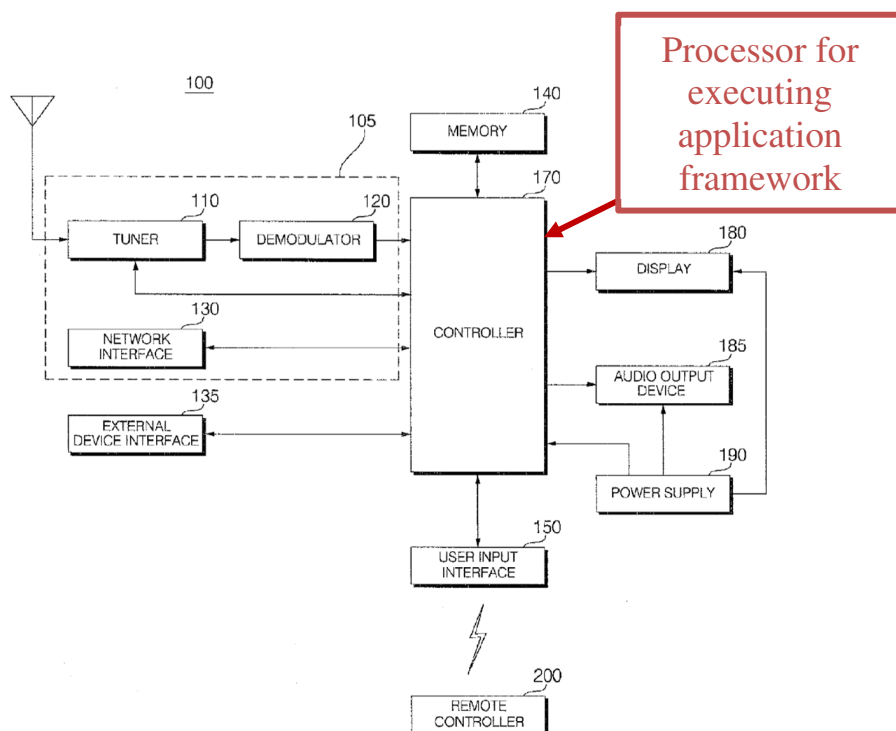
Ex.1005, [0133].

The controller 170 may control the image display apparatus 100 according to a user command received through the user input interface 150 or according to an internal program.

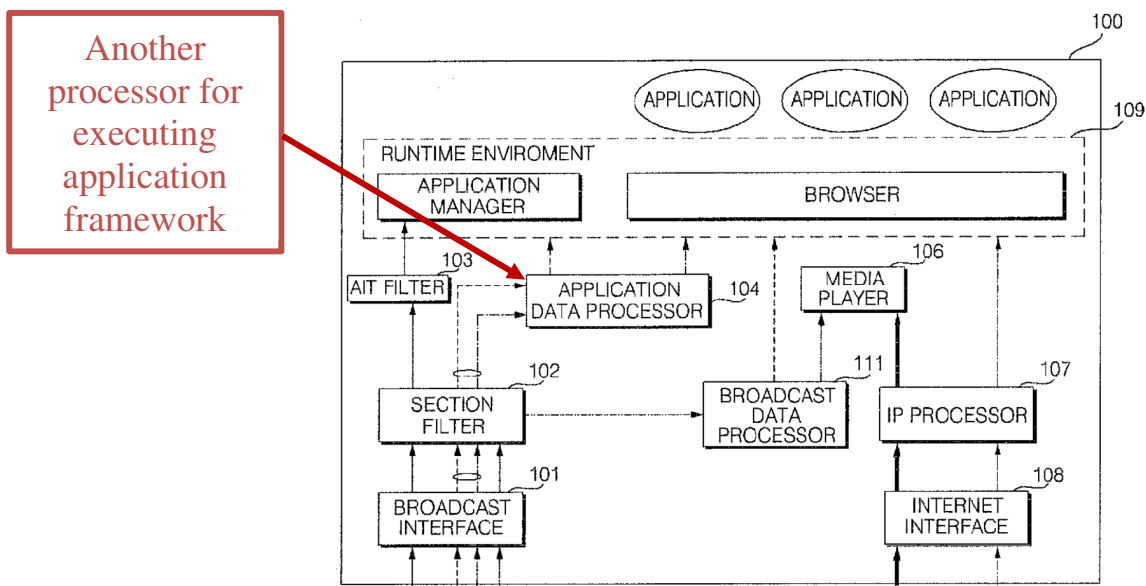
Ex.1005, [0090]



Ex.1005, Fig. 10 (annotated).



Ex.1005, Fig. 6 (annotated).



Ex.1005, Fig. 2 (annotated).

114. Fourth, Kim's controller 170 is used to generate and display different types of content on the television.

The **controller 170 may control the display 180 to display images.** For instance, the controller 170 may control the display 180 to display a broadcast image received from the tuner 110, an external input image received through the external device interface 135, an image received through the network interface 130, or an image stored in the memory 140. The image displayed on the display 180 may be a Two-Dimensional (2D) or Three-Dimensional (3D) still image or moving picture.

Ex.1005, [0092].

The controller 170 may control the image display apparatus 100 according to a user command received through the user input interface 150 or according to an internal program. The controller 170 may also access a network and download an application or application list selected by the user to the image display apparatus 100 over the network. For example, the controller 170 may control the tuner 110 to receive a channel selected according to a specific channel selection command received through the user input interface 150 and process a video, audio and/or data signal of the selected channel. The controller 170 may output the processed video or audio signal along with information about the user-selected channel to the display 180 or the audio output device 185.

Ex.1005, [0090].

115. Accordingly, a POSITA would readily understand that Kim's controller 170 is a microprocessor that executes the framework because it (i) provides overall control of the television, (ii) executes the applications and application framework, (iii) receives signals corresponding to user-provided commands, and (iv) generates content to be displayed on the television.

“the displayed on screen channel changer comprising electronic program guide (‘EPG’) information and a number input bar”

- “EPG information”:

116. As I previously noted, Kim’s Kim discloses several examples of using a processor to display an on screen channel changer, including card objects generated by the OSD generator:

The OSD generator 340 may generate an OSD signal autonomously or based on to user input. For example, the OSD generator 340 may generate signals by which a variety of information is displayed as images or text on the display 180, according to control signals received from the user input interface 150. The OSD signal may include various data such as a UI, a variety of menu screens, widgets, icons, etc. For example, **the OSD generator 340 may generate** a signal by which subtitles are displayed with a broadcast image or **Electronic Program Guide (EPG)-based broadcasting information.**

Ex.1005, [0137]; *see also id.* at [0133], [0193].

117. As a first example, Kim discloses a processor to display thumbnail images corresponding to tv channels for “channel browsing”:

The image display apparatus 100 may further include a channel browsing processor configured to generate thumbnail images corresponding to channel signals or external input signals. The channel browsing processor may extract some of the video frames of each of stream signals TS received from the demodulator 120 or stream signals received from the external device interface 135 and display the extracted video frames on the display 180 as thumbnail images. The

thumbnail images may be directly output to the controller 170 or may be output after being encoded.

Ex.1005, [0104].

The card object 1340 may represent a list of broadcast channels. This card object 1340 may include a card object name 1342 (CHANNEL BROWSER) and a thumbnail list of broadcast channels 1345. A plurality of broadcast channels may be represented as thumbnail images, as shown in FIG. 19. The thumbnail images may include still images or moving pictures. The thumbnail list 1345 may include information related to the channels as well as the thumbnail images for the channels such that the broadcast programs of the channels may be readily identified.

Ex.1005, [0205].

118. As a second example, Kim discloses a processor to display a program list:

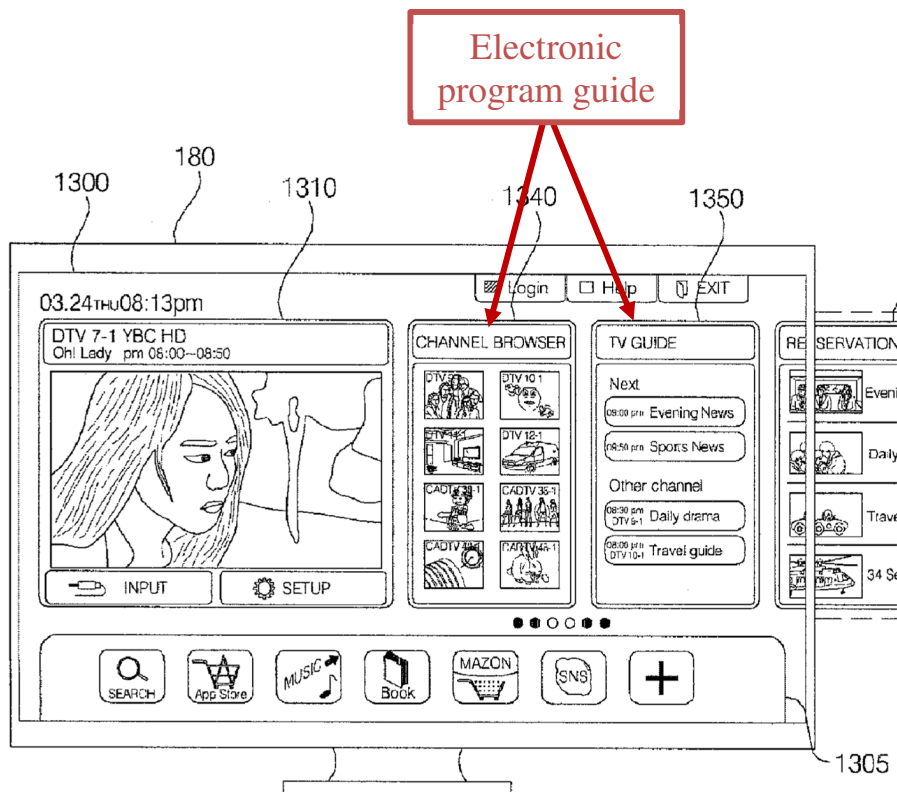
The card object **1350** which represents a program list may contain a card object name **1352** (TV GUIDE) and a program list **1355**. The program list **1355** may list broadcast programs for the currently displayed channel or broadcast programs for one or more different channels. If a program is selected from the program list **1355**, a broadcast image of the selected program (e.g., currently being broadcast) or broadcasting information related to the selected program (e.g., future broadcasts) may be displayed on the display **180**.

Ex.1005, [0207].

Other card objects may be arranged in a hidden area 1301. The card objects in the hidden area 1301 may be hidden from view on the display 180. These hidden card objects may be shifted or

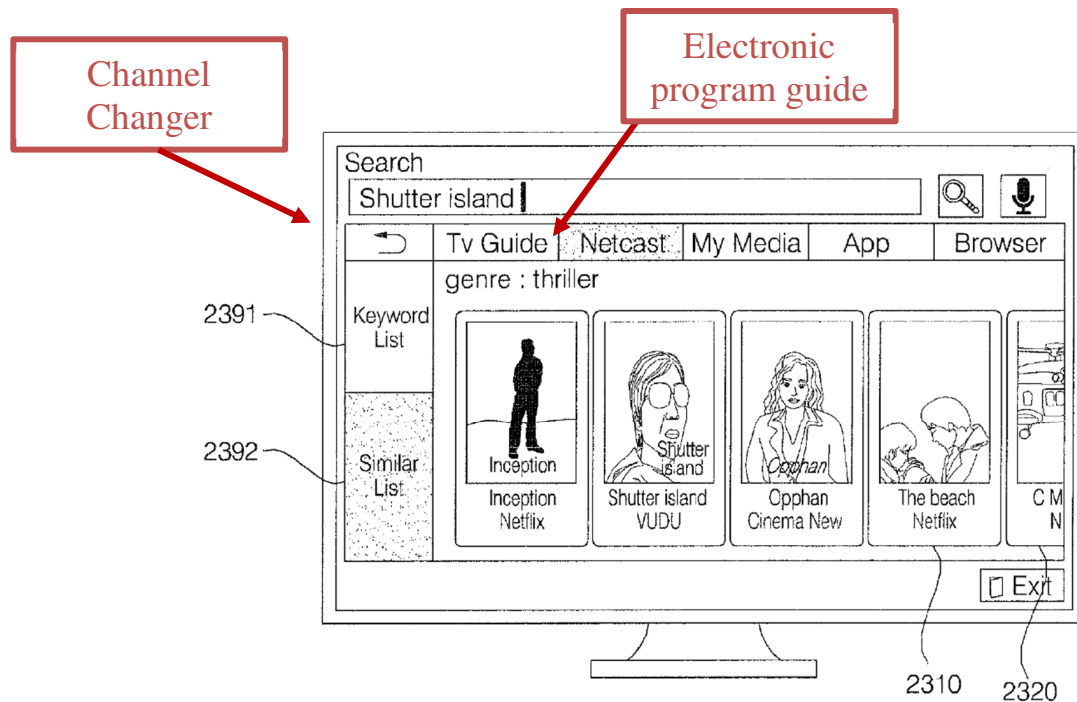
scrolled onto the display 180 to replace the displayed card objects. The hidden card objects, as shown in FIG. 19, may include a CHANNEL BROWSER card object 1340 which may provide a thumbnail list of broadcast channels, a TV GUIDE card object 1350 which may provide a program list.

Ex.1005, [0196]



Ex.1005, Fig. 22, partial (annotated).

119. Kim discloses one manner of changing the channel by using the remote control to search for a desired program or channel:



Ex.1005, Fig. 22 (annotated).

120. Thus, Kim teaches a known method for displaying an on screen channel changer that includes electronic program guide information that allows a user to select a channel thumbnail/program listing and/or enter a search keyword to facilitate the user changing the channel.

- “Number input bar”:

121. Additionally, Bae provides additional disclosure of known techniques for implementing an on screen channel changer displaying a number bar, with digits 0 to 9:

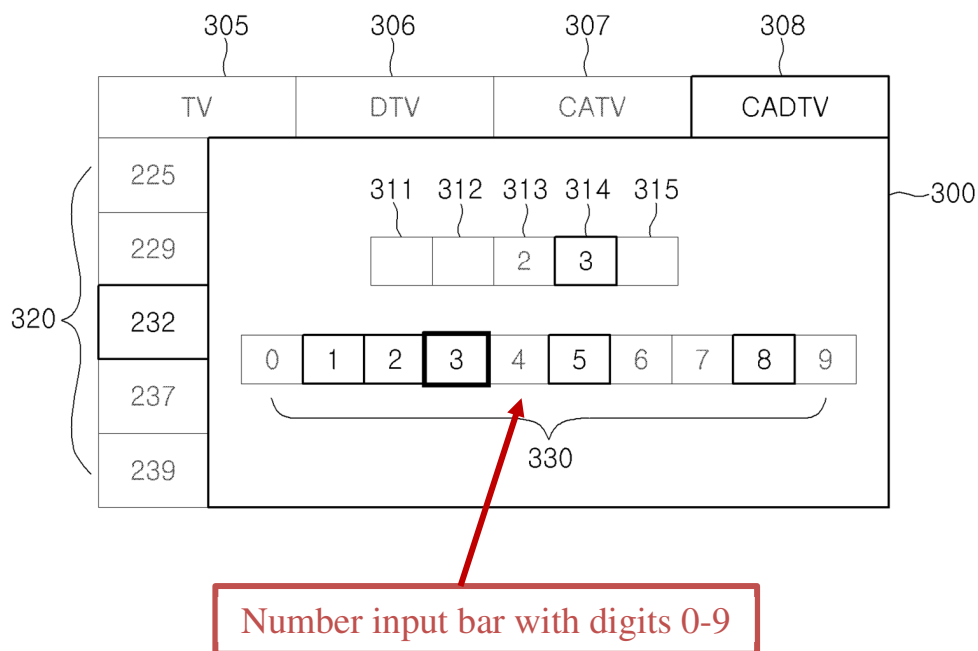
The control unit 160 controls the overall operation of the video display device. The control unit 160 controls the OSD

processing unit 150 that generates an OSD to receive channel numbers sequentially input from the highest number through the user interface unit 130 according to an embodiment of the present invention.

Ex.1007-8, [0018].

The channel search screen 300 is displayed divided into categories from which channels for each of TV 305, DTV 306, CATV 307, and CADTV 308 can be selected depending on the broadcast reception status. In addition, **the numbers 0 to 9 are displayed in the channel number selection window 330 for channel search** in each category; for each number, only selectable numbers are activated and displayed so that the user can input the corresponding number using the left and right keys or number keys.

Ex.1007-8, [0023].



Ex.1007-8, Fig. 3 (annotated).

122. Accordingly, Bae discloses that it was known to POSITAs to implement a television so that it displays a number input bar, with digits 0-9, to enable a user to change the channel.

123. As discussed in more detail at Section VII.A.4.c, it would have well within the skillset of a POSITA to further include the number input bar of Bae into the on screen channel changer of Kim with respect to Kim's known method for displaying an on screen channel changer. Adding the number input bar of Bae into the known method of Kim's on screen channel changer would have resulted in an on screen channel changer with both a search field and a number input bar. The result would have been predictable because Bae's number input bar was specifically being used as a method for changing the channel and would have the added benefit of enabling the user to directly identify a desired channel number rather than searching using the text field of Kim.

124. Thus, Kim's teaching of displaying an on screen channel changer, using an application framework executed by a processor to display, on a television, where the on screen channel changer includes EPG information for browsing channels/programs and searching for programs, in combination with Bae's technique of displaying a number input bar that displays digits 0-9 within an on screen channel changer, renders obvious "*displaying, by a microprocessor executable application framework and on a television screen, an on screen channel*

changer, the displayed on screen channel changer comprising electronic program guide (“EPG”) information and a number input bar comprising digits, wherein the digits range from 0 to 9.”

[1.3] receiving, by the application framework and from the remote control, a channel selection based on digits selected by a user using the remote control and the number input bar of the on screen channel changer, wherein the user selects the digits using non-numeric keys of the remote control; and

125. As discussed in connection with element [1.1], Kim discloses receiving user inputs, including channel switch commands, from a remote control.

126. As discussed in connection with element [1.2], Kim discloses a microprocessor executable application framework that that supports various programs (e.g., applications) and controls content displayed on the television based on user inputs from a remote control.

127. As discussed in connection with element [1.2], Kim and Bae render obvious displaying an on-screen channel changer that includes a number input bar.

128. Kim also discloses that its remote control has “arrow keys and an OK key”:

While FIGS. 15 and 16 show that a desired application may be selected by moving the pointer 205 using the remote controller 200, the application may be selected in many other ways. For example, the user may select a specific application by moving a cursor around the display 180 using dedicated keys (e.g., arrow keys and an OK key) on the remote controller 200. In another example, if the remote controller 200 equipped with a touch pad, the pointer 205 may be controlled using the touch pad.

Accordingly, the user may select a specific item using the pointer 205 and various types of input devices.

Ex.1005, [0187].

129. Bae further discloses that the user uses a remote control to select a number from the number bar using the left and right keys (which are non-numeric keys) on the remote control:

The channel search screen 300 is displayed divided into categories from which channels for each of TV 305, DTV 306, CATV 307, and CADTV 308 can be selected depending on the broadcast reception status. In addition, **the numbers 0 to 9 are displayed in the channel number selection window 330 for channel search in each category; for each number, only selectable numbers are activated and displayed so that the user can input the corresponding number using the left and right keys** or number keys.

Ex.1007-8, [0023].

130. Thus, Kim's teaching of a microprocessor executable application framework that displays an on screen channel changer and receives channel switch commands from a remote control, in combination with Bae's technique of displaying a number input bar to enable a user to select digits (0-9) using the left and right keys on a remote control, renders obvious *"receiving, by the application framework and from the remote control, a channel selection based on digits selected by a user using the remote control and the number input bar of the on screen channel changer, wherein the user selects the digits using non-numeric keys*

of the remote control.”

[1.4] *changing, by the application framework, to the selected channel,*

131. As discussed in connection with element [1.1], Kim discloses receiving channel switch commands from a remote control.

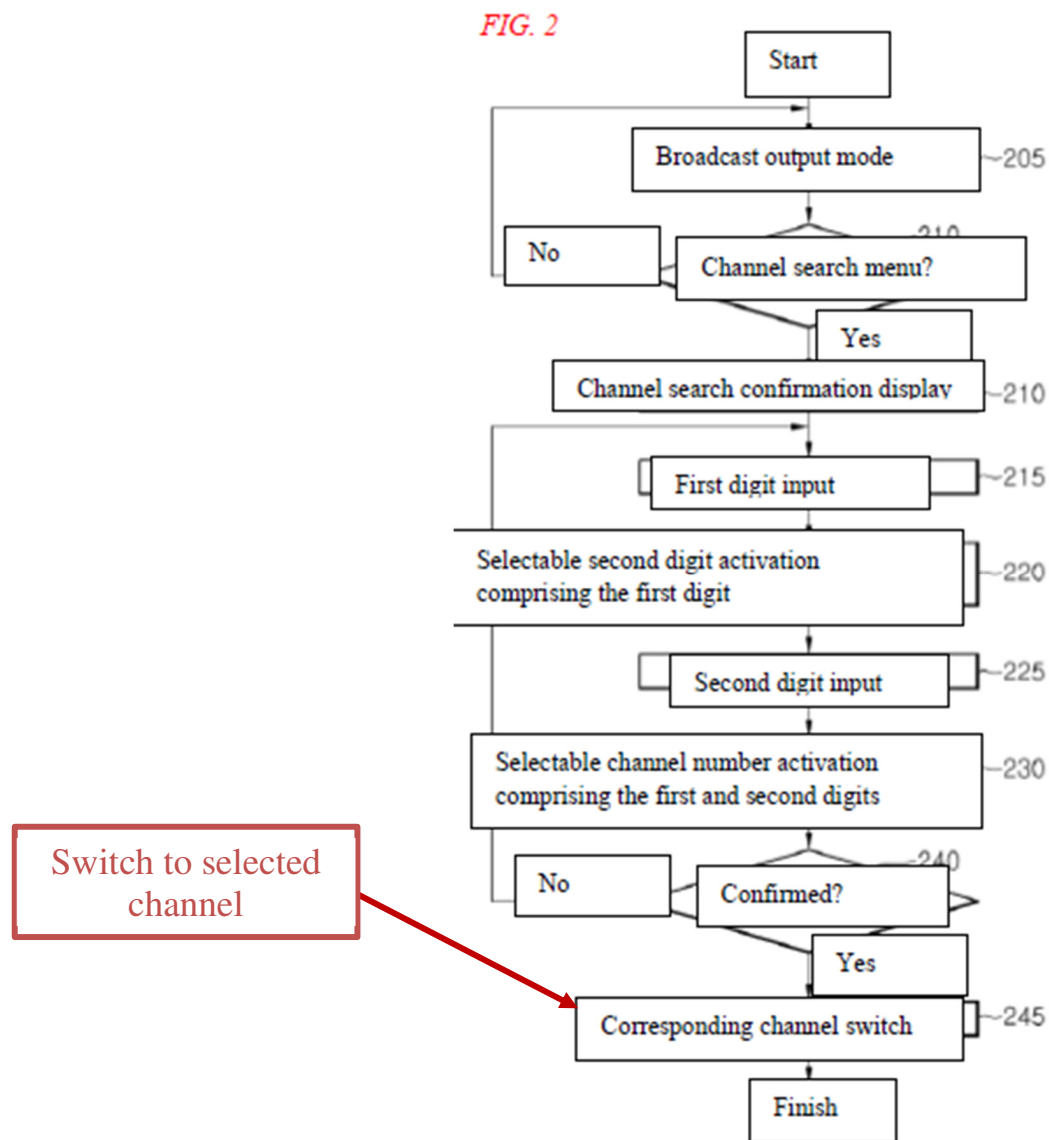
132. As discussed in connection with element [1.2], Kim discloses a microprocessor executable application framework that that supports various programs (e.g., applications) and controls content displayed on the television based on user inputs from a remote controls.

133. Bae further discloses that, after the user has used the number bar to input the digits corresponding to the desired channel, the display device changes to the selected channel:

When the control unit 160 selects “2” as the first number, which is a number in hundreds, through the user input unit 130, “2” is displayed in the position corresponding to the hundreds digit in the channel number display window 310. In the channel selection window, a second number that can be selected in tens among channels comprising the first number “2” is activated and displayed (Step 225). Afterwards, similar to the operation of inputting the first number from the user, a second number is selected (Step 230), and the selected number is displayed behind the hundredth unit number in the channel number display window. At this time, the channel number selection window activates and displays the third number that can be selected on a daily basis among channels including the first and second numbers (Step 235). The last one unit number is input, and when the confirmation key is pressed or a predetermined time has

elapsed (Step 240), the switch to the corresponding channel is performed (Step 245).

Ex.1007-8, [0026].



Ex.1007-8, Fig. 2 (annotated).

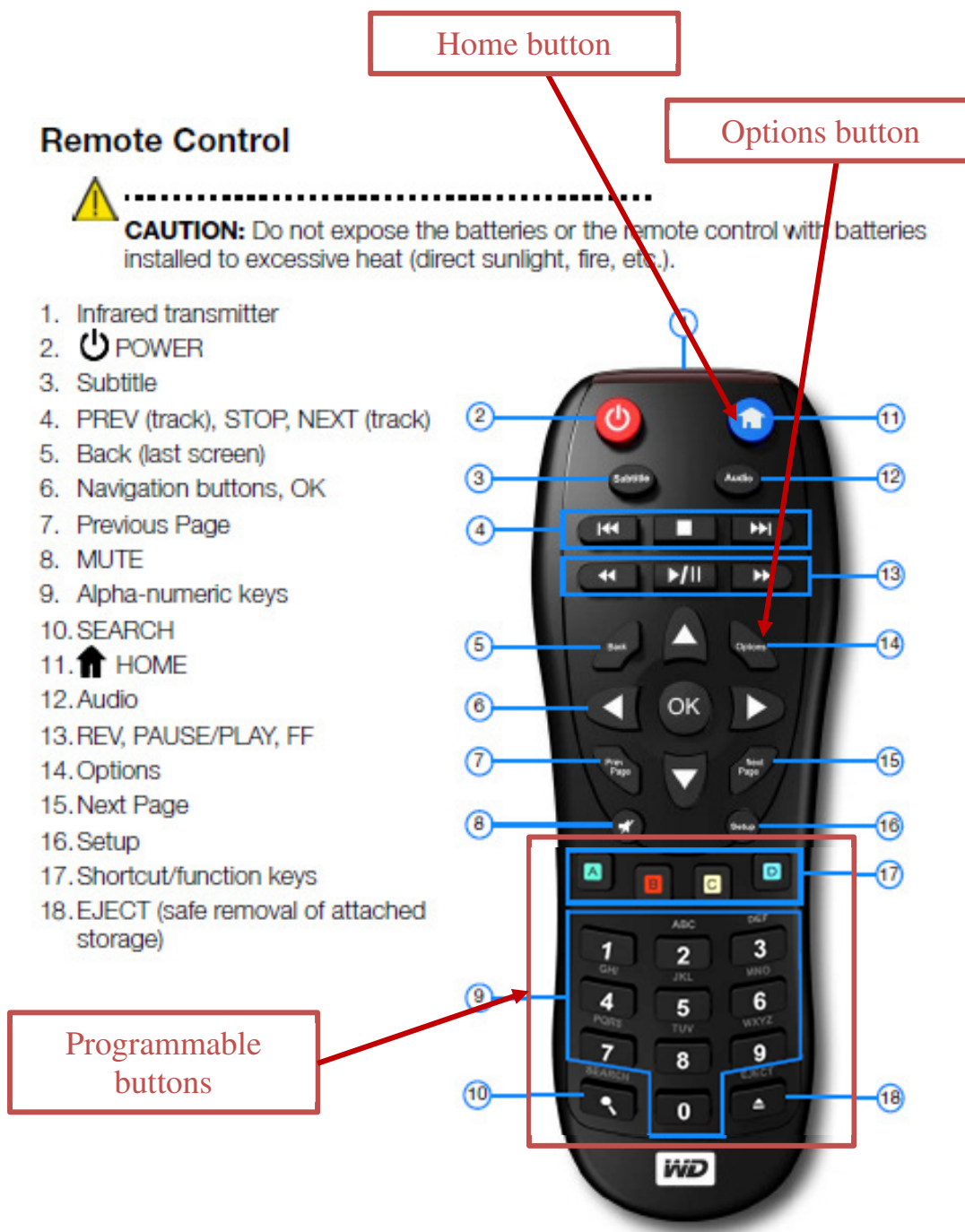
134. Thus, teaching of a microprocessor executable application framework that displays an on screen channel changer and receives channel switch commands

from a remote control, in combination with Bae's technique of switching to the user-selected channel, renders obvious "*changing, by the application framework, to the selected channel.*"

[1.5] wherein the remote control comprises:

135. As discussed in connection with element [1.1]-[1.4], Kim and Bae each teach controlling content displayed on a television based on user inputs from a remote control.

136. WD-Manual discloses additional details regarding the features of a remote control and teaches various techniques for controlling content displayed on a television using a remote control. For example, WD-Manual discloses a remote control with different types of buttons having different types of functionality including, for example, a Home button, an Options button, and various programmable buttons:



Ex.1006, pg. 11 (partial).

137. WD-Manual's remote control includes buttons that, when selected,

cause specific content or information to be displayed on the television. Ex.1006, pgs. 5, 25-26, 138. Further, WD-Manual teaches assigning specific functionality to specific hardware keys or buttons on its remote control (e.g., “[u]ser assignable shortcut/function keys”) to cause certain information or features to be displayed on the display screen:

A, B, C, D	User assignable shortcut/function keys. See "Remote Settings" on page 139. Default settings are as follows (only valid when inside the Videos, Music, or Photos menus): Pressing  activates the  sort and filter menu. Pressing  activates the  select content source menu. Pressing  activates the  change view menu. Pressing  activates the  dashboard menu.
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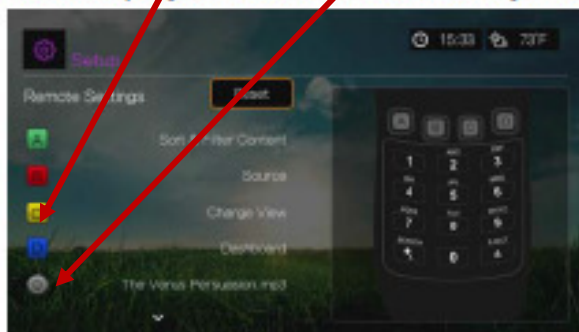
Ex.1006, pg. 26 (partial).

A, B, C, and D buttons programmable to display content such as Music, Video, or Services

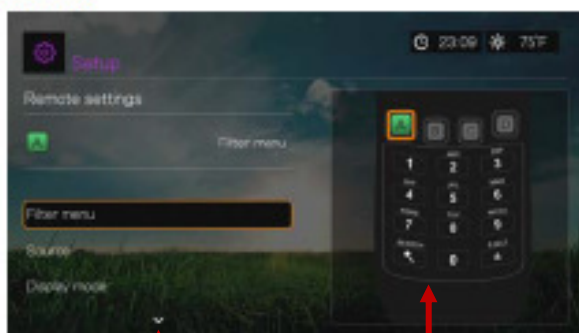
“0” programmed as a music preset

Remote Settings

Select a function for the **A**, **B**, **C**, and **D** function buttons on the remote controller. The remote settings menu displays the functions currently assigned to each button.



To change functions, press **▲** / **▼** to select a function button, then press **OK**. Press **▲** / **▼** to select functions such as display mode, filter menu, Music, Video, Services, Setup, etc., then press **OK**.



To reset the function buttons to default settings, select **Reset**, then press **OK**.

“etc.” and down arrow icon indicate that other functionality is available for the buttons

Ex.1006, pg. 138 (partial).

138. Additionally, WD-Manual describes other remote control features, including (1) an Options button that, when selected for a particular service, causes

information about that service to be displayed, and (2) a “home” button that, when selected, causes a main menu to be displayed:

Options	During playback, displays additional playback options. From an online media content screen, press to display more service options.
----------------	--

Pressing “Options” button displays options about a service

Ex.1006, pg. 25 (partial and annotated).

Button	Function
HOME	Displays the main menu and the various options for playback of files and device setup.

Pressing “Home” button displays main menu (home screen)

Ex.1006, pg. 25 (partial and annotated).

139. Accordingly, Kim’s remote control in view of the remote control features (e.g., buttons to access specific content and information) taught in WD-Manual, render obvious a “*remote control*.”

[1.5.1] *a media center button that, when selected, provides, by the television screen, displayed information regarding one or more of groupings of music, groupings of videos, groupings of photographs, and internal and external computational devices, the computational devices comprising one or more of personal computers, laptops, tablet computers, wireless phones, and removable*

computer readable media;

140. As discussed above with respect to the claim construction of “*one or more*,” the inventor provided a special meaning for the term. In particular, the phrasing of “one or more of A, B, or C” and “one or more of A, B, and C” means “A alone, B alone, C alone, A and B together, A and C together, B and C together, or A, B and C together.”

141. Element [1.5.1] uses “one or more” with respect to “one or more of groupings of music, groupings of videos, groupings of photographs, and internal and external computational devices.” Accordingly, for purposes of this limitation, any teaching of an item in this list alone or together with any of the other items in the list meets the “one or more” requirement. However, not only do the teachings of Kim and WD-Manual teach at least one item in this list, but, as I discuss below, the teachings of Kim and WD-Manual render obvious each and every item.

142. Element [1.5.1] also uses “one or more” with respect to “the computational devices comprising one or more of personal computers, laptops, tablet computers, wireless phones, and removable computer readable media.” Accordingly, for purposes of this limitation, any teaching of an item in this list alone or together with any of the other items in the list meets the “one or more” requirement. However, not only do the teachings of Kim and WD-Manual teach at least one item in this list, but, as I discuss below, the teachings of Kim and WD-

Manual render obvious each and every item.

As discussed above in connection with [1.5], Kim, Bae, and WD-Manual each teach controlling content displayed on a television based on user inputs from a remote control and WD-Manual teaches remote control buttons that, when selected, cause specific content and information to be displayed.

Remote Control



CAUTION: Do not expose the batteries or the remote control with batteries installed to excessive heat (direct sunlight, fire, etc.).

1. Infrared transmitter
2. POWER
3. Subtitle
4. PREV (track), STOP, NEXT (track)
5. Back (last screen)
6. Navigation buttons, OK
7. Previous Page
8. MUTE
9. Alpha-numeric keys
10. SEARCH
11. HOME
12. Audio
13. REV, PAUSE/PLAY, FF
14. Options
15. Next Page
16. Setup
17. Shortcut/function keys
18. EJECT (safe removal of attached storage)



Any one of A, B, C, or D buttons can be assigned to display specific types of media content

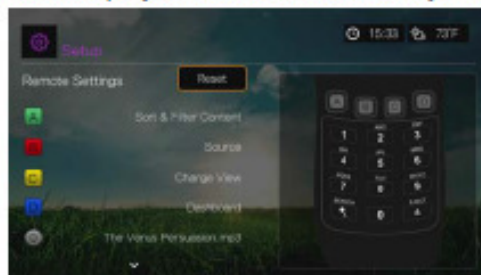
Ex.1006, pg. 11 (annotated).

- *“groupings of music”*

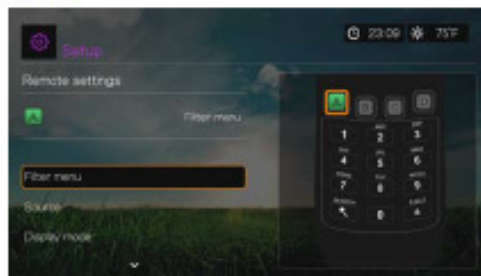
143. WD-Manual teaches a specific button that, when selected, causes “*information regarding groupings of music*” to be displayed on the television. For example, WD-Manual teaches assigning a specific button to display a “Music” screen. Ex.1006, pgs. 138, 24.

Remote Settings

Select a function for the **A**, **B**, **C**, and **D** function buttons on the remote controller. The remote settings menu displays the functions currently assigned to each button.



To change functions, press ▲ / ▼ to select a function button, then press **OK**. Press ▲ / ▼ to select functions such as display mode, filter menu, Music, Video, Services, Setup, etc., then press **OK**.



Music can be assigned to a button

To reset the function buttons to default settings, select **Reset**, then press **OK**.

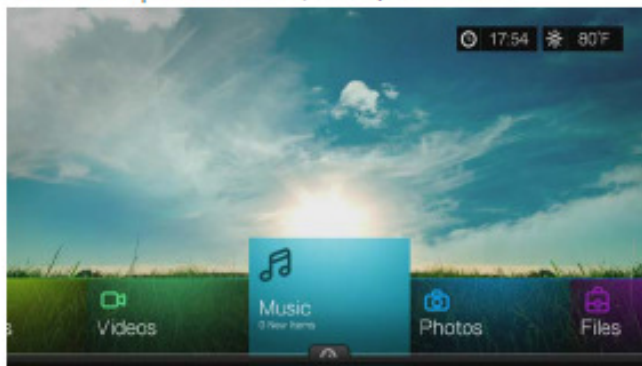
Ex.1006, pg. 138 (partial and annotated).

144. WD-Manual teaches displaying multiple groupings of music, such as

“Chrome Tracks,” “Essential Beats Vol. 1,” “Road Trip hits,” and “Rock Aces”:

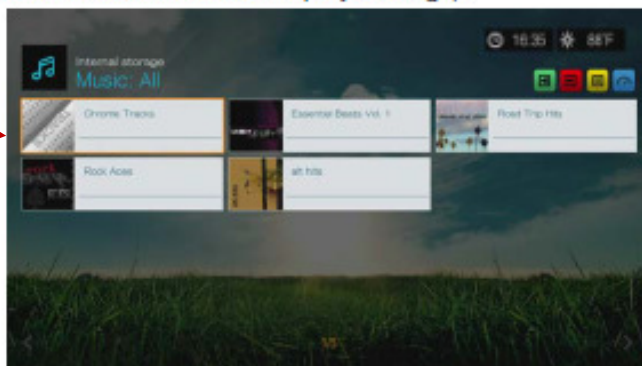
Music Playback

1. Navigate to the Home | Music menu, then press **OK**.



2. The screen displays available music files and folders in the media center's local drive by default. The display will either be in grid view (default) or list view, depending on your Browser Display setting (see “Music Settings” on page 134 for more information on Browser Display settings).

Music
screen
displays
“groupings
of music”

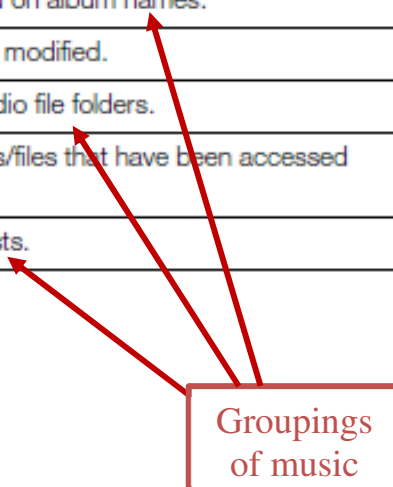


If Media Library is enabled, you can choose to navigate using sorting (Alphabetical, Date, Ratings, Recently Viewed) and filter options (All, All Tracks,

Ex.1006, pg. 48 (partial and annotated).

145. WD-Manual teaches that the Music screen displays groupings of music, such as “album names,” “file folders” and “music playlists”:

Media Type	Category	Description
Music	All Tracks	Displays a list of all audio files arranged in alphabetical order.
	Artist	Content is categorized based on the artist name.
	Genre	Content is categorized based on genre.
	Album	Content is categorized based on album names.
	Date	Content is organized by date modified.
	Folders	Contents are displayed in audio file folders.
	Recent	Displays a list of audio folders/files that have been accessed recently.
	Playlist	Displays a list of music playlists.



A diagram consisting of a rectangular box with a red border containing the text "Groupings of music". Three red arrows originate from the top-left corner of this box and point to the "Recent" row, the "Playlist" row, and the "Date" row of the table above.

Ex.1006, pg. 31 (partial and annotated).

146. Accordingly, WD-Manual teaches a button on a remote control can be assigned to music, which teaches a “media center button.” Further, when that button is pressed by the user, the television screen would then display groupings of music, such as “Chrome Tracks,” “Essential Beats Vol. 1”, “Road Trip hits,” “Rock Aces,” “album names,” “audio file folders,” and “playlists.” And, when combined with the television of Kim, the teachings of WD-Manual would enable a user to press a button on a remote control to access the groupings of music through Kim’s interface.

147. Kim discloses using a remote control to access different media content. For example, Kim teaches pressing a key on a remote control to access

media content:

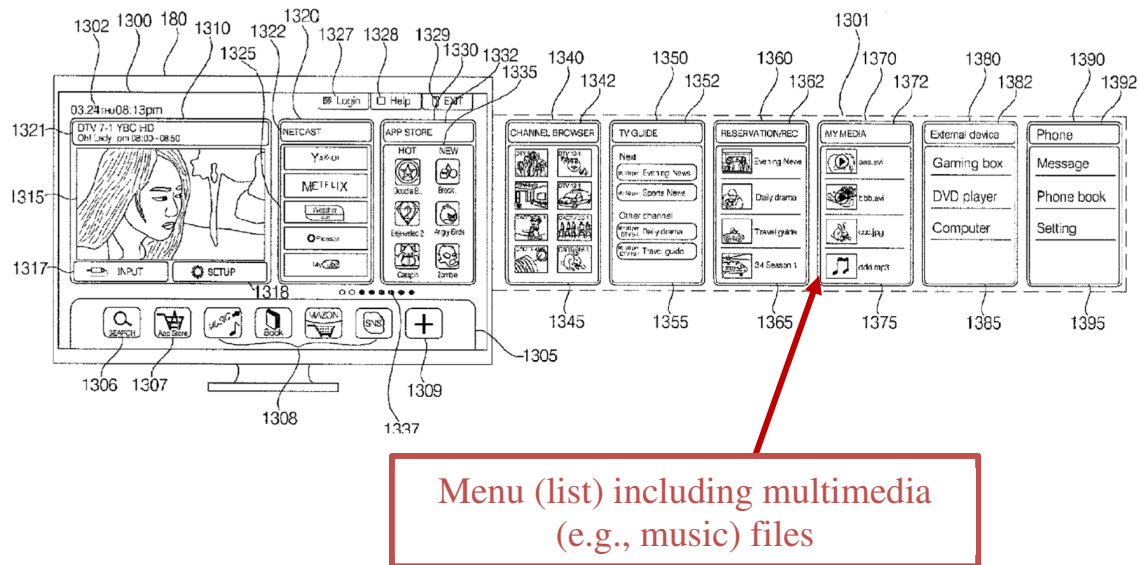
FIG. 19 shows an exemplary home screen displayed on the display 180. The configuration of the home screen as shown in FIG. 19 may be a default home screen configuration for a smart TV. The home screen may be set as an initial screen that may be displayed when the image display apparatus 100 is powered on or wakes up from a standby mode. Moreover, **the home screen may be a default screen which may be displayed when** a local key on the display apparatus 100 or **a home key on the remote controller 200 is selected.**

Ex.1005, [0192].

148. Kim discloses using a remote control to access music via a “card object” that presents a “list of multimedia files,” including “audio”:

The card object 1370 display a list of multimedia files and may include a card object name 1372 (MY MEDIA) and a media list 1375. The media list 1375 may list multimedia files available on the image display apparatus 100 or a device connected to the image display apparatus 100. While the multimedia files are shown as moving pictures, still images, and **audio** in FIG. 19, many other types of media (e.g., text, e-books, etc.) may be listed in the card object 1370. Upon selection of a file from the media list 1375, the selected file may be opened and a window (e.g., audio/video player or picture viewer window) that corresponds to the selected file may be displayed on the display 180.

Ex.1005, [0209].



Ex.1005, Fig. 19 (annotated).

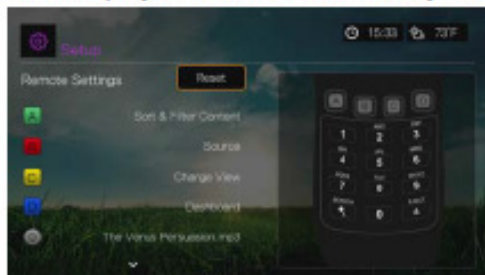
149. Accordingly, a POSITA would have found it obvious that Kim’s remote control could have a button assigned to, when selected, cause the display of information about groupings of music, as taught in WD-Manual.

- **“groupings of videos”**

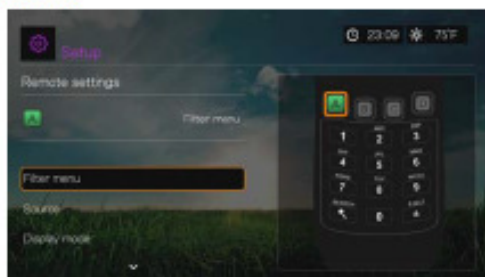
150. WD-Manual teaches a specific button that, when selected, causes “information regarding...groupings of video” to be displayed on the television. For example, WD-Manual teaches assigning a specific button to display a “Video” screen. Ex.1006, pgs. 138, 24.

Remote Settings

Select a function for the **A**, **B**, **C**, and **D** function buttons on the remote controller. The remote settings menu displays the functions currently assigned to each button.



To change functions, press **▲**/**▼** to select a function button, then press **OK**. Press **▲**/**▼** to select functions such as display mode, filter menu, Music, Video, Services, Setup, etc., then press **OK**.



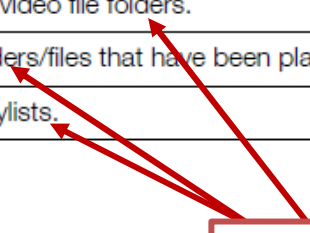
Video can be assigned to a button

To reset the function buttons to default settings, select **Reset**, then press **OK**.

Ex.1006, pg. 138 (partial and annotated).

151. WD-Manual's Video screen displays groupings of videos, such as "video folders," "video file folders," and "video playlists":

Media Type	Category	Description
Video	All Video	Displays a list of all video files arranged in alphabetical order.
	Date	Content is organized by date modified.
	Folders	Contents are displayed in video file folders.
	Recent	Displays a list of video folders/files that have been played recently.
	Playlist	Displays a list of video playlists.



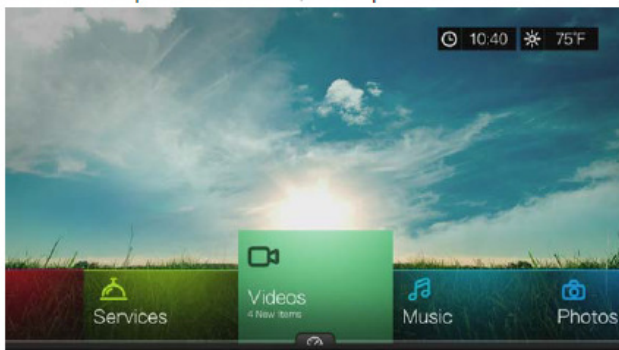
Groupings
of videos

Ex.1006, pg. 32 (partial and annotated).

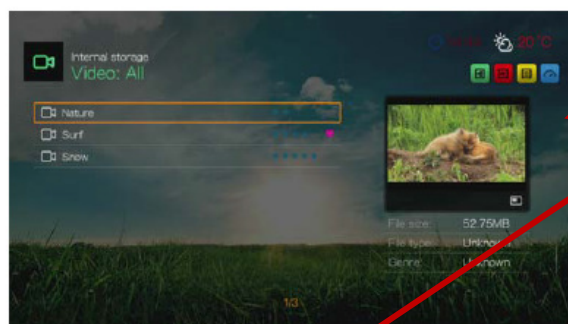
Video Playback

To play back video:

1. Navigate to the Home | Videos menu, then press **OK**.



2. The screen display available video files and video folders in the media center's local drive by default. The display will either be in preview view (default), grid view, list view, or gallery view, depending on your Browser Display setting (see "Video Settings" on page 133 for more information on Browser Display settings). Preview mode displays file size, and file type and genre (if available) for the selected video.



Groupings of
videos

If Media Library is enabled, you can choose to navigate using sorting (Alphabetical, Date, Ratings, Recently Viewed) and filter options (All Video, Genre, Playlists, Folder, Favorites) See "Supported Categories for Media Library Compilation" on page 31 for details.

Ex.1006, pg. 36-37 (partial and annotated).

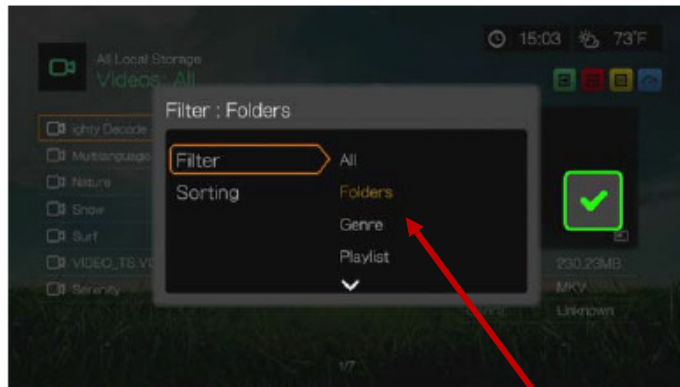
152. Further, WD-Manual teaches the Video screen displays groupings of video content using "filter options (All, All Tracks, Genre, Album, Playlists, Favorites)." Ex.1006, pgs. 36-37.

Filter

1. Press **A** or navigate to the sort and filter content icon , and press **OK**.
2. Press **►**, then **▲** / **▼** to select Filter by All, Folders, Genre, Playlist, and Favorites. Press **OK** to display videos by the criteria selected.



.....
 Note: If you have your media files organized by folder, it may be easier and quicker to find your files by using the Filter option to only show folders.



3. With the green check mark  selected, press **OK** again.

Groupings of
videos

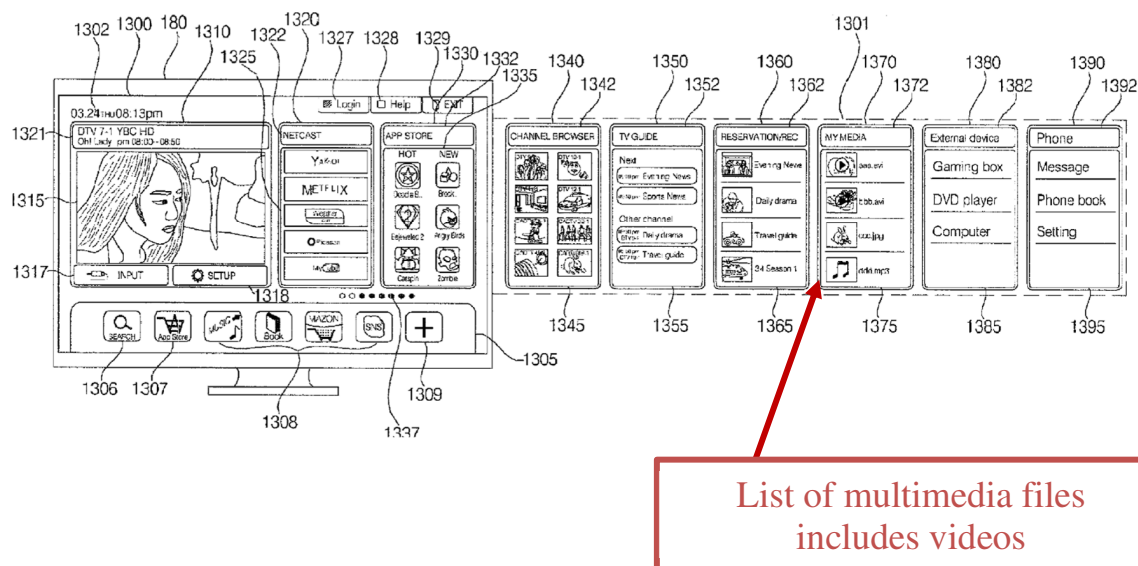
Ex.1006, pg. 37 (partial and annotated).

153. Accordingly, WD-Manual teaches a button on a remote control can be assigned to video, which teaches a “media center button.” Further, when that button is pressed by the user, the television screen would then display groupings of music, such as “All Video,” “Genre,” “Playlists,” “Folder,” “Favorites,” “file folders,” and “a list of video playlists.”

154. Kim discloses using a remote control to access videos, such as “card object 1370,” which presents a “list of multimedia files,” which may include “moving pictures”:

The card object 1370 display a list of multimedia files and may include a card object name 1372 (MY MEDIA) and a media list 1375. The **media list 1375 may list multimedia files available on the image display apparatus 100** or a device connected to the image display apparatus 100. While **the multimedia files are shown as moving pictures**, still images, and audio in FIG. 19, many other types of media (e.g., text, e-books, etc.) may be listed in the card object 1370. Upon selection of a file from the media list 1375, the selected file may be opened and a window (e.g., audio/**video** player or picture viewer window) that corresponds to the selected file may be displayed on the display 180.

Ex.1005, [0209].



Ex.1005, Fig. 19 (annotated).

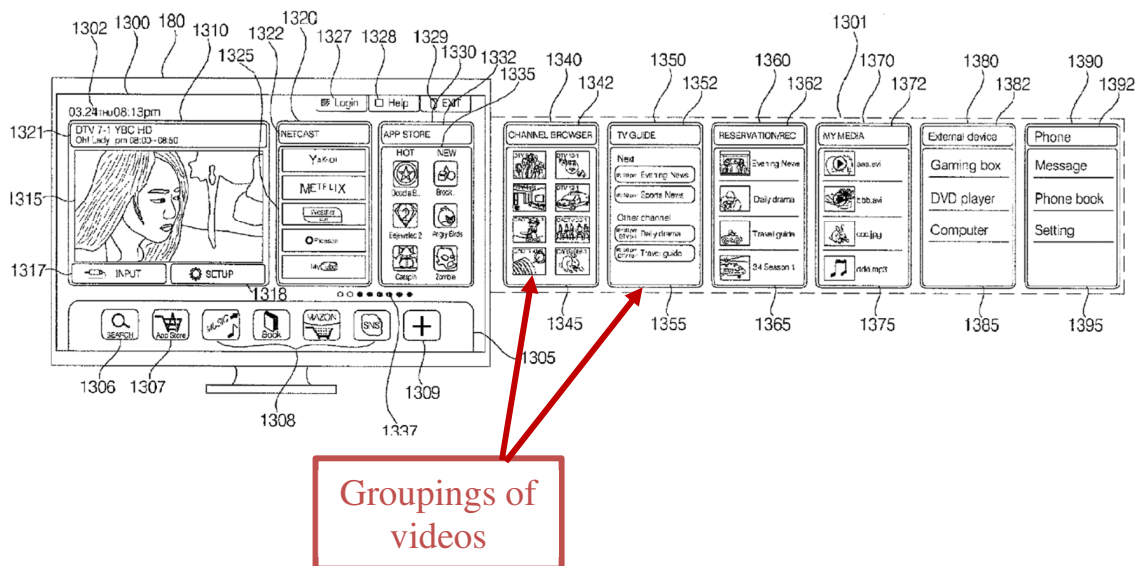
155. Kim discloses using a remote control to access a user interface object that presents a list of broadcast channels in the form of “moving pictures”:

The card object 1340 may represent a list of broadcast channels. This card object 1340 may include a card object name 1342

(CHANNEL BROWSER) and a thumbnail list of broadcast channels 1345. A plurality of broadcast channels may be represented as thumbnail images, as shown in FIG. 19. The thumbnail images may include still images or moving pictures. The thumbnail list 1345 may include information.

Ex.1005, [0205].

156. Each channel in the “list of broadcast channels” corresponds to the recited “*grouping of videos*.”



Ex.1005, Fig. 19 (annotated).

157. Accordingly, a POSITA would have found it obvious that Kim’s remote control could have a button assigned to, when selected, cause the display of information about groupings of videos, as taught in WD-Manual.

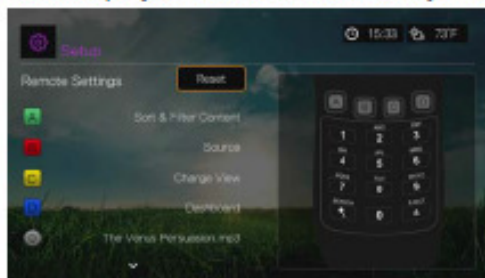
- “groupings of photographs”

158. WD-Manual teaches a specific button that, when selected, causes

“information regarding...groupings of photographs” to be displayed on the television. For example, WD-Manual teaches assigning a specific button to display a “Photo” screen. Ex.1006, pg. 138, 24.

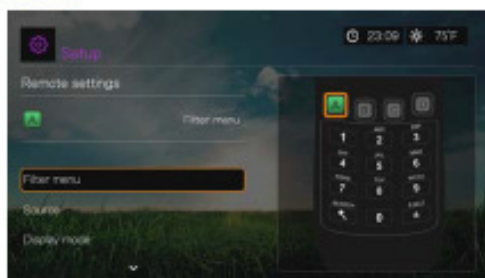
Remote Settings

Select a function for the **A**, **B**, **C**, and **D** function buttons on the remote controller. The remote settings menu displays the functions currently assigned to each button.



To change functions, press **▲**/**▼** to select a function button, then press **OK**. Press **▲**/**▼** to select functions such as display mode, filter menu, Music, Video, Services, Setup, etc., then press **OK**.

Photos screen
can be
assigned to a
button



To reset the function buttons to default settings, select **Reset**, then press **OK**.

Ex.1006, pg. 138 (partial and annotated).

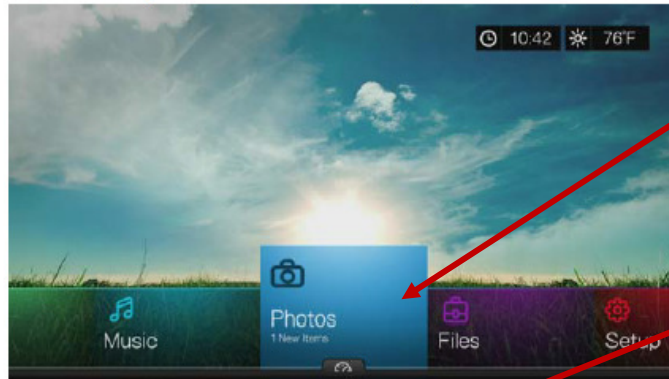
159. WD-Manual’s Photo screen displays information regarding “available

[photo/photograph]² files and folders,” where each “folder” is a different grouping of photographs:

² Although page 55 of WD-Manual recites “available music files and folders,” a POSITA would recognize the reference to music as a typographical error based on context.

Photo Display

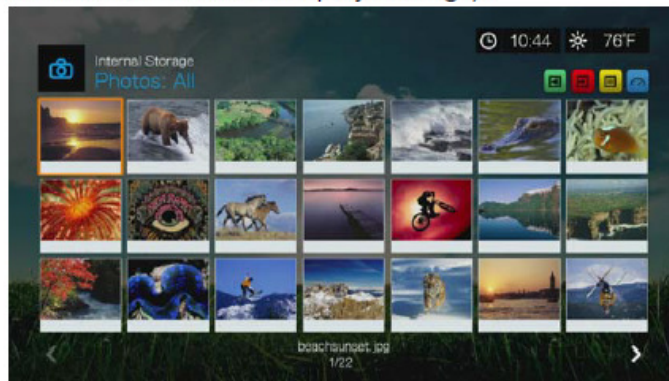
1. Navigate to the Home | Photos menu, then press **OK**.



Photos menu in same menu bar as Music, Video, Services, etc.

Photograph folders

2. The screen displays available music files and folders in the media center's local drive by default. The display will either be in grid view (default) or list view, depending on your Browser Display setting (see "Photo Settings" on page 136 for more information on Browser Display settings).



Groupings of photographs

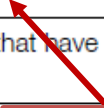
3. If Media Library is enabled, you can choose to navigate using sorting (Alphabetical, Date, Ratings, Recently Viewed) and filter options (All Pictures, Date, Folders, Recent). See "Supported Categories for Media Library Compilation" on page 31 for details.

160. Further, WD-Manual teaches the Photo screen displays groupings of photos, such as "image file folders":

Ex.1006, pg. 55-56 (partial and annotated).

Photo	All Pictures	Displays a list of all image files arranged in alphabetical order.
	Date	Content is organized by date modified.
	Folders	Contents are displayed in image file folders.
	Recent	Displays a list of image folders/files that have been accessed recently.

Groupings of photographs



Ex.1006, pg. 32 (partial and annotated).

161. Kim discloses using a remote control to access photographs, such as “card object 1370,” which presents a “list of multimedia files,” which may include **“still images”**:

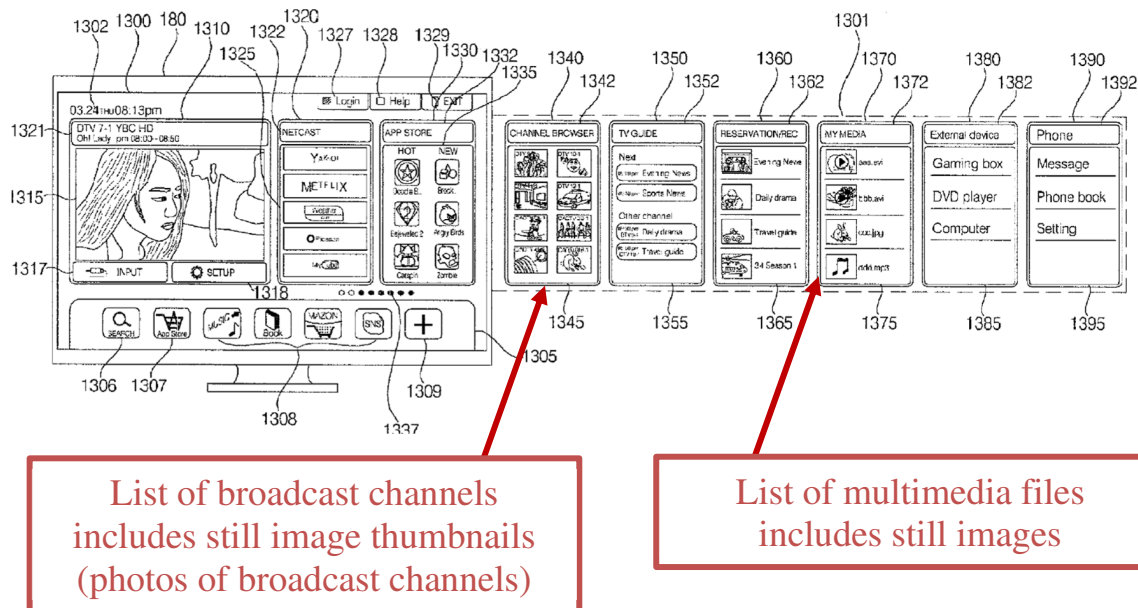
The card object 1340 may represent a list of broadcast channels. This card object 1340 may include a card object name 1342 (CHANNEL BROWSER) and a thumbnail list of broadcast channels 1345. A plurality of broadcast channels may be represented as thumbnail images, as shown in FIG. 19. The thumbnail images may include **still images** or moving pictures. The thumbnail list 1345 may include information.

Ex.1005, [0205].

The card object 1370 display a list of multimedia files and may include a card object name 1372 (MY MEDIA) and a media list 1375. The media list 1375 may list multimedia files available on the image display apparatus 100 or a device connected to the image display apparatus 100. **While the multimedia files are shown as** moving pictures, **still images**, and audio in FIG. 19, many other types of media (e.g., text, e-books, etc.) may be listed in the card object 1370. Upon selection of a file from the media

list 1375, the selected file may be opened and a window_(e.g., audio/video player or **picture viewer window**) that corresponds to the selected file may be displayed on the display 180.

Ex.1005, [0209].



Ex.1005, Fig. 19 (annotated).

162. Accordingly, a POSITA would have found it obvious that Kim's remote control could have a button assigned to, when selected, cause the display of information about groupings of photographs, as taught in WD-Manual.

- **"internal and external computational devices"**

163. Kim and WD-Manual together teach a specific button that, when selected, causes "information regarding...internal and external computational devices, the computational devices comprising one or more of personal computers,

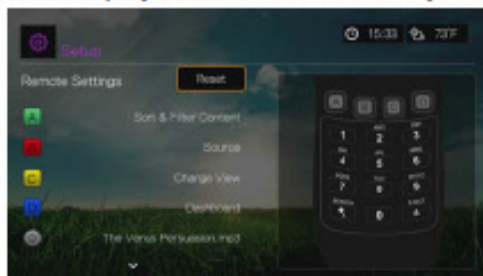
laptops, tablet computers, wireless phones, and removable computer readable media” to be displayed on the television.

- “internal computational devices” that are “removable computer readable media”

164. WD-Manual teaches assigning displaying a “Files” screen to a specific button. Ex.1006, pg. 138, 28 (“Files”), 62 (“Files menu”).

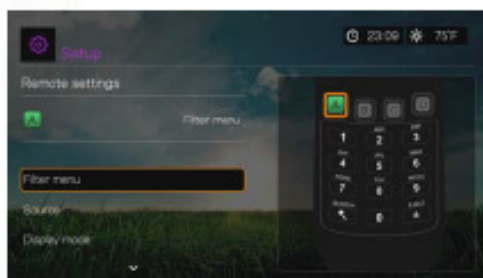
Remote Settings

Select a function for the **A**, **B**, **C**, and **D** function buttons on the remote controller. The remote settings menu displays the functions currently assigned to each button.



To change functions, press ▲ / ▼ to select a function button, then press **OK**. Press ▲ / ▼ to select functions such as display mode, filter menu, Music, Video, Services, Setup, etc., then press **OK**.

Button can be assigned to other menus (e.g., Files screen)



function buttons to default settings, select **Reset**, then press **OK**.

Ex.1006, pg. 138 (partial and annotated).

165. While WD-Manual does not specifically list “local drive” in the user manual, it would have been obvious to a POSITA that the “etc.” references the

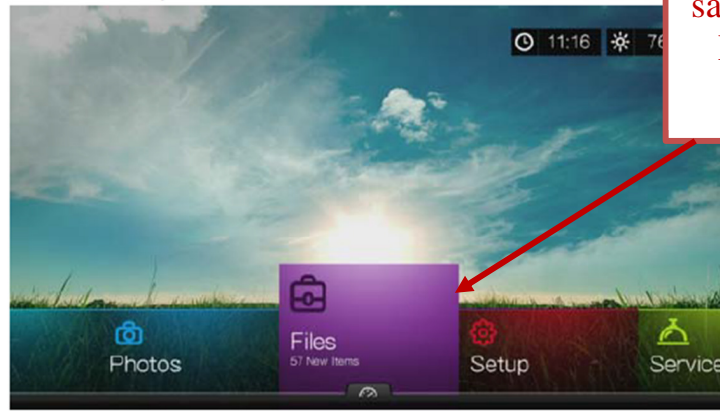
other features described in the WD-Manual, such as the files display functionality.

166. WD-Manual's Files screen displays information regarding "all available media files and folders in the...local drive by default." Ex.1006, pg. 62.

This local drive teaches an *internal computational device*.

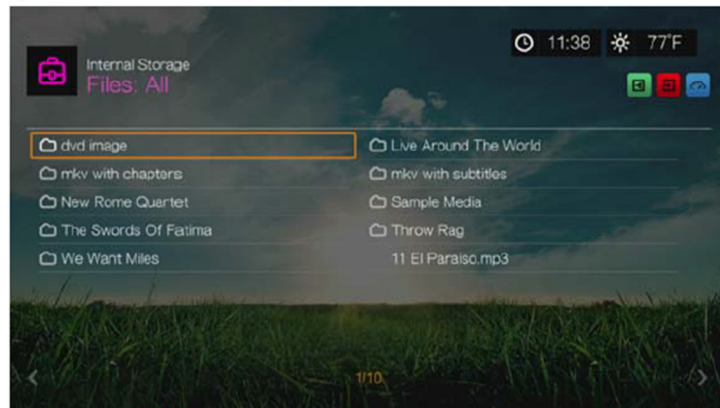
Files Display

1. Navigate to the Home | Files menu, then press **OK**.



Files menu in
same menu bar as
Music, Video,
Photos, etc.

2. The screen displays all available media files and folders in the media center's local drive by default. The display is in list view.



Default view shows
files in local drive

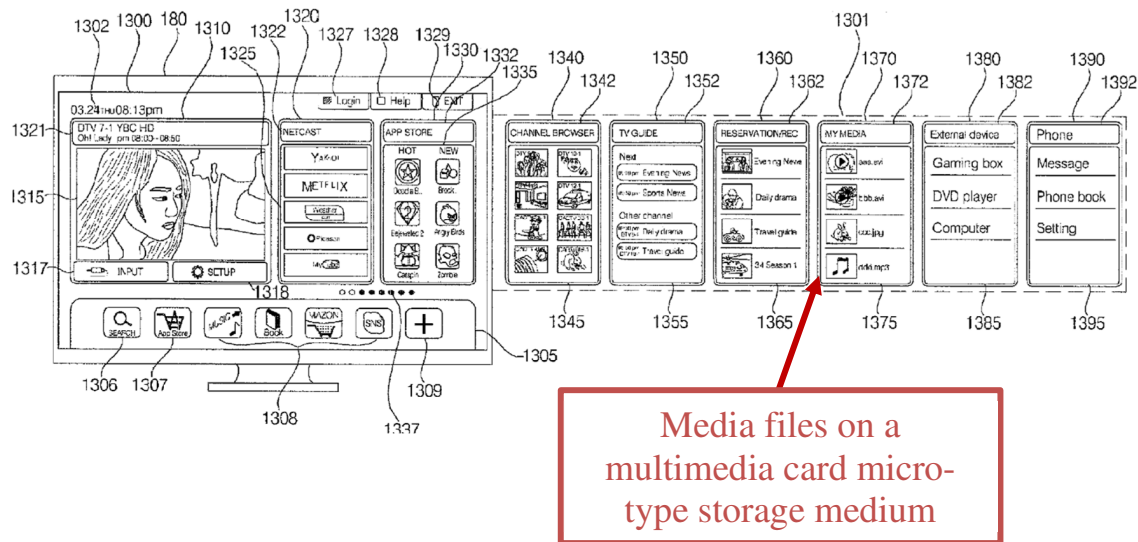
Ex.1006, pg. 62 (partial and annotated).

167. As I previously noted, Kim discloses using a remote control to access and display “card object 1370” that includes a list of “multimedia files available on the image display apparatus 100 or a device connected to the image display apparatus 100.” Ex.1005, [0209]. Kim further explains that “video files, still image files, music files, text files, or application files” may be stored on “at least one of...a card-type memory (e.g. a Secure Digital (SD) or eXtreme Digital (XD) memory):”

The **memory 140 may include, for example,** at least one of a flash memory-type storage medium, a hard disk-type storage medium, a multimedia card micro-type storage medium, **a card-type memory (e.g. a Secure Digital (SD) or eXtreme Digital (XD) memory),** a Random Access Memory (RAM), a Read-Only Memory (ROM) such as an Electrically Erasable and Programmable Read Only Memory, or another appropriate type of storage device. The **image display apparatus 100 may reproduce content stored in the memory 140** (e.g. video files, still image files, music files, text files, or application files). While the memory 140 is shown in FIG. 6 as being configured to be separate from the controller 170, the present disclosure is not limited thereto. For example, the memory 140 may be incorporated into the controller 170.

Ex.1005, [0085].

168. A POSITA would understand that a “card-type memory” (e.g., SD card) is a type of removable computer readable media that, when installed/inserted in a device (e.g., television), becomes an internal computational device.



Ex.1005, Fig. 19 (annotated).

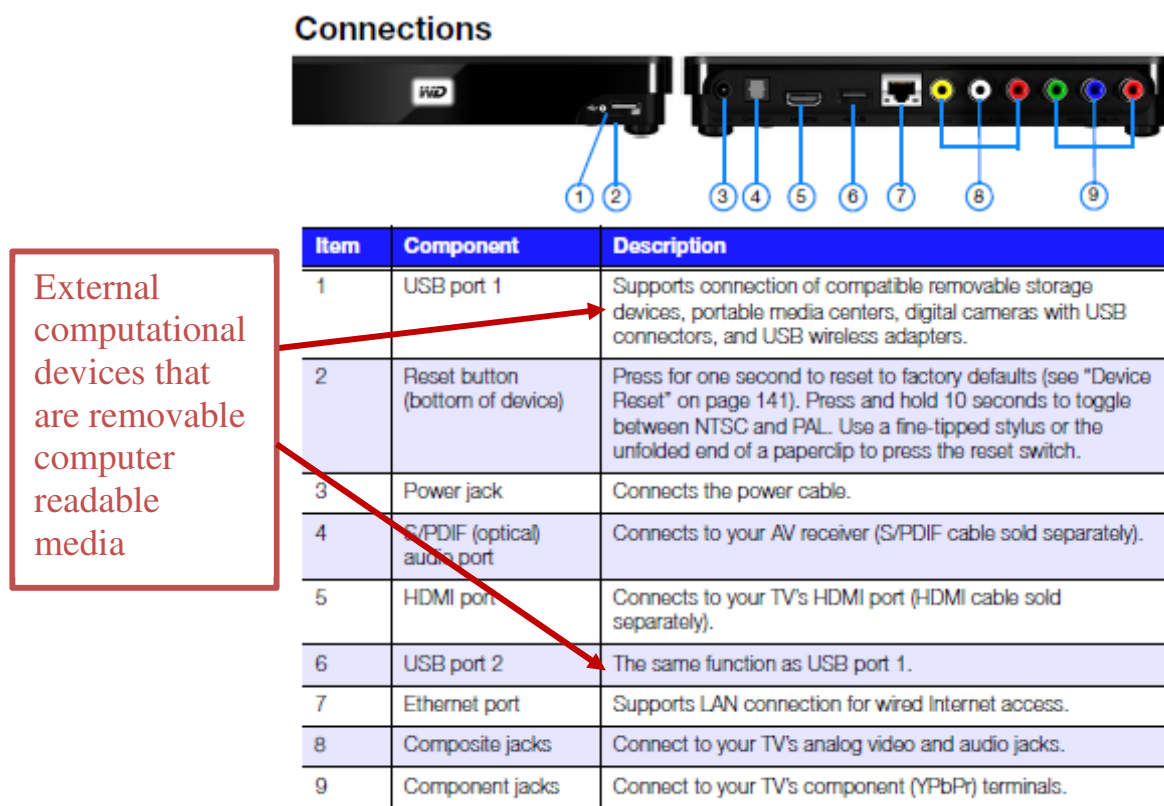
169. Accordingly, where Kim already teaches accessing and displaying files stored on at least one SD card, a POSITA would have found it obvious that Kim's remote control could have a button assigned to, when selected, cause the display of information about the contents stored in Kim's memory (e.g., one or more SD-cards), as taught in WD-Manual.

- "external computational devices" that are "removable computer readable media,"

170. As described above, WD-Manual teaches that a button can be assigned to display a Music, Videos, Photos, or Files screen, each screen including various media content. WD-Manual further explains that "[m]edia contents will be displayed either as file/file folders in the media center, **network attached storage [NAS]**, or a **USB drive directory.**" Ex.1006, pg. 28, 70.

171. A POSITA would understand that network attached storage contains

various removable computer readable media. *See, e.g., Ex.1013*, [0083] (describing a NAS as containing removable storage media). Further, a POSITA would understand that WD-Manual's "USB drive directory" reflects the content of external computational devices that are connected to the USB ports of WD-Manual's media center device:



Ex.1006, pg. 9 (annotated).

172. Thus, WD-Manual's USB ports can be connected to "removable storage devices, portable media centers, digital camera with USB connectors, and USB wireless adapters." A POSITA would understand that these devices are

examples of external computational devices that are removable computer readable media. Ex.1006, pg. 9.

Kim teaches displaying “a list of external devices,” which may be connected to the television via an “I/O interface” such as “a Universal Serial Bus (USB) port. Ex.1005, [0076]-[0080], [0196].

173. Accordingly, where Kim already teaches connecting external devices to its television via USB, a POSITA would have found it obvious that Kim’s remote control could have a button assigned to, when selected, cause the display of media content on external computational devices that are removable computer readable media (such as a USB drive), as taught in WD-Manual.

- “external computational devices” that are “personal computers,” “laptops” and “tablet computers”

174. As described above, WD-Manual teaches that a button can be assigned to display a Music, Videos, Photos, or Files screen, each screen including various media files and media file folders. WD-Manual further describes accessing media content from a “shared computer.” Ex.1006, pg. 70.

175. Kim discloses using a remote control to access and display a “card object” that includes a “list of connected external devices,” which may include “a computer”:

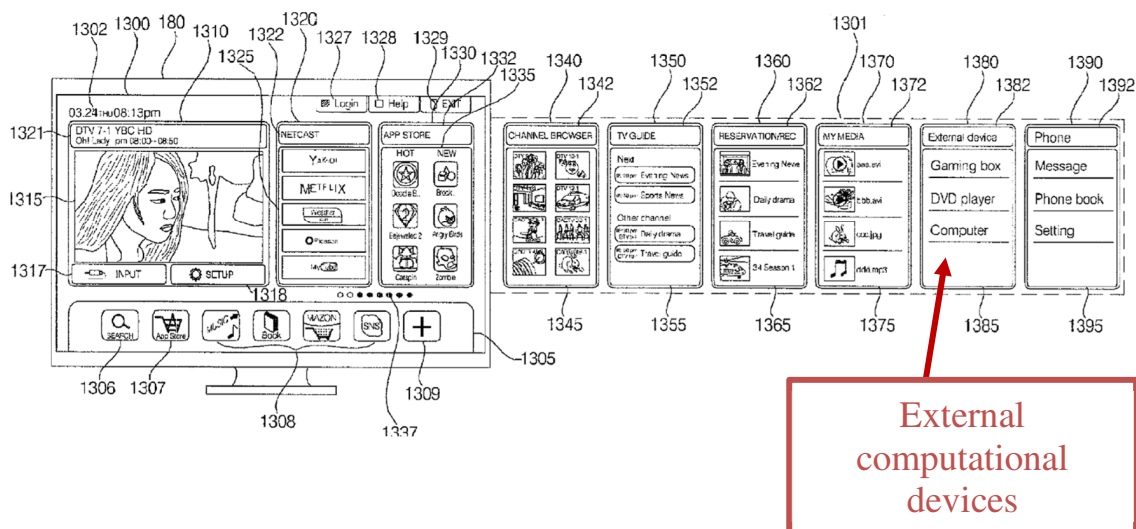
The card object 1380 may display a list of connected external devices and may contain a card object name 1382 (EXTERNAL

DEVICE) and a device list 1385 of external devices connected to the image display apparatus 100. The external device list 1385 **may include a gaming box, a DVD player, a computer, or another appropriate device.** Upon selection of the card object name 1382, the card object 1380 may be displayed as a full screen image on the display 180. Moreover, upon selection of a specific external device from the external device list 1385, a menu related to the selected external device may be displayed. For example, content may be played back from the external device and a window (e.g., device control menu window) that corresponds to the reproduced content may be displayed on the display 180.

Ex.1005, [0210].

The external device interface 265 may also interface with an external device such as a game console, a camera, a camcorder, **a computer (e.g. a laptop computer),** or another appropriate external device, for data transmission or reception.

Ex.1005, [0123].



Ex.1005, Fig. 19 (annotated).

176. A POSITA would have found it obvious that Kim's "list of connected

external devices” and WD-Manual’s “shared computer” could include multiple computers, including different types of devices that are well-known as computers, such as personal computers, laptops computers, and tablet computers. *See* Ex.1011 pg. 672 (defining a “laptop computer” as a computer), pg. 879 (defining “personal computer” as a computer), and pg. 1121 (defining “tablet PC” as a form of laptop).

177. Accordingly, where Kim teaches displaying information regarding computers, a POSITA would have found it obvious that Kim’s remote control could have a button assigned to, when selected, cause the display information regarding personal, laptop, and/or tablet computers (e.g., the content stored on such devices), as taught in WD-Manual.

- “external computational device” such as “wireless phones”

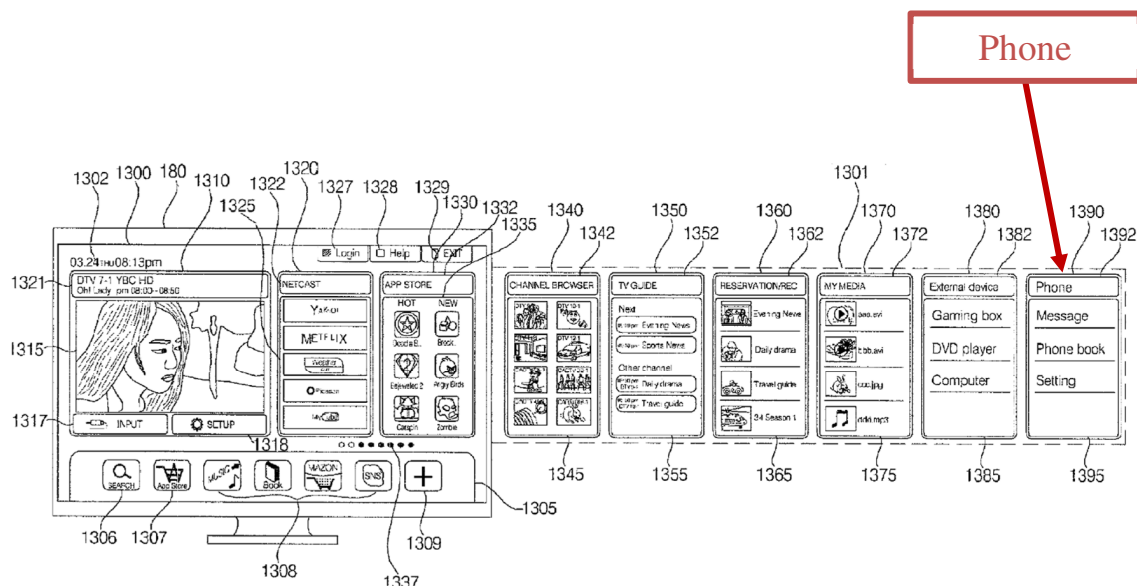
178. As I previously discussed, WD-Manual teaches a button can be assigned to display information regarding external devices.

179. Kim discloses using a remote control to access and display a Phone card object 1390 that includes call information for a “portable phone”:

The card object 1390 may display call-related information and may include a card object name 1392 (PHONE) and a call-related list 1395. The call-related list 1395 may be a listing related to calls placed or received from a portable phone, a computer, or the image display apparatus 100 capable of placing calls. For instance, the call-related list 1395 may include a message item, a phone book item, or a setting item. Upon receipt of an incoming call at the portable phone, the computer, or the

image display apparatus 100, the call-related card object 1390 may be automatically displayed in the card object area of the display 180. If the card object 1390 is already displayed on the display 180, it may be highlighted or otherwise distinguished from the other card objects.

Ex.1005, [0211].



Ex.1005, Fig. 19 (annotated).

180. A POSITA would have recognized and understood that the portable phone of Kim is a wireless phone:

Therefore, the user may readily identify incoming calls received on a nearby portable phone,

Ex.1005, [0212].

181. Accordingly, where Kim teaches displaying information regarding external devices such as phones, a POSITA would have found it obvious that

Kim's remote control could have a button assigned to, when selected, cause the display of information regarding wireless phones (e.g., identification of calls), as taught in WD-Manual.

182. Accordingly, WD-Manual teaches a button (*media center button*) on a remote control can be assigned to display “*information regarding one or more of groupings of music, groupings of videos, groupings of photographs, and internal and external computational devices, the computational devices comprising one or more of personal computers, laptops, tablet computers, wireless phones, and removable computer readable media.*”

Remote Control



CAUTION: Do not expose the batteries or the remote control with batteries installed to excessive heat (direct sunlight, fire, etc.).

1. Infrared transmitter
2. POWER
3. Subtitle
4. PREV (track), STOP, NEXT (track)
5. Back (last screen)
6. Navigation buttons, OK
7. Previous Page
8. MUTE
9. Alpha-numeric keys
10. SEARCH
11. HOME
12. Audio
13. REV, PAUSE/PLAY, FF
14. Options
15. Next Page
16. Setup
17. Shortcut/function keys
18. EJECT (safe removal of attached storage)

“media center button”



Ex.1006, pg. 11 (annotated).

183. And, as I discussed in more detail at Section VII.A.4 (*Reasons to Combine*), it would have been obvious to a POSITA to combine the teachings of Kim with those of WD-Manual. Kim teaches that its system could be “configured

separately as a set-top box and a display device.” Kim also teaches that “new components may be added” to its television or that “two or more components” could be “incorporated into one component.” Ex.1005, [0115]. Here, WD-Manual teaches known functionality in the form of a set-top box that uses customizable buttons on a remote control to cause desired information to be displayed on the television. *See, e.g.*, Ex.1006, pg. 26. The combination takes the known techniques of WD-Manual and applies them to Kim’s television to achieve the straight-forward result of a television that displays certain information when a specific button on the remote control is pressed. Each of Kim and WD-Manual contemplate this result. *See, e.g.*, Ex.1005, [0269] (pressing a button the remote control to change what is displayed on the screen); Ex.1005, [0175] (“the user may input various commands to the image display apparatus 100 by activating the hard buttons”); Ex.1006, pg. 138 (instructions on how to assign the function for a remote control button to cause information, such as “Music, Video, Services, Setup, etc.” to be displayed on the television).

184. Thus, for all the reasons stated above, Kim’s method of using a remote control to access identifying information and media content on devices in view of WD-Manual’s teaching of assigning buttons to display specific media and/or device information, renders obvious “*a media center button that, when selected, provides, by the television screen, displayed information regarding one or*

more of groupings of music, groupings of videos, groupings of photographs, and internal and external computational devices, the computational devices comprising one or more of personal computers, laptops, tablet computers, wireless phones, and removable computer readable media.”

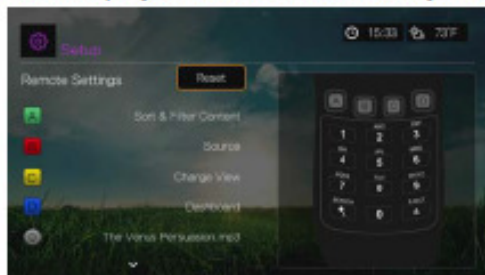
[1.5.2] an application center button that, when selected, provides, by the television screen, displayed information regarding pre-installed and downloaded software applications,

185. As discussed in connection with element [1.5], Kim, Bae, and WD-Manual each teach displaying content on a television based on user inputs from a remote control and WD-Manual teaches remote control buttons that can be assigned to, when selected, cause specific types of content and information to be displayed.

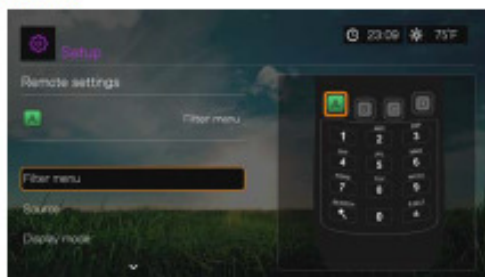
186. WD-Manual further teaches assigning a specific button to display information about “Services,” which are applications in WD-Manual. Ex.1006, pgs. 138, 28, 76-77 (“Services menu”).

Remote Settings

Select a function for the **A**, **B**, **C**, and **D** function buttons on the remote controller. The remote settings menu displays the functions currently assigned to each button.



To change functions, press **▲**/**▼** to select a function button, then press **OK**. Press **▲**/**▼** to select functions such as display mode, filter menu, Music, Video, Services, Setup, etc., then press **OK**.

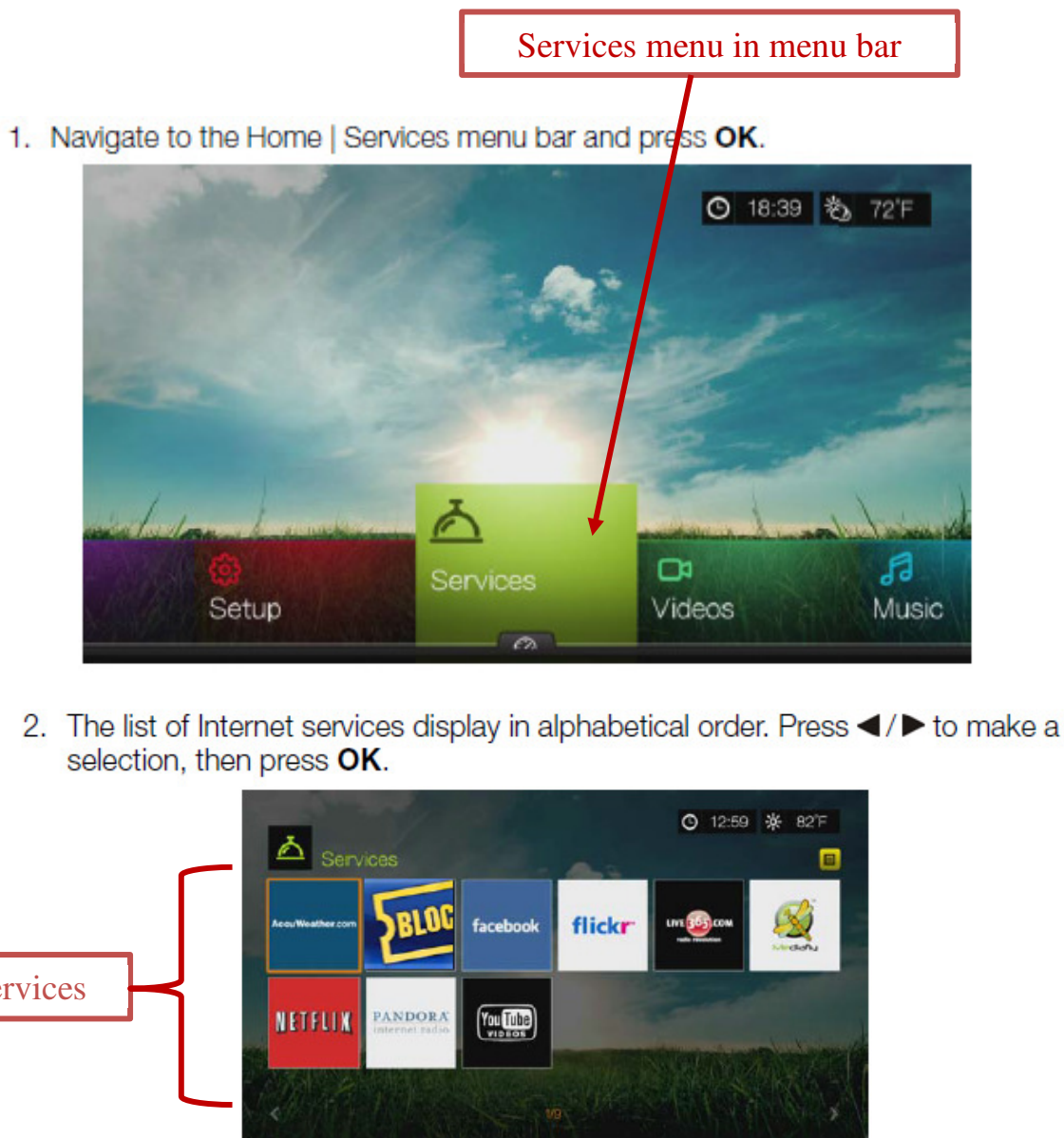


Services
screen can be
assigned to a
button

To reset the function buttons to default settings, select **Reset**, then press **OK**.

Ex.1006, pg. 138 (partial and annotated).

187. The Services menu displays the available services:



Ex.1006, pg. 76-77 (partial and annotated).

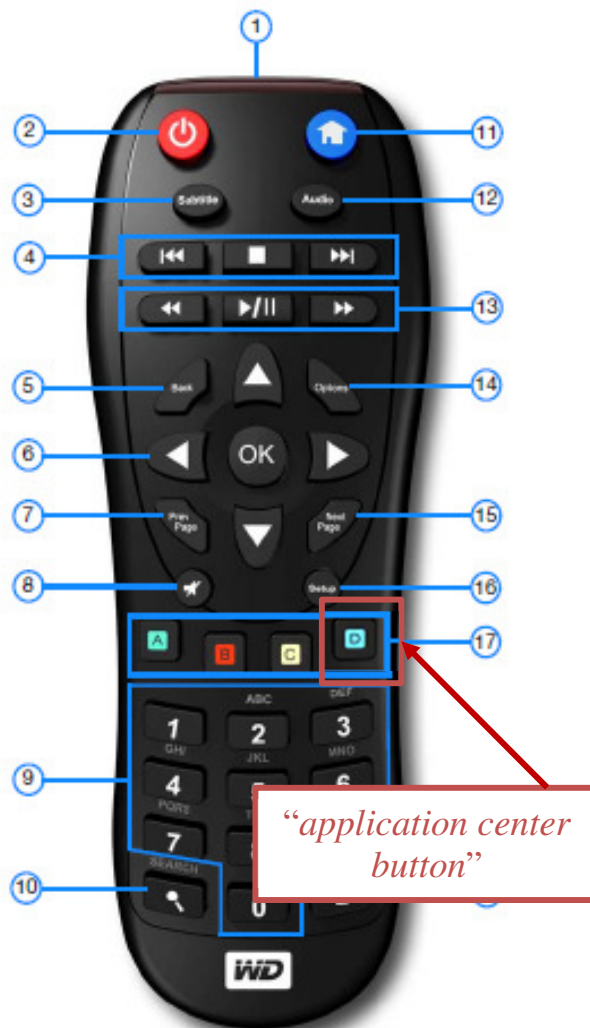
188. A POSITA would recognize that “Services” (e.g., Netflix, Facebook, Flickr, Pandora, etc.) are software applications. Thus, WD-Manual teaches a button programmed to be an “*application center button*.”

Remote Control



CAUTION: Do not expose the batteries or the remote control with batteries installed to excessive heat (direct sunlight, fire, etc.).

1. Infrared transmitter
2. POWER
3. Subtitle
4. PREV (track), STOP, NEXT (track)
5. Back (last screen)
6. Navigation buttons, OK
7. Previous Page
8. MUTE
9. Alpha-numeric keys
10. SEARCH
11. HOME
12. Audio
13. REV, PAUSE/PLAY, FF
14. Options
15. Next Page
16. Setup
17. Shortcut/function keys
18. EJECT (safe removal of attached storage)



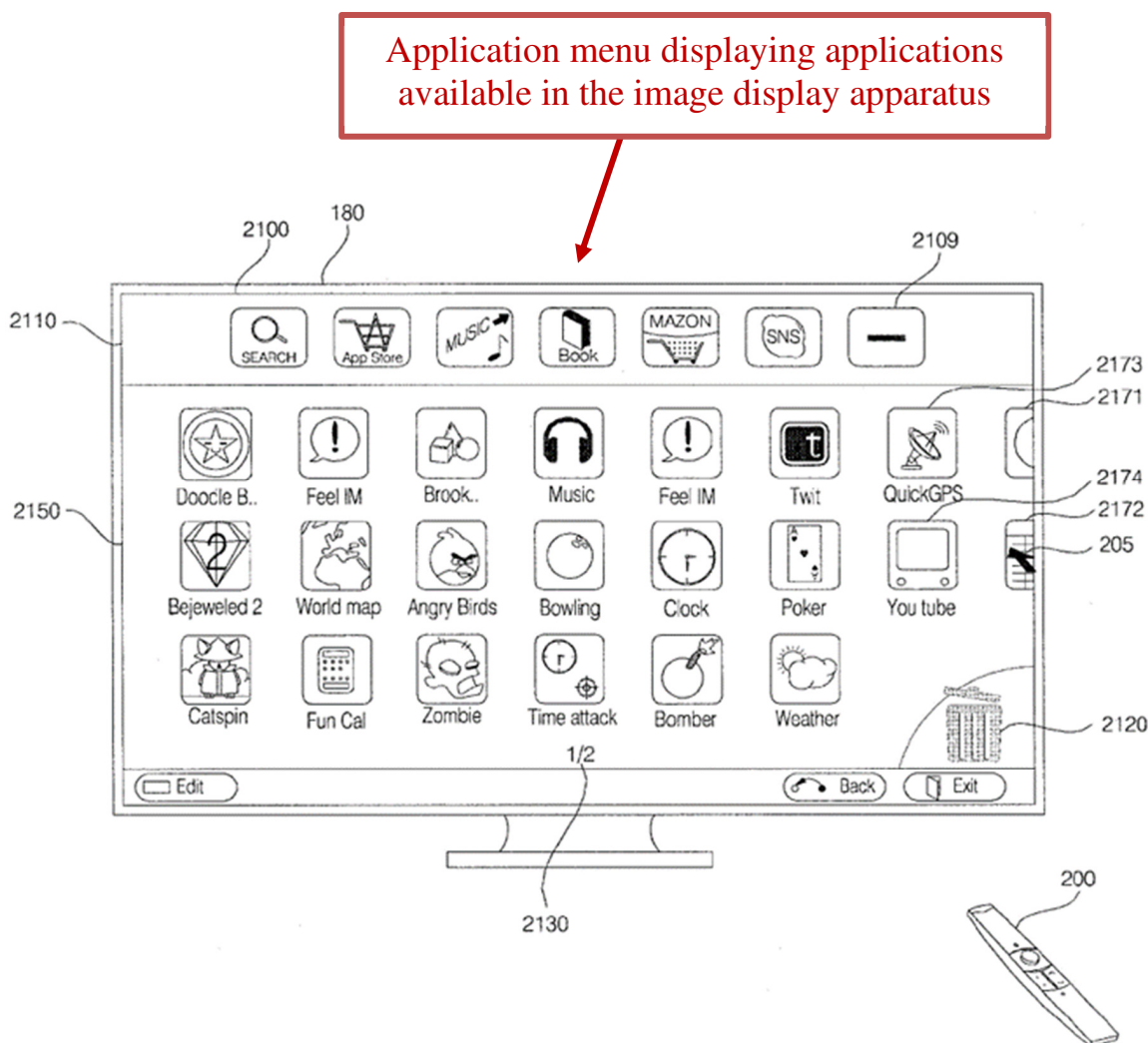
Ex.1006, pg. 11 (annotated).

189. Kim discloses t discloses at least two examples for using a remote control to display an application panel that provides access to software applications. In a first example, Kim's controller 170 displays "applications that

are available in the image display apparatus”:

Upon receipt of an incoming call at a connected external device or the image display apparatus 100, the controller 170 may control the display to focus-on or shift a call-related card object among the plurality of card objects. Furthermore, if an application view menu item is selected, the controller 170 may control display of applications or a list of applications that are available in the image display apparatus or downloadable from an external network.

Ex.1005, [0099].



Ex.1005, Fig. 34 (annotated).

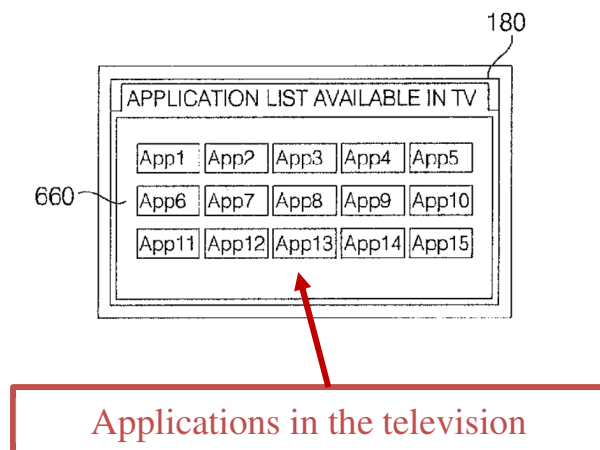
190. In a second example, Kim controller 170 displays “a list of applications 660 stored in the image display apparatus may be displayed.”

FIG. 16 illustrates an application list displayed on the display 180 according to another embodiment. Referring to FIG. 16(a), when an application list view menu is selected by manipulating the remote controller 200, **a list of applications 660** stored in the image display apparatus may be displayed on the display 180. The icons may include identifying information related to the corresponding application to facilitate identification of the application. Moreover, while only icons representing the applications are shown in FIG. 16, the application list 660 may also include brief descriptions of the applications, as in the application list 610 of FIG. 15. Therefore, the user may access additional information to readily identify the applications if desired. FIG. 16(b) illustrates a selection of one application icon 670 from the application list 660 using the pointer 205. The pointer 205 may be controlled by moving the remote controller 200. Accordingly, the selected application 670 may be easily selected and executed.

Ex.1005, [0184].

Moreover, in certain embodiments, the application lists 610 or 660 may display icons representing both applications available over the network as well as applications available locally. In this embodiment, the icons or the descriptions may include additional indicia to differentiate the remote and local applications. For example, the description may include a network address for the corresponding application.

Ex.1005, [0185].



Ex.1005, Fig. 16(a) (annotated).

191. Kim further teaches that applications available in the image display apparatus (and displayed as shown in Figs. 16 and 34) are the software applications in application layer 550, discussed in [1.2]. Kim explains that these software applications are “user-undeletable applications” and “user-deletable applications”:

Referring to FIG. 12, a platform for the image display apparatus according to another embodiment may be an integrated type. The integrated platform may include an OS kernel 510, a driver 520, middleware 530, a framework 540, and an application layer 550.

Ex.1005, [0160].

In the application layer 550, **applications may be categorized into user-undeletable applications 565 that are stored in the image display apparatus and user-installable or user-deletable applications 575 that are downloaded** from an external device or a network **and stored in the image display apparatus.**

Ex.1005, [0163].

192. A POSITA would recognize that a user-undeletable application stored in the television is a pre-installed application and that a user-installable application that is downloaded is a downloaded application. For example, Kim specifically contrasts and distinguishes “user-undeletable applications” from “user-installable” applications:

In the application layer 455, applications may be categorized into user-undeletable applications 465 or user installed/deletable applications 475. **User-undeletable applications 465 may be applications stored in the image display apparatus 100 that cannot be modified. User-installable or user-deletable applications 475 may include application which may be downloaded** from an external device or a network and stored in the image display apparatus.

Ex.1005, [0158].

The controller 170 may control installation and execution of an application downloaded from the external network along with various UIs. Also, the controller 170 may control display of an image related to the executed application on the display 180, upon user selection.

Ex.1005, [0100].

193. Even the '254 patent makes the same distinction between downloaded (e.g., user-installed) applications that can be deleted by a user and pre-installed applications that cannot be deleted by a user:

The application center button 740, when selected, may provide information regarding pre-installed and downloaded applications. **Unlike downloaded applications, pre-installed**

applications cannot be removed by the user or manually updated. Exemplary pre-installed applications include web browser, settings control, and content search algorithms.

'254 patent, 24:17-22.

194. Accordingly, a POSITA would understand that Kim's user-und deletable applications are *pre-installed applications* because they are (i) und deletable, (ii) stored in the television, and (iii) not modifiable, and that Kim's downloaded, user-deletable applications are *downloaded* applications.

195. Thus, WD-Manual teaches a button on a remote control can be assigned to display applications, which teaches an "application center button." Further, when that button is pressed by the user, the television screen would then display the applications (called "Services" in the WD-Manual). And, when combined with the television of Kim, the teachings of WD-Manual would enable a user to press a button on a remote control to access the application menu displaying information (e.g., application items) for software applications (both preinstalled and downloaded) available through Kim's interface.

196. Accordingly, Kim's method of displaying pre-installed and downloaded software applications using a remote control in view of WD-Manual's teaching of a button assigned to, when selected, cause a display of an application screen including information about software applications, renders obvious "*an application center button that, when selected, provides, by the television screen,*

displayed information regarding pre-installed and downloaded software applications.”

[1.5.2.1] wherein the downloaded software applications comprise one or more of a web browser, settings control, and content search algorithms;

197. As discussed above with respect to the claim construction of “*one or more*,” the inventor provided a special meaning for the term. In particular, the phrasing of “one or more of A, B, or C” and “one or more of A, B, and C” means “A alone, B alone, C alone, A and B together, A and C together, B and C together, or A, B and C together.”

198. Element [1.5.1] uses “*one or more*” with respect to “*one or more of a web browser, settings control, and content search algorithms*.” Accordingly, for purposes of this limitation, any teaching of an item in this list alone or together with any of the other items in the list meets the “one or more” requirement. However, not only do the teachings of Kim and WD-Manual teach at least one item in this list, but, as I discuss below, the teachings of Kim and WD-Manual render obvious each and every item.

“Web Browser” and “Settings Control”

199. As discussed in connection with [1.5.2], Kim generally teaches that its applications may be downloaded (user-installable) or pre-installed (user-undeletable).

200. Kim describes examples of different types of applications, including

an application for “Web browsing”:

With the applications of the application layer 455, a variety of functions such as Internet telephony, VoD, Web album, Social Networking Service (SNS), Location-Based Service (LBS), map service, **Web browsing**, and application search may be performed through network access. In addition, other functions such as gaming and schedule management may be performed by the applications.

Ex.1005, [0159].

The application layer 455 on top of the framework 440 may include a variety of programs that are executed and displayed in the image display apparatus. The application layer 455 may include, for example, a core application suite having at least one of an e-mail, Short Message Service (SMS), calendar, map, browser, or another appropriate application based on the desired functionality. The application layer 455 may be written in Java.

Ex.1005, [0157].

201. Kim also describes a settings control application (e.g., a “setup object...to **set various settings** of the image display apparatus:

A current time object 1302 that includes a date (03.24), a day (THU), and a current time (8:13 PM) may be displayed above the card object 1310. Thus, the user may readily identify current time information through the current time object 1302. The device object 1317 may represent an external device connected to the image display apparatus 100. For example, if the object 1317 is selected, a list of external devices connected to the image display apparatus 100 may be displayed. **The setup object 1318 may be used to set various settings of the image display apparatus 100, such as video settings, audio settings, screen settings, reservation settings, setting of the pointer 205 of the**

remote controller 200, network settings, or another appropriate setting for the image display apparatus 100.

Ex.1005, [0200].

202. Kim teaches that applications (such as its Web browsing application and settings control applicaiton) exist in the application layer:

The application layer 455 on top of the framework 440 may include a variety of programs that are executed and displayed in the image display apparatus. The application layer 455 may include, for example, a core application suite having at least one of an e-mail, Short Message Service (SMS), calendar, map, browser, or another appropriate application based on the desired functionality.

Ex.1005, [0157].

203. Kim further teaches that applications in the application layer may be either preinstalled (e.g., applications in firmware) or downloaded and installed on the television:

In the application layer 455, applications may be categorized into user-undeletable applications 465 or user installed/deletable applications 475. User-undeletable applications 465 may be applications stored in the image display apparatus 100 that cannot be modified. **User-installable or user-deletable applications 475 may include application which may be downloaded from an external device or a network and stored in the image display apparatus.**

Ex.1005, [0158]

In the application layer 550, applications may be categorized into user-undeletable applications 565 that are stored in the

image display apparatus and **user-installable or user-deletable applications 575 that are downloaded from an external device or a network** and stored in the image display apparatus.

Ex.1005, [0163].

204. Accordingly, a POSITA would therefore recognize that Kim's web browser and settings control applications may be either downloaded over a network or preinstalled in firmware.

205. Kim further teaches that the preinstalled firmware can be updated from over the network:

Also, the network interface 130 may receive update information about firmware and update files of the firmware from the NP [network provider].

Ex.1005, [0082].

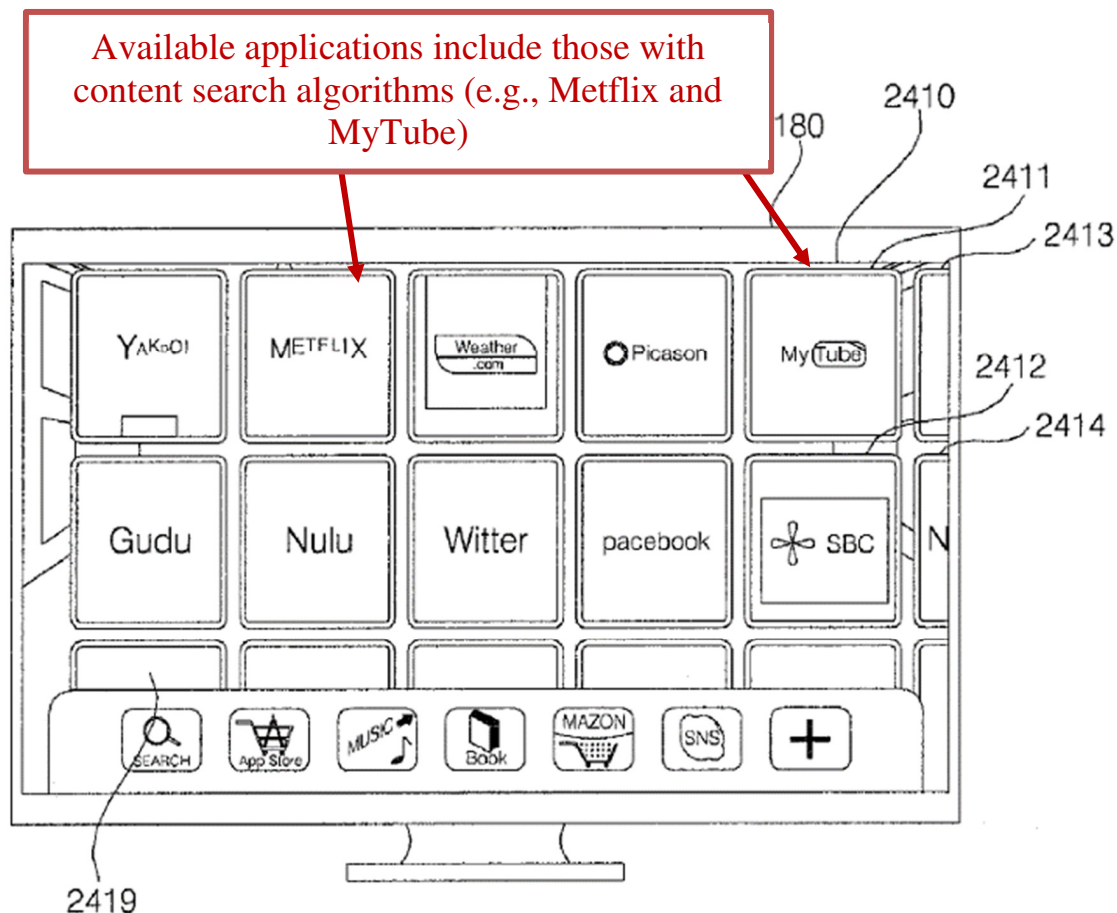
206. A POSITA would thus recognize and understand that once a preinstalled application in firmware is updated over the network, the application becomes a "*downloaded software application.*" See, e.g., Ex.1010, 2:22-25 (describing known "method for downloading the firmware (software embedded in a device)"). A POSITA would thus recognize and understand that updating firmware over the network renders obvious downloading a software application.

207. Accordingly, Kim's method of downloading applications and downloading updates to preinstalled applications in firmware where Kim's applications include web browsing and settings control applications renders

obvious “downloaded software applications” including a “a web browser” or “settings control.

“Content Search Algorithms”

208. First, Kim discloses displaying applications, illustrating examples such as “Metflix” and “MyTube:”



Ex.1005, Fig. 44 (annotated).

209. A POSITA would understand to be referencing applications such as

Netflix and YouTube, respectively, each of which includes a content search algorithm for searching media content. I understand that Patent Owner similarly treats Netflix as meeting this limitation. Ex.1015, 13-14 (referencing “content search algorithms, such as the ‘Netflix’ app”).

210. Second, WD-Manual discloses that applications can be downloaded via an Internet browser to search for content (e.g., to “find media files and create playlists”), thereby teaching “*content search algorithms*”:

How do I find media files and create playlists?

Several media center applications are currently available, such as Winamp and iTunes, that let you play, arrange, and edit media files. These media centers also let you create playlists and edit the metadata information for media files. You can search the Internet with your browser to locate where these applications are available for download.



Applications can be downloaded to
search for media content

Ex.1006, pg. 150.

211. A POSITA would have recognized and understood that iTunes is a content search algorithm used to search for music. Ex.1014.

212. Thus, Kim’s displaying information about downloaded software applications, which include (i) a web browser application, (ii) downloaded software updates for a settings control application in firmware, and (iii) a content search application, in view of WD-Manual’s teaching of downloaded applications that allow searching for content, renders obvious “*wherein the downloaded*

software applications comprise one or more of a web browser, settings control, and content search algorithms.”

[1.5.3] *an application panel button that, when selected, displays, by the television screen, an application panel, wherein the application panel comprises an information panel regarding a selected (pre-installed or previously downloaded) application icon; and*

213. In my opinion, WD-Manual and Kim each render obvious element [1.5.3] for the reasons stated below.

214. As discussed in connection with element [1.5], Kim, Bae, and WD-Manual each teach controlling content displayed on a television based on user inputs from a remote control and WD-Manual teaches remote control buttons that can be assigned to, when selected, cause specific types of content and information to be displayed.

215. As discussed above in connection with elements [1.2], [1.5.2], and [1.5.2.1], Kim and WD-Manual teach accessing pre-installed software applications or previously downloaded software applications. WD-Manual refers to applications as “services.”

- **WD-Manual’s “Options” button**

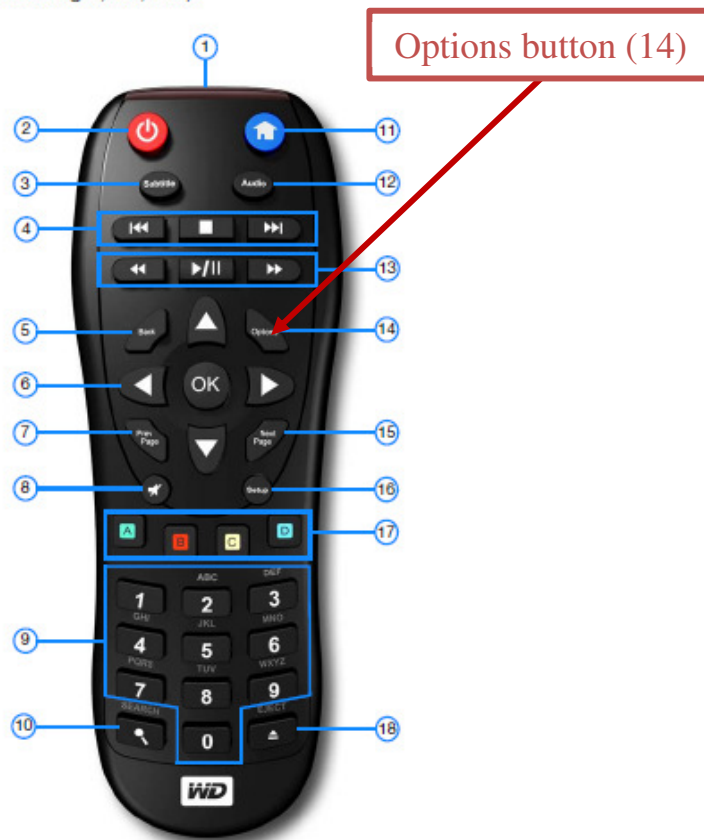
216. First, WD-Manual renders obvious element [1.5.3] because it teaches an “Options” button that displays an application panel that includes an information panel regarding a selected application (which as discussed above, may be a pre-installed or previously download application):

Remote Control



CAUTION: Do not expose the batteries or the remote control with batteries installed to excessive heat (direct sunlight, fire, etc.).

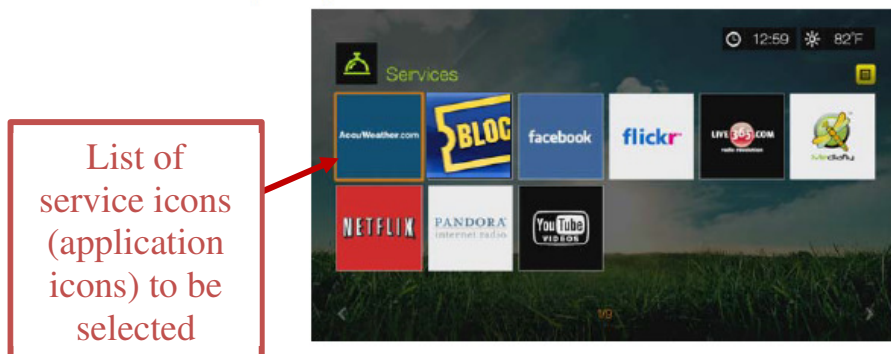
1. Infrared transmitter
2. POWER
3. Subtitle
4. PREV (track), STOP, NEXT (track)
5. Back (last screen)
6. Navigation buttons, OK
7. Previous Page
8. MUTE
9. Alpha-numeric keys
10. SEARCH
11. HOME
12. Audio
13. REV, PAUSE/PLAY, FF
14. Options
15. Next Page
16. Setup
17. Shortcut/function keys
18. EJECT (safe removal of attached storage)



Ex.1006, pg. 11 (annotated).

217. In operation, the user uses the remote control to select an icon representing a service, from a displayed list of icons representing available services, to thereby “select a service.” And, as discussed above, the services in WD-manual are applications.

2. The list of Internet services display in alphabetical order. Press ◀/▶ to make a selection, then press **OK**.



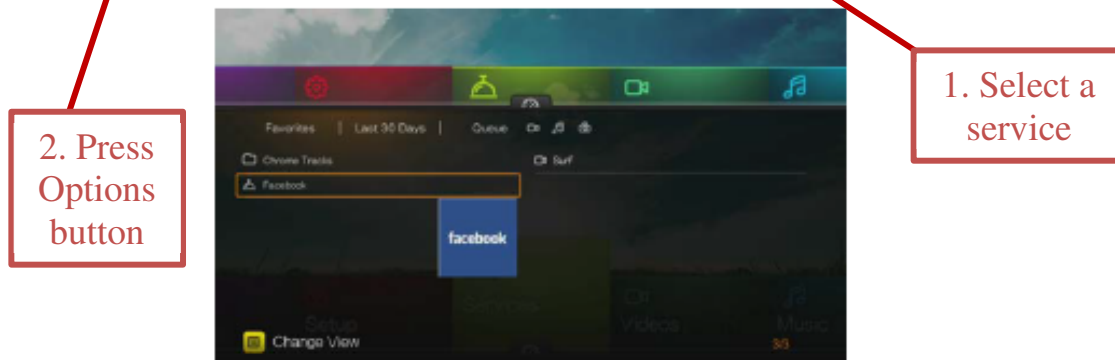
Ex.1006, pg. 77 (partial and annotated).

218. WD-Manual describes (1) using arrow keys to select a desired service (*application*) based on its corresponding icon then (2) pressing the “Options” button:

Adding a Service to Favorites

You can add a Service to your Favorites so that it's quickly available via the dashboard when you are in the Home screen or other screens (when you press  or navigate to  in certain screens then press **OK**).

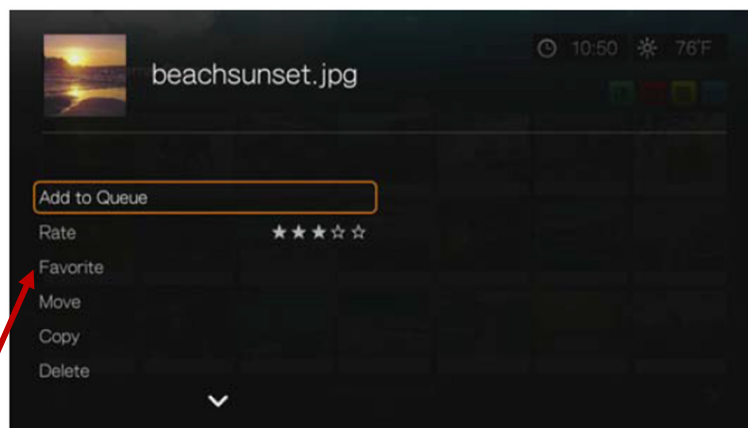
1. In the Services screen, press ◀/▶ to select a service you want to favorite, then press **Options**.
2. Press **OK** to list the service in the dashboard under Favorites



Ex.1006, pg. 77 (partial and annotated).

219. When the user presses the Options button, an application panel comprising an information panel regarding the selected service icon is displayed:

Application panel with multiple information panels is displayed



Information panel includes option to add the selected service as a favorite (*regarding a selected application icon*)

Ex.1006, pg. 57 (annotated).

220. Second, WD-Manual teaches that numerous services are “integrated” into the media center. Ex.1006, pg. 66, 68. A POSITA would understand that integrated services are “*pre-installed*” applications.

After establishing a network connection, you can:

- Use the different Internet services integrated into your media center to access streaming media. Go to the next chapter for more information on these services.



Services are integrated into the media center (“pre-installed”)

Ex.1006, pg. 66 (partial and annotated).

221. WD-Manual also teaches that additional services (applications) can be downloaded for playing, arranging, and editing media files:

How do I find media files and create playlists?

Several media center applications are currently available, such as Winamp and iTunes, that let you play, arrange, and edit media files. These media centers also let you create playlists and edit the metadata information for media files. You can search the Internet with your browser to locate where these applications are available for download.

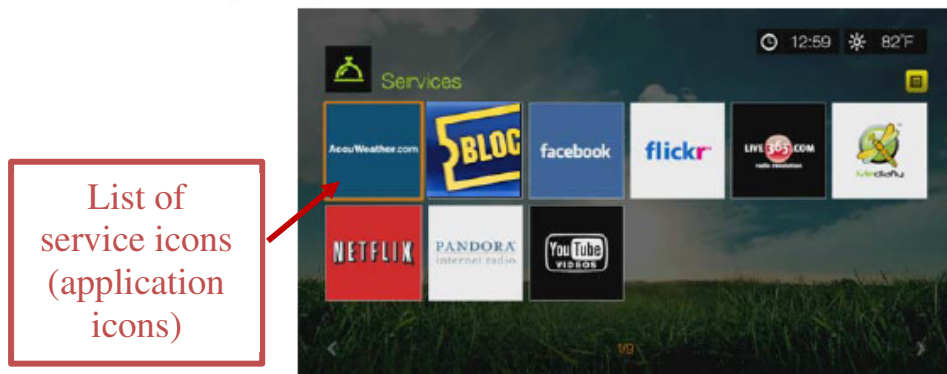


Additional applications can be downloaded by the user

Ex.1006, pg. 150 (partial and annotated)

222. A POSITA would have found it obvious that services that are downloaded by the user would be added to the list of services displayed on WD-Manual’s page 77.

2. The list of Internet services display in alphabetical order. Press ◀/▶ to make a selection, then press **OK**.



Ex.1006, pg. 77 (partial and annotated).

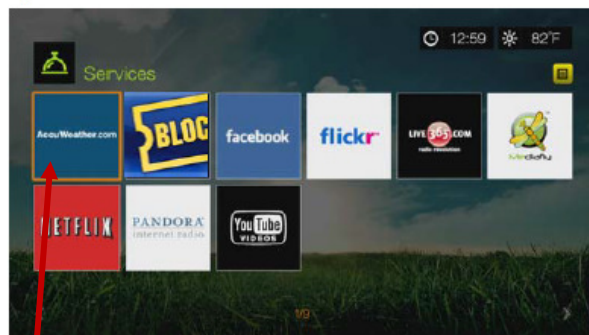
223. A POSITA would find it obvious that any services (applications) that are downloaded by the user would be added to the list of services displayed after the Home | Services option is selected from the Home screen, as shown above.

224. Accordingly, WD-Manual teaches an Options button on a remote control that, when selected, displays on the television an information panel regarding a selected icon. Further, WD-Manual teaches that the selected icon may be an icon representing a pre-installed service (application) or the selected icon may be an icon representing a previously downloaded service (application).

225. Alternatively, to the extent that element [1.5.3] requires more than highlighting or placing a cursor on an icon, a POSITA would understand that an application icon can be a “selected application icon” in various ways.

226. For example, WD-Manual discloses that an icon corresponding to a service can be selected by launching the service using the “OK” button:

2. The list of Internet services display in alphabetical order. Press ◀/▶ to make a selection, then press **OK**.



Pressing “OK” launches highlighted application

Ex.1006, pg. 77 (partial and annotated).

Home Screen Navigation

Use the following keys to navigate through the menu screens.

Button	Function
◀▶ Left/Right arrows	Move from one option to the next
▼ Down arrow	View the dashboard
OK	Launches your selection

Pressing “OK” button selects icon and launches corresponding service

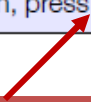
Ex.1006, pg. 29 (partial and annotated).

227. The '254 patent equates an “OK” button with being a “select” button.

'254 patent, 22:56-23:67 (“The remote control 700 can include...an OK (or select) button 764”).

228. WD-Manual also discloses that its “Options” button, when pressed after the service has launched, has the specific function of causing an information panel with options to be displayed.

Options	During playback, displays additional playback options. From an online media content screen, press to display more service options.
----------------	--



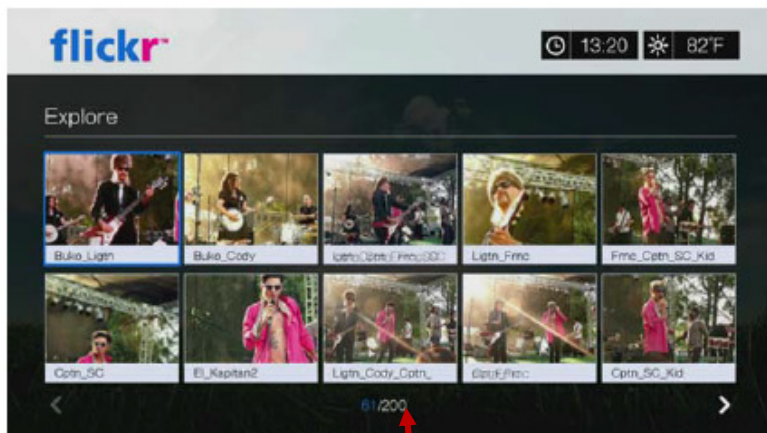
Pressing “Options” button displays information panel with additional options for service executing on television

Ex.1006, pg. 25 (partial and annotated).

229. WD-Manual further discloses that this information panel can identify the selected service (*application*), which aligns with the '254 patent's explanation that an information panel can simply identify the selected application. '254 patent, 24:56-25:4 (“The information panel can one or more of identify the selected application...”). For example, WD-Manual discloses that, after launching the Flickr application, a user can press the “Options” button to display an information panel that includes menu options and identifies the selected application:

Flickr Photostream

The Flickr photostream layout is the same as that of a Photos directory in thumbnail mode.

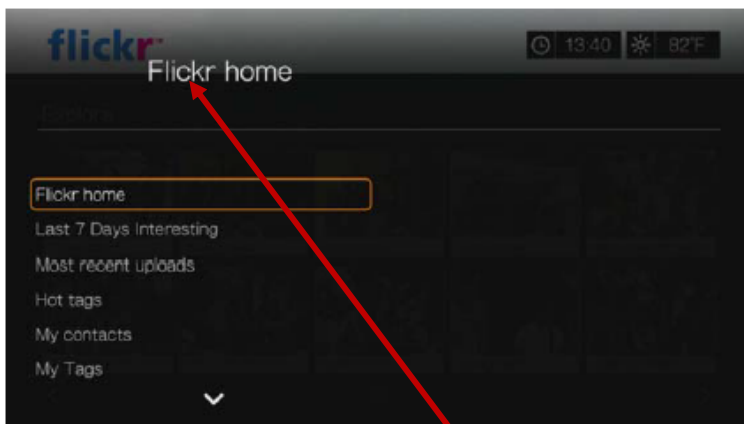


Flickr photostream layout

Ex.1006, pg. 91 (partial and annotated).

Press "Options" button while in selected service

- While in the photostream layout, press Options to jump back to the Flickr home page or choose any of the Flickr home page menu options.



Information panel that "identifies the selected application"

Ex.1006, pg. 91 (partial and annotated).

230. I note that the '254 patent explains that an information panel can simply identify the selected application:

The application panel button 748, when selected, can display an application window or panel. One application panel may be an information panel regarding a selected (pre-installed or previously downloaded) application icon. The information panel can one or more of identify the selected application, provide a description of the functionality (including application developer and/or vendor, version, release, and/or last update date and a category or type of application based on the application's functionality) and user ratings and/or degree of other user downloading of the application (e.g., a star rating assigned based on one or more of the foregoing inputs), provide the option to launch, remove, update, and add to favorites the identified application, and provide a listing of selectable links of other (not yet downloaded) recommended applications that provide similar functionality to the identified application.

'254 patent, 24:56-25:4.

231. Accordingly, WD-Manual teaches an Options button that, when selected, displays an information panel regarding a selected service (pre-installed or previously downloaded application).

232. Thus, WD-Manual's "Options" button that, when pressed after either highlighting of an icon for or launching a selected service (pre-installed or previously downloaded), displays an information panel with information (e.g., identifying information and options), renders obvious "*an application panel button*

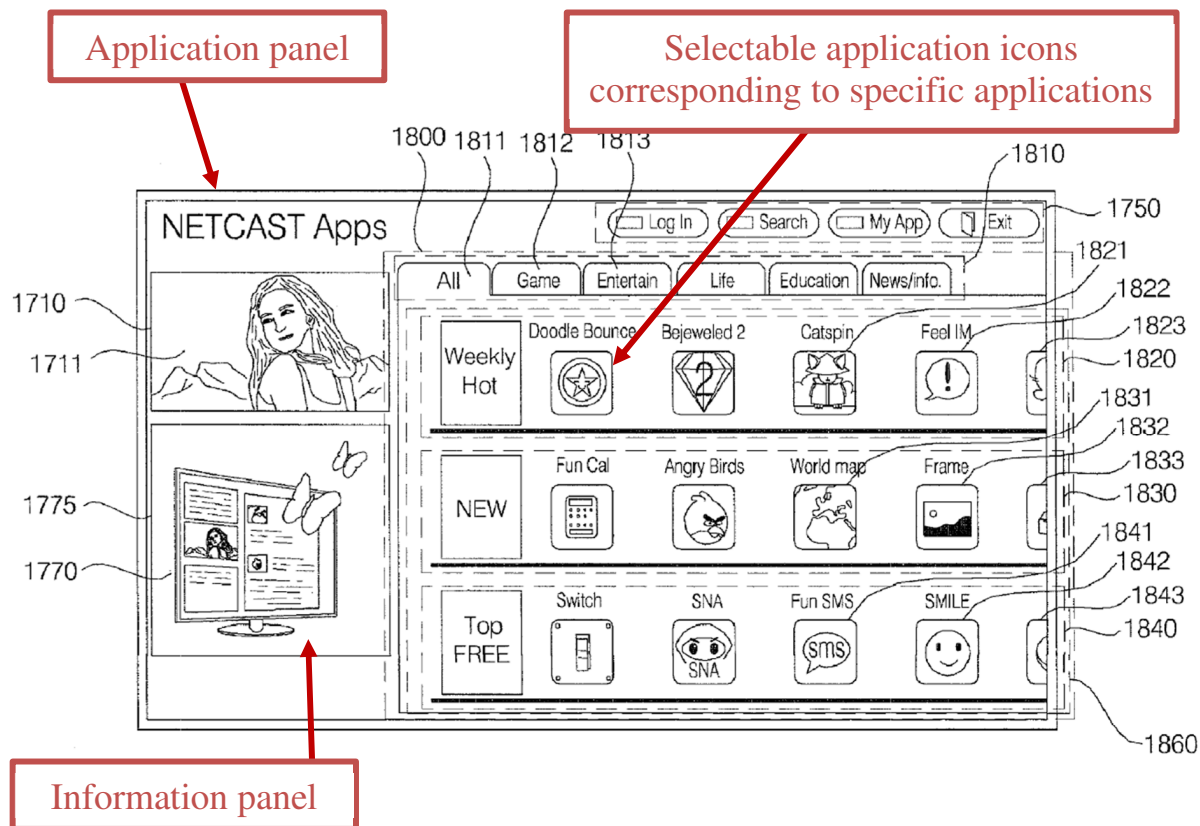
that, when selected, displays, by the television screen, an application panel, wherein the application panel comprises an information panel regarding a selected (pre-installed or previously downloaded) application icon.”

- **Kim’s “OK” Button**

233. Kim teaches displaying information on the screen “when the user selects or focuses on a specific application:”

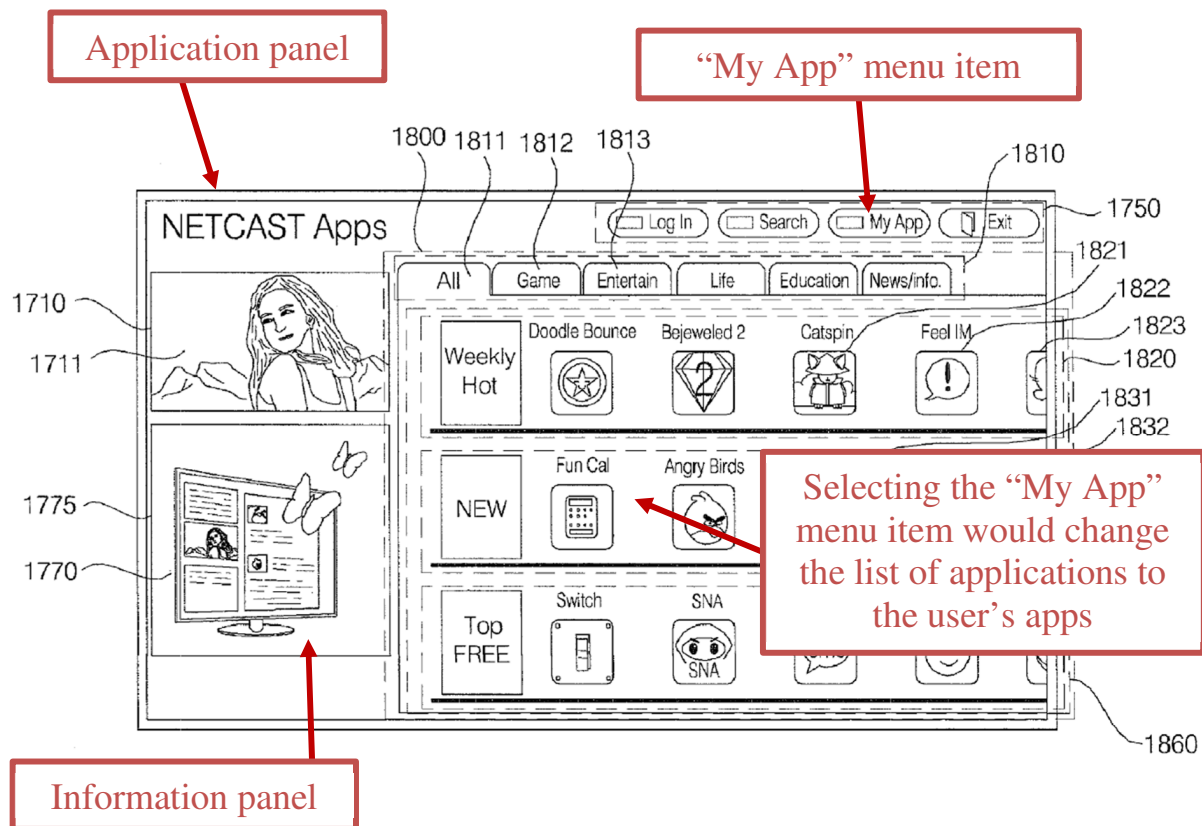
In addition, when the user selects or focuses on a specific application, an image that corresponds to the application may be displayed in the third area 1770. If the **user selects an icon, an image displayed on the third area 1770 may be replaced with information about the application corresponding to the selected icon**. Moreover, when another icon is selected, or if a hidden first icon is selected, the displayed images in the corresponding list (Weekly Hot list 1820, New list 1830, or Top Free list 1840) as well as the third area 1770 may be updated accordingly.

Ex.1005, [0247].



Ex.1005, Fig. 25 (annotated).

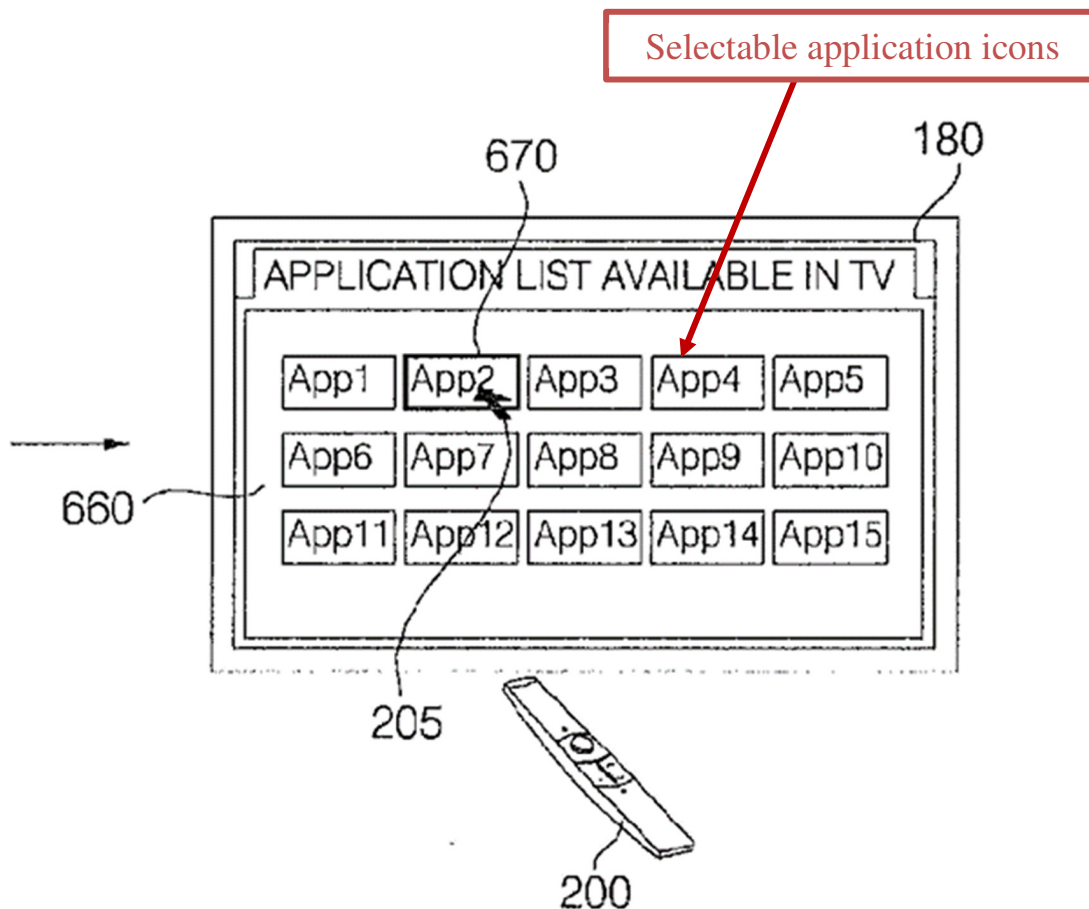
234. While Fig. 25 above depicts displaying applications that are available in an app store, the user interface of Fig. 25 further includes a “My App” menu item:



Ex.1005, Fig. 25 (annotated).

235. A POSITA would have found it obvious that selection of the “My App” menu item displays applications available in the television. For example, a POSITA would have found it obvious that selection of the “My App” menu item displays the applications available in the television because Kim already contemplates displaying applications available in the image display apparatus.

236. For example, as discussed in connection with element [1.5.2], application list 660 displays both user-undeletable (pre-installed) applications and user-deletable (previously downloaded) applications:



Ex.1005, Fig. 16b (partial and annotated).

237. Kim teaches using arrow keys and an OK key on the remote control to select applications:

While FIGS. 15 and 16 show that a desired application may be selected by moving the pointer 205 using the remote controller 200, the application may be selected in many other ways. For example, the user may select a specific application by moving a cursor around the display 180 using dedicated keys (e.g., arrow keys and an OK key) on the remote controller 200. In another example, if the remote controller 200 equipped with a touch pad, the pointer 205 may be controlled using the touch pad.

Accordingly, the user may select a specific item using the pointer 205 and various types of input devices.

Ex.1005, [0187].

238. And as discussed above, the '254 patent equates an "OK" button with being a "select" button. '254 patent, 22:56-23:67.

239. Accordingly, Kim teaches a user interface that enables a user to focus on an application and press a dedicated "OK" button on the remote control to cause information about the application to be displayed, where the application can be from a list of "My App" applications (pre-installed or previously downloaded).

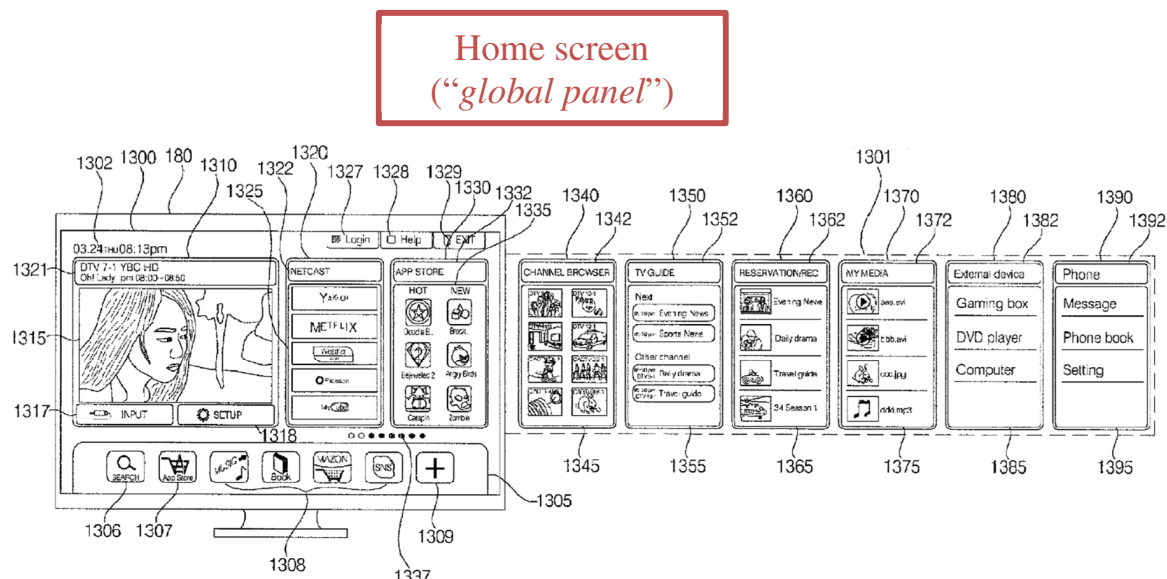
240. Thus, Kim's "OK" button that, when selected for an icon that has been focused on, displays an application panel with an information window that includes information about a selected application (pre-installed or previously downloaded), also renders obvious *"an application panel button that, when selected, displays, by the television screen, an application panel, wherein the application panel comprises an information panel regarding a selected (pre-installed or previously downloaded) application icon."*

[1.5.4] *a global panel button that, when selected, provides the user, via one or more panels or windows displayed by the television screen, with access to one or more of silos, notifications, a web browser system settings, and information associated therewith.*

241. First, Kim discloses using the home key on the remote control to access the home screen:

FIG. 19 shows an exemplary home screen displayed on the display 180. The configuration of the home screen as shown in FIG. 19 may be a default home screen configuration for a smartTV. The home screen may be set as an initial screen that may be displayed when the image display apparatus 100 is powered on or wakes up from a standby mode. Moreover, **the home screen may be a default screen which may be displayed when** a local key on the display apparatus 100 or **a home key** on the remote controller 200 is selected.

Ex.1005, [0192].



Ex.1005, Fig. 19 (annotated).

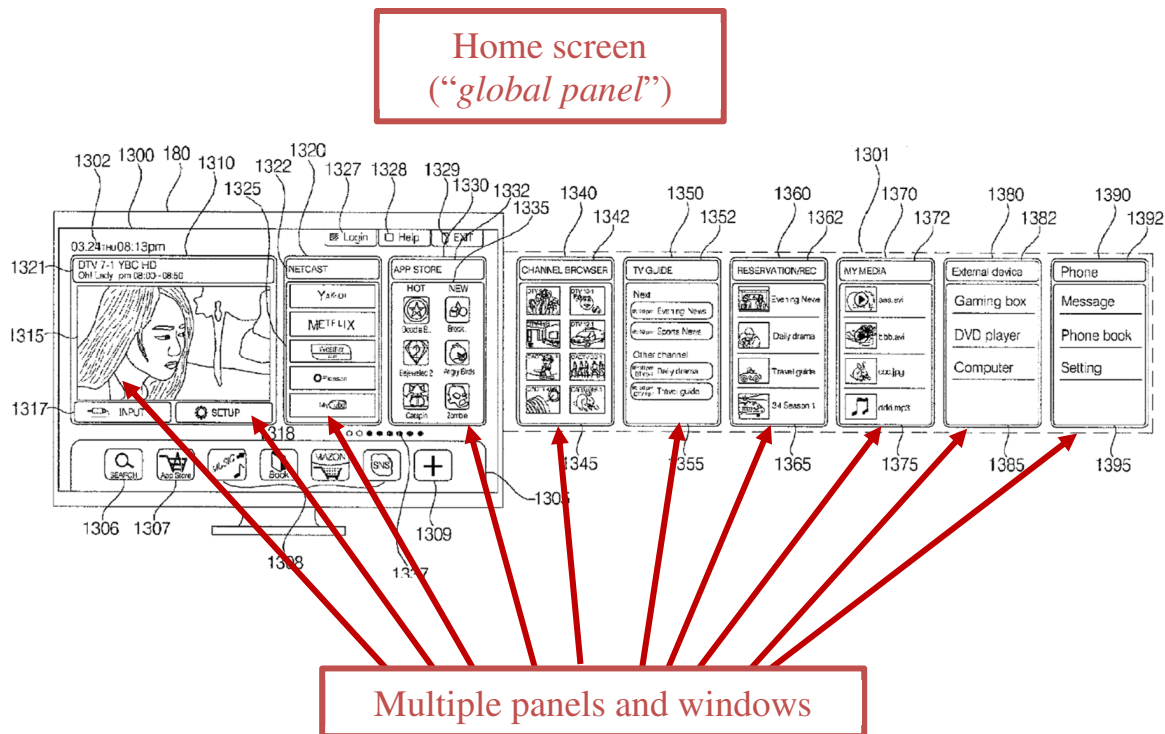
242. I note that '254 patent's "*global panel*" is similarly referred to as a "home panel." Ex.1001, 29:58-59 ("[T]he global panel 1404 may also be thought of as a home panel."). Additionally, the '254 patent's "*global panel*" similarly uses a scrollbar to view hidden portions when there is too much information to display.

Ex.1001, 32:60-65 (“If there is too much information...to display at one time in the global panel, the global panel may have a scrollbar or other means for the user to view the overflow information (e.g., information that will not fit on the screen).”).

243. Second, Kim discloses that the home screen (the *global panel*) displays multiple panels and windows containing different pieces of information and content:

In one embodiment, upon receipt of a go-to-home screen input, the controller 170 may control display of the home screen on the display 180. The home screen may include a plurality of card objects classified according to content sources. The card objects may include at least one card object representing a thumbnail list of broadcast channels, a card object representing a broadcast program guide, a card object representing a program reservation list or a program recording list, or a card object representing a media list of a device connected to the image display apparatus 100. The card objects may further include at least one of a card object representing a list of connected external devices or a card object representing a call-associated list. The home screen may further include an application menu with at least one application that can be executed.

Ex.1005, [0094].



Ex.1005, Fig. 19 (annotated).

244. Third, WD-Manual further teaches that one of the buttons on its remote control causes the home screen to be displayed to the user:

Remote Control



CAUTION: Do not expose the batteries or the remote control with batteries installed to excessive heat (direct sunlight, fire, etc.).

1. Infrared transmitter
2. POWER
3. Subtitle
4. PREV (track), STOP, NEXT (track)
5. Back (last screen)
6. Navigation buttons, OK
7. Previous Page
8. MUTE
9. Alpha-numeric keys
10. SEARCH
11. HOME
12. Audio
13. REV, PAUSE/PLAY, FF
14. Options
15. Next Page
16. Setup
17. Shortcut/function keys
18. EJECT (safe removal of attached storage)



Ex.1006, pg. 11 (annotated).

Using the Remote Control

The media center’s ergonomic remote control lets you navigate the Home screen, browse for media files, enable playback options, and customize the system settings. The infrared sensor detects signals from the remote.



.....

Important: Make sure there are no obstructions between the remote control and the infrared sensor on the media center.

Button	Function
HOME	Displays the main menu and the various options for playback of files and device setup.

Pressing the home button displays the main menu

Ex.1006, pg. 25 (annotated).

245. Accordingly, Kim discloses a home key on the remote control to access a home screen containing one or more panels and windows, which teaches “a global panel button.” Separately and in addition, WD-Manual teaches a Home button on a remote control to display the home screen containing one or more panels, which teaches “a global panel button.”

246. **Fourth**, element [1.5.4] uses “one or more” with respect to “one or more of silos, notifications, a web browser system settings, and information associated therewith.” And as previously discussed with respect to the claim construction of “one or more,” the inventor provided a special meaning for the term. In particular, the phrasing of “one or more of A, B, or C” and “one or more

of A, B, and C” means “A alone, B alone, C alone, A and B together, A and C together, B and C together, or A, B and C together.”

247. Accordingly, for purposes of this limitation, any teaching of an item in this list alone or together with any of the other items in the list meets the “one or more” requirement. However, not only do the teachings of Kim and WD-Manual teach at least one item in this list, but, as I discuss below, the teachings of Kim and WD-Manual render obvious each and every item.

- *“silos...and information associated therewith”*

248. As discussed above, a “silo” is a logical representation of an input, source or application.

- *“Input”:*

249. The '254 patent describes a “silo” as a representation of an “input” (e.g., “input can be a device or devices...connected to the television”). '254 patent, 5:57-63.

250. Kim discloses using a remote control to display a home screen having panels that provide access to the representation of a device/devices (e.g., “gaming box,” “DVD player,” “computer,” and a “phone”) connected to the television and information associated with the device/devices (e.g., the type/name of device and call information):

The card object 1380 may display a list of connected external devices and may contain a card object name 1382 (EXTERNAL

DEVICE) and a device list 1385 of external devices connected to the image display apparatus 100. **The external device list 1385 may include a gaming box, a DVD player, a computer, or another appropriate device.** Upon selection of the card object name 1382, the card object 1380 may be displayed as a full screen image on the display 180. Moreover, upon selection of a specific external device from the external device list 1385, a menu related to the selected external device may be displayed. For example, content may be played back from the external device and a window (e.g., device control menu window) that corresponds to the reproduced content may be displayed on the display 180.

Ex.1005, [0210].

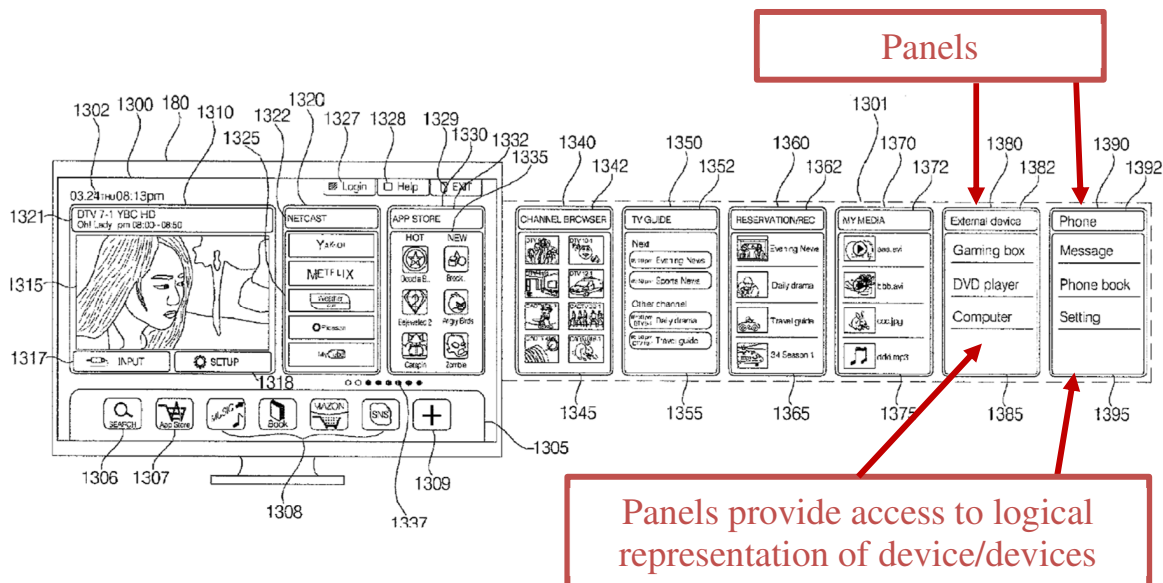
The card object 1390 may display call-related information and may include a card object name 1392 (PHONE) and a call-related list 1395. The call-related list 1395 may be a listing related to calls placed or received from a portable phone, a computer, or the image display apparatus 100 capable of placing calls. For instance, the call-related list 1395 may include a message item, a phone book item, or a setting item. Upon receipt of an incoming call at the portable phone, the computer, or the image display apparatus 100, the call-related card object 1390 may be automatically displayed in the card object area of the display 180. If the card object 1390 is already displayed on the display 180, it may be highlighted or otherwise distinguished from the other card objects.

Ex.1005, [0211].

Therefore, the user may readily identify incoming calls received on a nearby portable phone, a computer, or the image display apparatus 100. This is an interactive function among the **portable phone,** the computer, and the image display apparatus, and may be referred to as a 3-screen function. Moreover, upon

selection of the card object name 1392, the card object 1390 may be displayed as a full screen image on the display 180. Upon selection of a specific item from the call-related list 1395, a window that corresponds to the selected item may be displayed on the display 180.

Ex.1005, [0212].



Ex.1005, Fig. 19 (annotated).

251. WD-Manual also teaches and discloses a silo that represents an input (device connected to the television). For example, WD-Manual discloses using a remote control to display a home screen having a panel that provides access to a representation of a device (e.g., a NAS device) connected to the television and information associated with the device (e.g., multimedia files on the NAS):

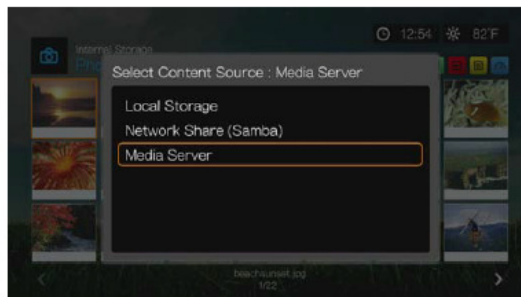
Accessing Media Content from the Network

Once the media center has an active network connection, you can access media content from a NAS device or shared computer located on the same network as your media center.

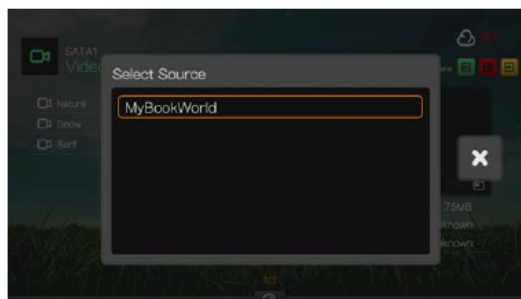
To access media content from a network share or media server:

1. Navigate to the Home screen, and select the menu for media content you wish to access. It can be Music, Videos, or Photos. Press **OK**.
2. Press **⏏** or **▲/▶** to select Source **⏏**, then press **OK**.
3. Press **▲/▼** to select the network resource where the media content you wish to access is located, then press **OK**.

Media content on the
NAS device



4. Select your source and press **OK** twice.



Ex.1006, pg. 70 (annotated).

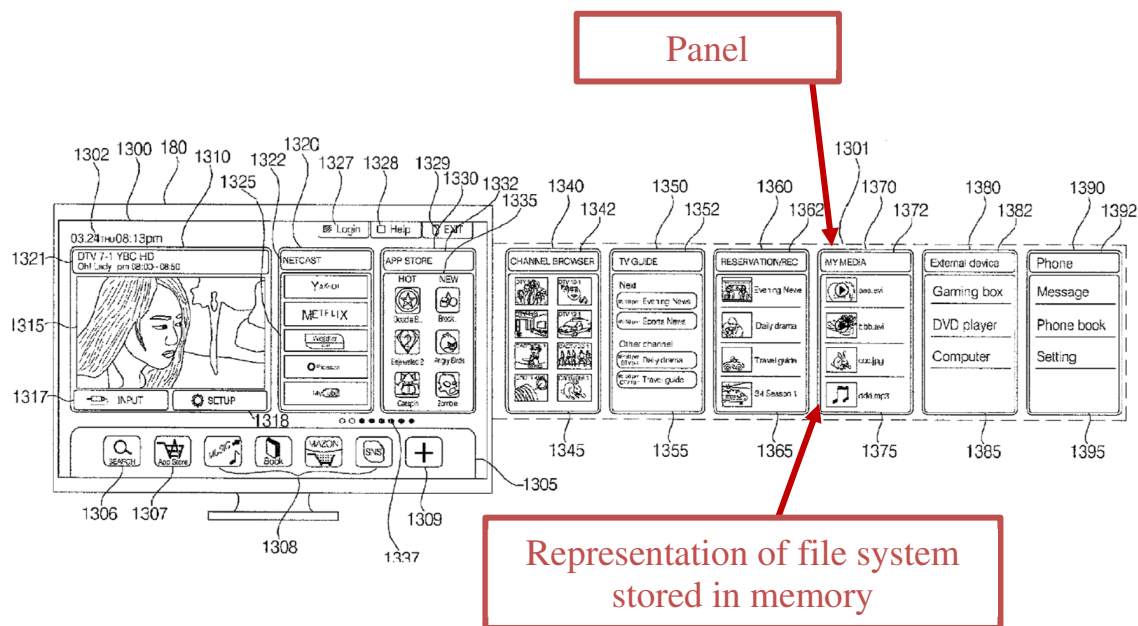
- “Source”:

252. The '254 patent states, for purposes of a “*silo*,” that a source is a data service that provides content, such as a file system. '254 patent, 5:63-65.

253. Kim discloses using a remote control to display a home screen providing access to panels displaying multimedia files from a file system and information associated with the file system (e.g., type of content in the file):

The memory 140 may include, for example, at least one of a flash memory-type storage medium, a hard disk-type storage medium, **a multimedia card micro-type storage medium**, a card-type memory (e.g. a Secure Digital (SD) or eXtreme Digital (XD) memory), a Random Access Memory (RAM), a Read-Only Memory (ROM) such as an Electrically Erasable and Programmable Read Only Memory, or another appropriate type of storage device. **The image display apparatus 100 may reproduce content stored in the memory 140 (e.g. video files, still image files, music files, text files, or application files).** While the memory 140 is shown in FIG. 6 as being configured to be separate from the controller 170, the present disclosure is not limited thereto. For example, the memory 140 may be incorporated into the controller 170.

Ex.1005, [0085].



Ex.1005, Fig. 19 (annotated).

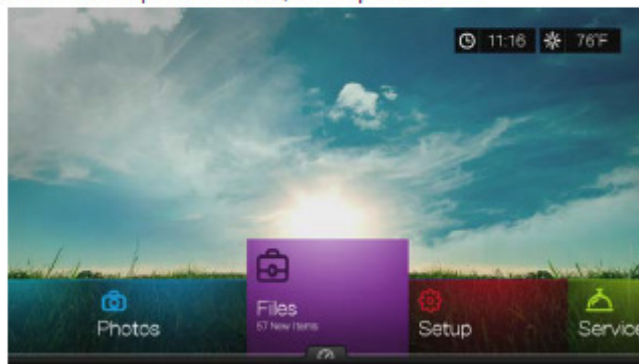
254. WD-Manual also teaches and discloses a silo that represents a source.

For example, discloses using a remote control to display a home screen having

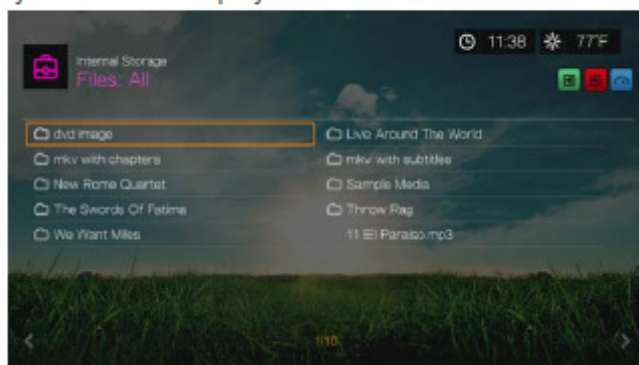
panels that provide access to a representation of a file system and information associated with the file system (e.g., multimedia files in the file system):

Files Display

1. Navigate to the Home | Files menu, then press **OK**.



2. The screen displays all available media files and folders in the media center's local drive by default. The display is in list view.



3. Locate a file you want to play.
 - To play a single file, select the file from the list or by navigating through the folder structure, then press **OK**.
 - Follow the instructions under "Watching Video" on page 36, "Playing Music" on page 48, or "Viewing Photos" on page 55.
 - To find files on a network share or media server, follow the instructions in "Accessing Media Content from the Network" on page 70.

Ex.1006, pg. 62.

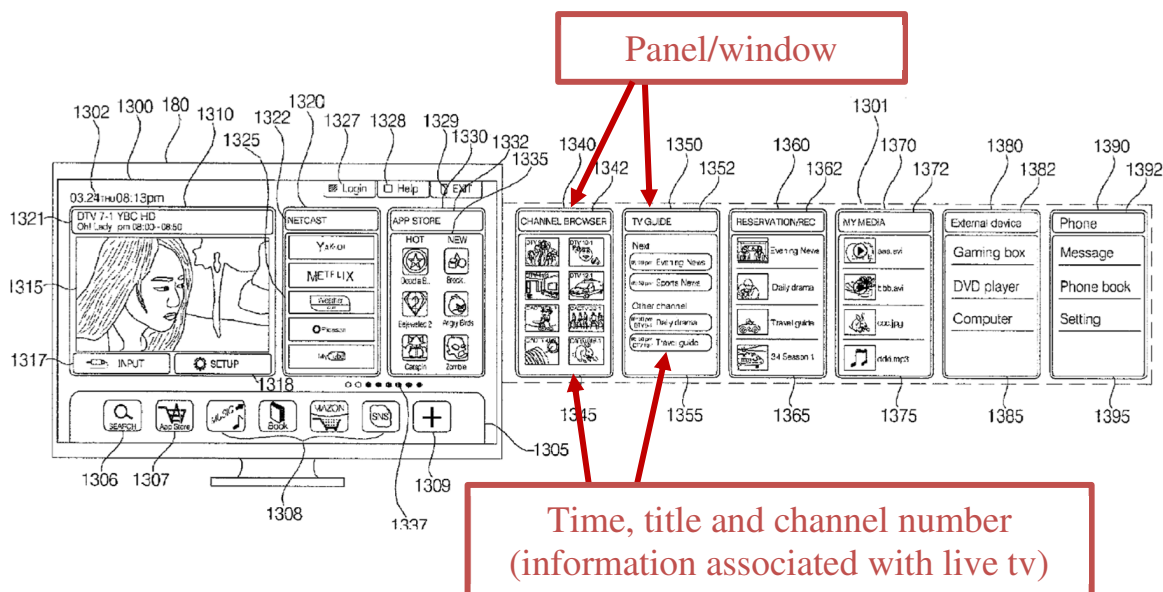
- "Application":

255. The '254 patent states, for purposes of a "silo," that an application is a software service, such as live tv or video on demand. '254 patent, 5:65-67.

256. Kim discloses using a remote control to display a home screen having panels providing access to a representation of “live broadcasting, such as a conventional broadcasting service”:

The service control manager 709 may manage selection and control services. For example, if a user selects live broadcasting, such as a conventional broadcasting service, the service control manager may select and control the service using Internet Group Management Protocol (IGMP) or Real-Time Streaming Protocol (RTSP). If the user selects Video on Demand (VoD), the service control manager 709 may select and control the service.

Ex.1005, [0063].



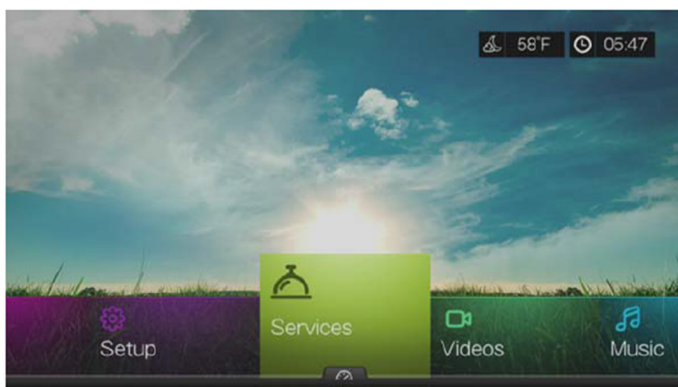
Ex.1005, Fig. 19 (annotated).

257. WD-Manual also teaches and discloses a silo that represents an application (e.g., software service), such as video on demand. For example, WD-

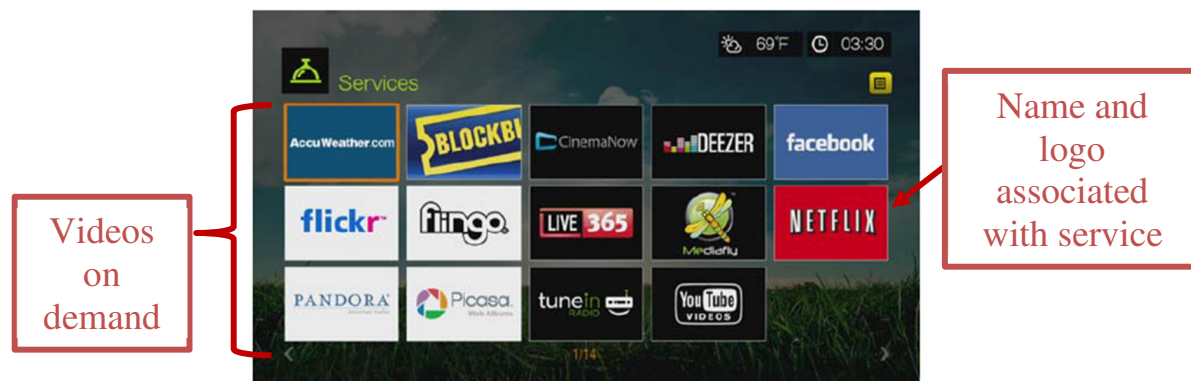
Manual discloses using a remote control to display a home screen having panels providing access to a representation of video on demand service (e.g., Netflix) and information associated with this service (e.g., name and logo):

To access Internet Media:

1. Navigate to the Home | Services menu bar and press **OK**.



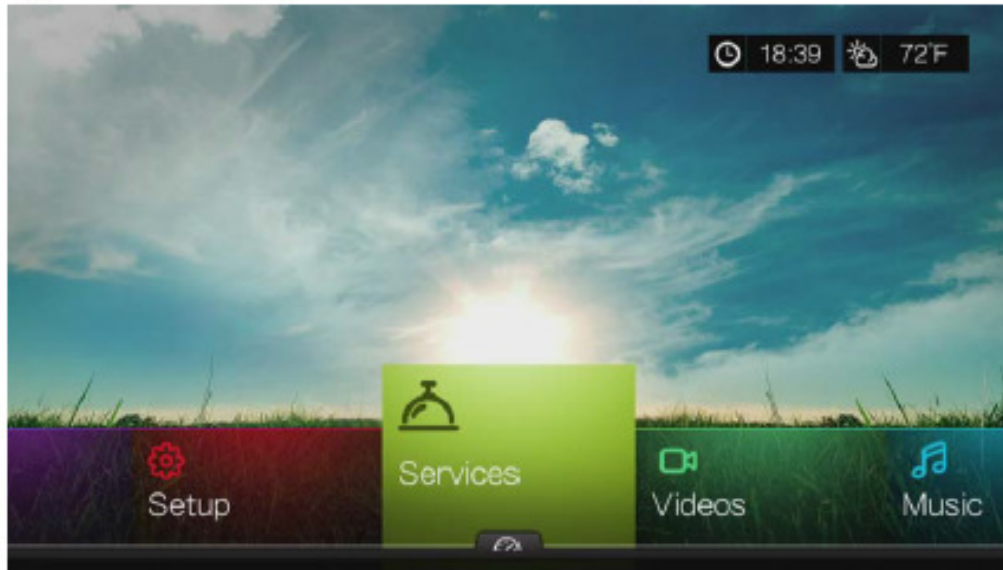
2. The list of Internet services display in alphabetical order. Press ◀/▶ to make a selection, then press **OK**.



Ex.1006, pg. 79 (annotated).

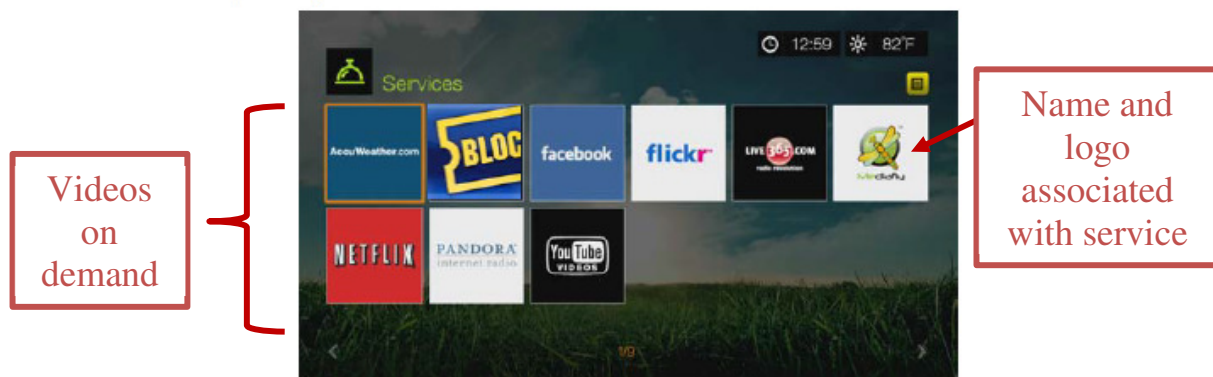
To access Internet Media:

1. Navigate to the Home | Services menu bar and press **OK**.



Ex.1006, pg. 76.

2. The list of Internet services display in alphabetical order. Press ◀/▶ to make a selection, then press **OK**.



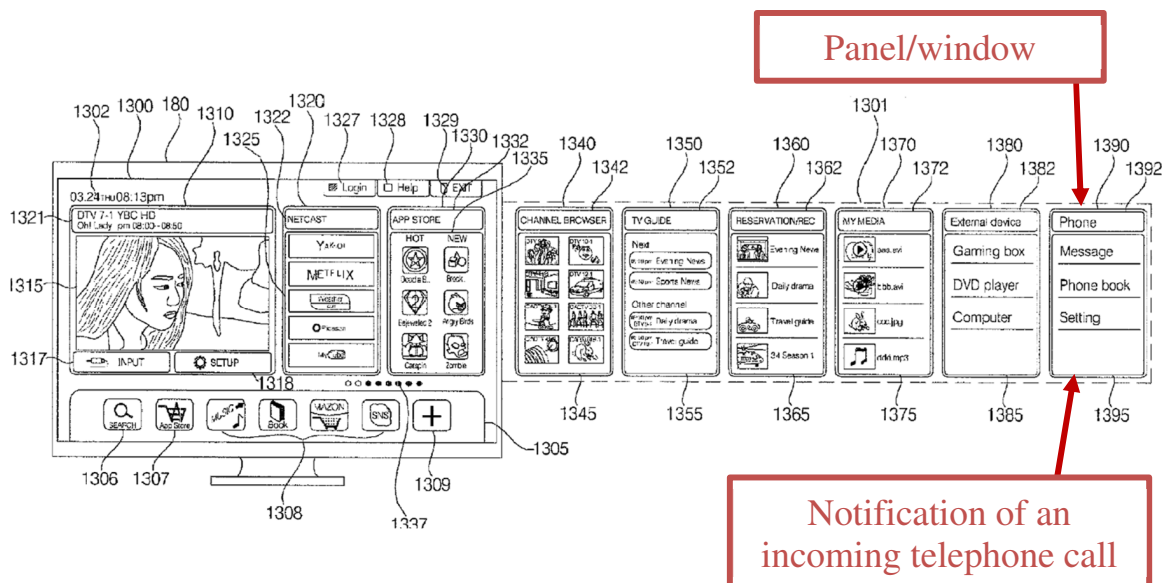
Ex.1006, pg. 77 (partial and annotated).

- *“notifications...and information associated therewith”*

258. Kim further teaches that the home screen provides access to panels displaying notifications and information associated with the notifications. For example, Kim teaches that messages and telephone calls can be displayed and access on the home screen:

The card object 1390 may display call-related information and may include a card object name 1392 (PHONE) and a call-related list 1395. The call-related list 1395 may be a listing related to calls placed or received from a portable phone, a computer, or the image display apparatus 100 capable of placing calls. For instance, the call-related list 1395 may include a message item, a phone book item, or a setting item. **Upon receipt of an incoming call at the portable phone,** the computer, or the image display apparatus 100, **the call-related card object 1390 may be automatically displayed in the card object area of the display 180. If the card object 1390 is already displayed on the display 180, it may be highlighted or otherwise distinguished from the other card objects.**

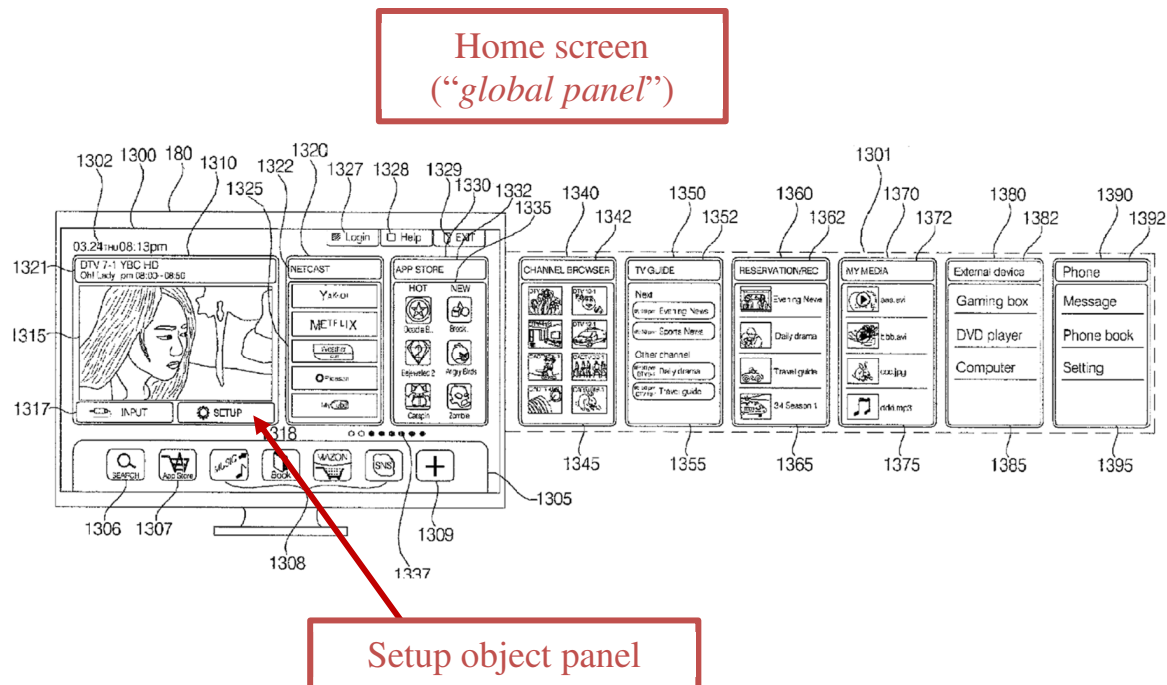
Ex.1005, [0211].



Ex.1005, Fig. 19 (annotated).

- *“web browser system settings...and information associated therewith”*

259. Kim further teaches that the home screen provides access to a panel that provides access to web browser system settings and information associated with the settings. Kim teaches that the home screen includes a panel for the setup object:



Ex.1005, Fig. 19 (annotated).

260. The setup object is used to set any “appropriate setting” on the television:

The setup object 1318 may be used to set various settings of the image display apparatus 100, such as video settings, audio settings, screen settings, reservation settings, setting of the pointer 205 of the remote controller 200, network settings, or another appropriate setting for the image display apparatus 100.

Ex.1005, [0200].

261. Further, one aspect of Kim’s television that can be configured is web browsing:

Furthermore, **because the image display apparatus may be connected to the Internet, it may be configured to provide various functions including e-mail, web browsing, online**

banking, gaming, or another appropriate type of online activity by connecting directly to the Internet or a computer having Internet access. **Moreover, to implement these functions, the image display apparatus may operate based on a standard general purpose Operating System (OS).**

Ex.1005, [0282].

262. Accordingly, in view of these teachings, a POSITA would recognize and understand that Kim's home screen that displays a setup object, where one of the functions of the television includes web browsing, provides access to the web browser system settings and information associated with those settings.

263. Thus, Kim's method of using a remote control with a home key that, when selected, displays the home screen having (i) panels that provide access to representations of external devices, live tv, and content providers (each, a silo), (ii) a panel that provides access to incoming phone call-related information (notifications), and (iii) a panel that provides access to web browser system settings, further in view of WD-Manual's teaching of pressing a Home button on a remote control to display a home screen with panels that provide access to representations of a NAS device, file system, and videos on demand service, renders obvious *"a global panel button that, when selected, provides the user, via one or more panels or windows displayed by the television screen, with access to one or more of silos, notifications, a web browser system settings, and information associated therewith."*

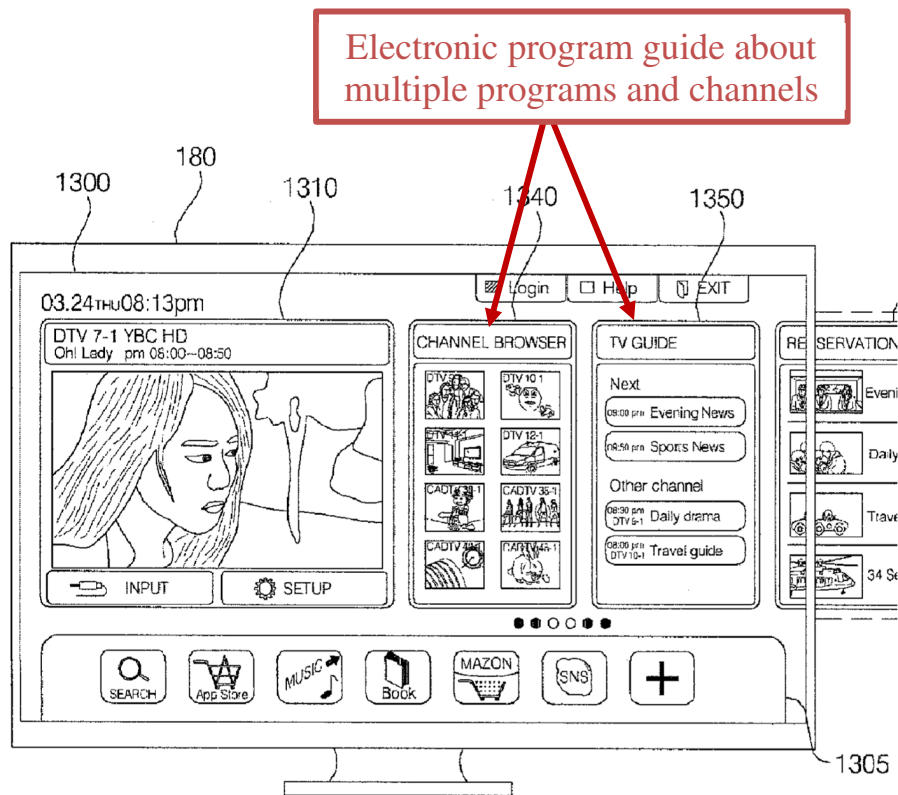
6. Claim 2

[2.0] *The method of claim 1,*

264. *See claim 1.*

[2.1] *wherein the EPG information corresponds to multiple programs and/or channels, wherein the EPG information comprises, for each program, airtime, program name, program channel, and program description.*

265. Kim discloses that the electronic program guide information corresponds to multiple programs and channels:



Ex.1005, Fig. 22 (annotated).

266. Kim further describes that the electronic program guide information comprises, for each program, the channel number, channel name, title, airtime, and

related EPG information:

The information object 1321 that displays information related to the broadcast image 1315 may include **a channel number (DTV7-1), a channel name (YBC HD), the title of a broadcast program (“Oh! Lady”), and an airtime (8:00-8:50 PM)** for the broadcast program. Therefore, the **user may readily obtain information regarding the displayed broadcast image 1315** through the information object 1321. Moreover, **if the user selects the information object 1321, related EPG information may be displayed on the display 180.**

Ex.1005, [0199].

267. A POSITA would have found it obvious that such information could also be readily obtained for the channels and programs presented in card objects 1340 and 1350 to better inform the user when selecting a channel or program for viewing.

268. Accordingly, the electronic program guide of Kim that includes information that corresponds to multiple programs and channels, where the information includes, for each program, the airtime, the title of the program, the channel number and name for the program, and related information, renders obvious “*wherein the EPG information corresponds to multiple programs and/or channels, wherein the EPG information comprises, for each program, airtime, program name, program channel, and program description.*”

7. Claim 3

[3.0] The method of claim 1,

269. See claim 1.

[3.1] *wherein each of the digits are selected using one or more arrow keys and a select button and*

270. Kim discloses a remote control that has a plurality of buttons with which the user can enter commands:

The user input device 235 may include a keypad, a plurality of buttons, a touchpad and/or a touch screen. The user may enter commands to the image display apparatus 100 by manipulating the user input circuit 235. If the user input circuit 235 includes a plurality of hard buttons, the user may input various commands to the image display apparatus 100 by activating the hard buttons. Moreover, if the user input circuit 235 includes a touch screen displaying a plurality of soft keys, the user may input various commands to the image display apparatus 100 by touching the soft keys on the display 180. The user input device 235 may also include various input tools other than those set forth herein, such as a scroll key, a jog wheel, or another appropriate user input device.

Ex.1005, [0175].

271. As discussed in connection with [1.3], the teachings of Kim and Bae render obvious selecting digits using one or more “arrow keys” or “left and right keys.”

272. Kim also discloses a remote control that has arrow keys and an OK key:

While FIGS. 15 and 16 show that a desired application may be selected by moving the pointer 205 using the remote controller 200, the application may be selected in many other ways. For

example, the user may select a specific application by moving a cursor around the display 180 using **dedicated keys (e.g., arrow keys and an OK key) on the remote controller 200**. In another example, if the remote controller 200 equipped with a touch pad, the pointer 205 may be controlled using the touch pad. **Accordingly, the user may select a specific item using the pointer 205 and various types of input devices.**

Ex.1005, [087].

273. And as explained above with respect to element [1.2], the '254 patent equates an "OK" button with being a "select" button:

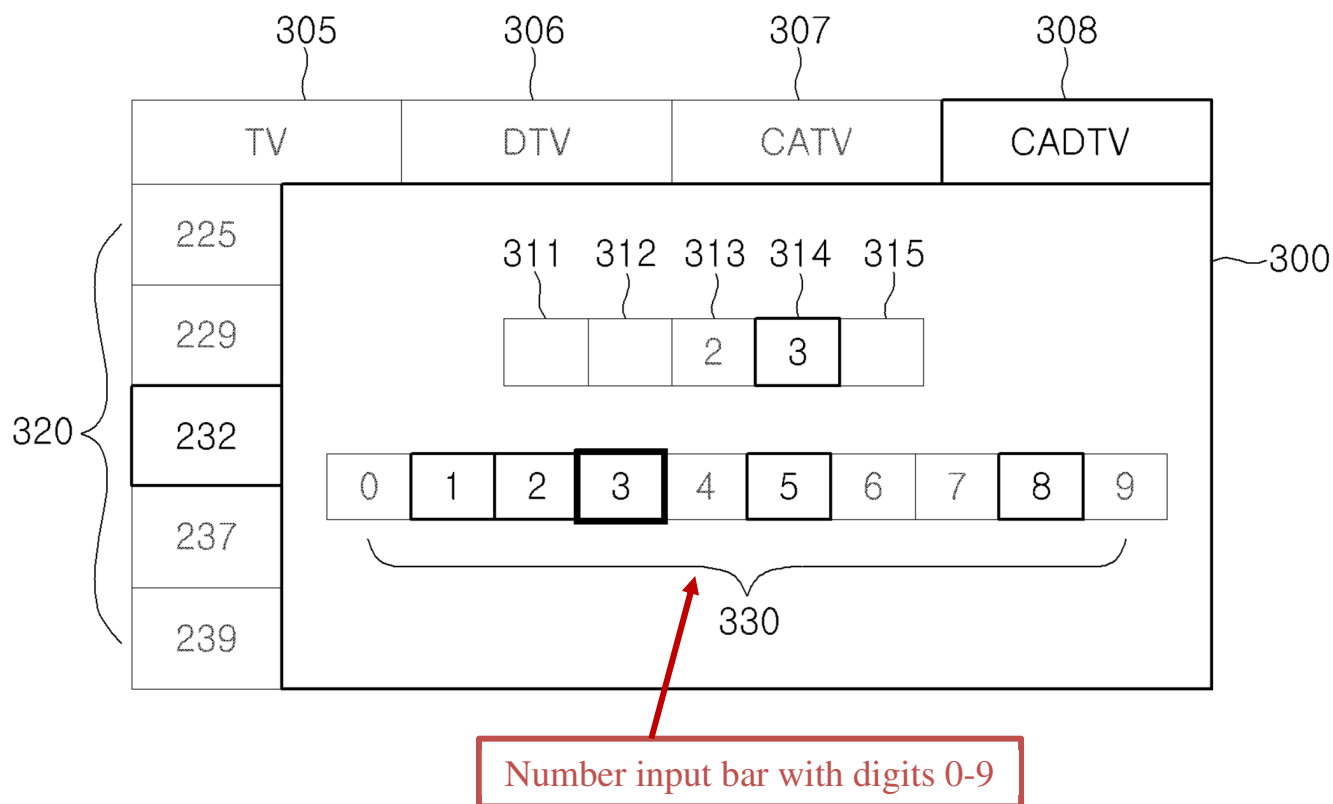
A handheld remote control can be provided to enable user interaction with the Intelligent TV 100. An exemplary handheld remote control is shown in FIGS. 7-9. **The remote control 700 can include one or more of, but is not limited to, . . . a D-pad 760 (which includes north, east, west, and south directional arrows to navigate among displayed images and/or move between levels of an application's or object's hierarchy such as application view navigation, panel navigation, and collection navigation), an OK (or select) button 764 (to select a highlighted displayed image** (such as displayed speed control, rewind, forward, play, and pause objects and/or objects on menu bar or in a menu box) and/or navigate down a hierarchy of any displayed image or object(s))

'254 patent, 22:56-23:67.

274. Thus, Kim's teaching of arrow keys and an OK key on its remote control teaches the claimed "*arrow keys and a select button,*" respectively.

275. A POSITA would have found it obvious that a user could use Kim's arrow keys and OK key to navigate to and select the digits displayed on Bae's

input bar where Bae already teaches using left and right keys:



Ex.1007-8, Fig. 3 (annotated).

The channel search screen 300 is displayed divided into categories from which channels for each of TV 305, DTV 306, CATV 307, and CADTV 308 can be selected depending on the broadcast reception status. In addition, **the numbers 0 to 9 are displayed in the channel number selection window 330 for channel search in each category; for each number, only selectable numbers are activated and displayed so that the user can input the corresponding number using the left and right keys** or number keys.

Ex.1007-8, [0023].

276. In this manner, Kim's OK key would function as the claimed "application panel button" when being used with respect to a selected application

icon and would function as the claimed “*select button*” when Bae’s input bar is displayed on the television.

277. Second, the combined teachings of Kim, Bae, and WD-Manual render obvious element [3.1] because WD-Manual discloses a remote control that uses navigation buttons (arrows keys) and an “OK” button (e.g., a select button as contemplated by the ’254 patent) to navigate the user interface of a display device:

Remote Control



CAUTION: Do not expose the batteries or the remote control with batteries installed to excessive heat (direct sunlight, fire, etc.).

1. Infrared transmitter
2. POWER
3. Subtitle
4. PREV (track), STOP, NEXT (track)
5. Back (last screen)
6. Navigation buttons, OK
7. Previous Page
8. MUTE
9. Alpha-numeric keys
10. SEARCH
11. HOME
12. Audio
13. REV, PAUSE/PLAY, FF
14. Options
15. Next Page
16. Setup
17. Shortcut/function keys
18. EJECT (safe removal of attached storage)



Arrow keys

Select button

Ex.1006, pg. 11 (annotated).

278. A POSITA would have found it obvious that implementing WD-

Manual's navigation buttons (*arrow keys*) and OK button (*select button*) in Kim's remote control to select the digits displayed on Bae's input bar.

279. According, Kim's teaching of controlling a television with the arrow keys and OK button of a remote control, in view of Bae's technique of selecting digits 0-9 from a displayed number input bar using left and right keys, further in view of WD-Manual's teaching of using a remote control's arrows keys and OK button renders obvious "*wherein each of the digits are selected using one or more arrow keys and a select button.*"

[3.2] *wherein the information panel comprises one or more of identify the selected application, provide a description of the functionality of the selected application, user ratings and/or degree of other user downloading of the selected application, an option to launch, remove, update, and add to favorites the selected application, and provide a listing of selectable links of other (not yet downloaded) recommended applications that provide similar functionality to the selected application.*

280. Element [3.2] uses "one or more" with respect to "one or more of identify the selected application, provide a description of the functionality of the selected application, user ratings and/or degree of other user downloading of the selected application, an option to launch, remove, update, and add to favorites the selected application, and provide a listing of selectable links of other (not yet downloaded) recommended applications that provide similar functionality to the selected application." Accordingly, for purposes of this limitation, any teaching of an item in this list alone or together with any of the other items in the list meets the

“one or more” requirement. As discussed below, the prior art teaches at least “identify the selected application,” “provide a description of the functionality of the selected application,” and “an option to launch, remove, update and add to favorites the selection application.”

281. As discussed in connection with element [1.5.3], Kim discloses that the information panel displays an image that identifies the application and other information about the application:

In addition, **when the user selects or focuses on a specific application, an image that corresponds to the application may be displayed in the third area 1770. If the user selects an icon, an image displayed on the third area 1770 may be replaced with information about the application corresponding to the selected icon.** Moreover, when another icon is selected, or if a hidden first icon is selected, the displayed images in the corresponding list (Weekly Hot list 1820, New list 1830, or Top Free list 1840) as well as the third area 1770 may be updated accordingly.

Ex.1005, [0247].

282. Kim discloses that applications can be executed (“*launch an application*”):

In an embodiment of the present disclosure, when a game application is executed in the image display apparatus 100, the network interface 130 may transmit data to or receive data from a user terminal connected to the image display apparatus 100 through a network.

Ex.1005, [0083].

283. To the extent that Kim does not expressly disclose a user interface element in the information panel that enables the user to launch the application from the information, Kim discloses that such a modification to its information panel would have been obvious.

284. For example, Kim teaches that it was known to control execution of an application through “various UIs”:

The controller 170 may control installation and execution of an application downloaded from the external network along with various UIs. Also, the controller 170 may control display of an image related to the executed application on the display 180, upon user selection.

Ex.1005, [0100].

285. Kim also teaches that it was desirable to have a selected application be “easily selected and executed” when accessing the application list. Ex.1005, [0184].

286. Accordingly, because Kim teaches an information panel displaying an already selected application, and information about the application, and Kim teaches that it would be desirable easily execute the application, it would have been obviously to a POSITA to include the option for the user to launch the already selected application from the information panel.

287. Further, as also discussed in connection with element [1.5.3], Kim discloses that the information panel displays an image that identifies the

application and “information about the application corresponding to the selected icon:

In addition, when the user selects or focuses on a specific application, an image that corresponds to the application may be displayed in the third area 1770. If the user selects an icon, an image displayed on the third area 1770 may be replaced with information about the application corresponding to the selected icon. Moreover, when another icon is selected, or if a hidden first icon is selected, the displayed images in the corresponding list (Weekly Hot list 1820, New list 1830, or Top Free list 1840) as well as the third area 1770 may be updated accordingly.

Ex.1005, [0247].

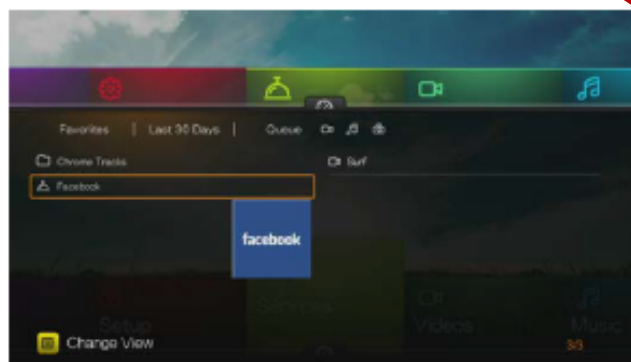
288. And WD-Manual discloses that an application panel comprising an information panel regarding a selected service icon is displayed when the “Options” button is pressed:

Adding a Service to Favorites

You can add a Service to your Favorites so that it's quickly available via the dashboard when you are in the Home screen or other screens (when you press  or navigate to  in certain screens then press **OK**).

1. In the Services screen, press ◀/▶ to select a service you want to favorite, then press **Options**.
2. Press **OK** to list the service in the dashboard under Favorites

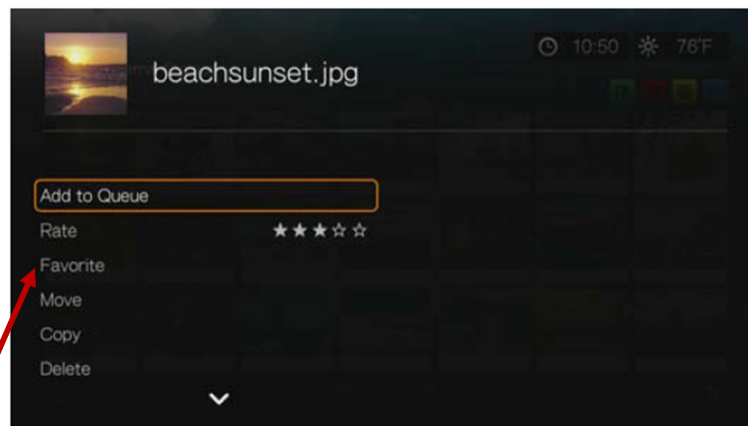
2. Press
Options
button



1. Select a
service

Ex.1006, pg. 77 (partial and annotated).

Application panel with multiple information panels is displayed



Information panel includes option to add the selected service as a favorite (*regarding a selected application icon*)

Ex.1006, pg. 57 (annotated).

289. Therefore, the combination of Kim and WD-Manual renders obvious “wherein the information panel comprises one or more of identify the selected application, provide a description of the functionality of the selected application, user ratings and/or degree of other user downloading of the selected application, an option to launch, remove, update, and add to favorites the selected application, and provide a listing of selectable links of other (not yet downloaded) recommended applications that provide similar functionality to the selected application.”

8. Claim 4

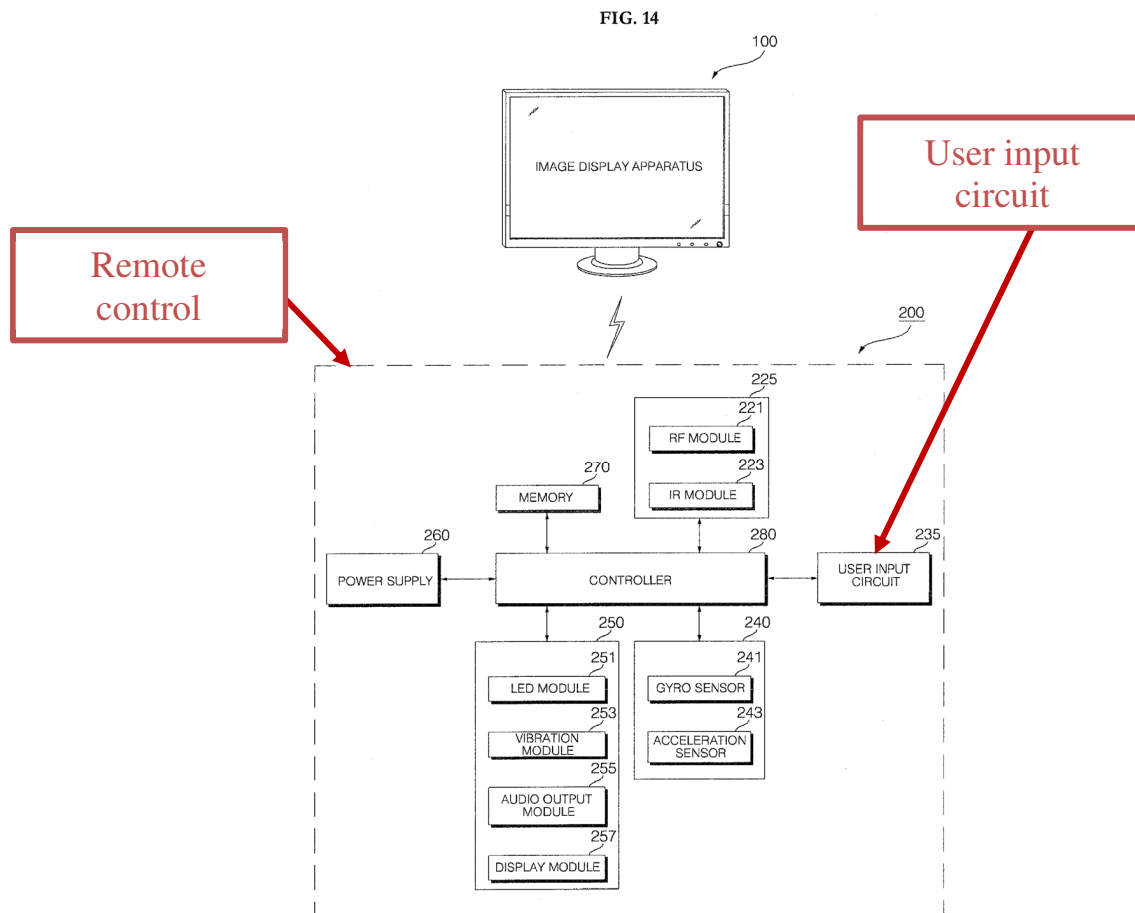
[4.0] *The method of claim 1,*

290. *See [1.0].*

[4.1] *wherein the remote control does not have a key corresponding to each of the digits.*

291. First, Kim renders obvious element [4.1] because it teaches a remote control that includes input mechanisms other than keys corresponding to the digits 0-9.

292. For example, Kim discloses a remote control that has a user input circuit:



Ex.1005, Fig. 14 (annotated).

293. Further, Kim discloses that the user input circuit (also referred to as user input device 235) of the remote control may include one or more of a variety of input mechanisms:

The user input device 235 may include a keypad, a plurality of buttons, a touchpad and/or a touch screen.

The user may enter commands to the image display apparatus 100 by manipulating the user input circuit 235. If the user input circuit 235 includes a plurality of hard buttons, the user may input various commands to the image display apparatus 100 by activating the hard buttons. Moreover, if the user input circuit 235 includes a touch screen displaying a plurality of soft keys, the user may input various commands to the image display

apparatus 100 by touching the soft keys on the display 180. **The user input device 235 may also include various input tools other than those set forth herein, such as a scroll key, a jog wheel, or another appropriate user input device.**

Ex.1005, [0175].

While FIGS. 15 and 16 show that a desired application may be selected by moving the pointer 205 using the remote controller 200, the application may be selected in many other ways. For example, the user may select a specific application by moving a cursor around the display 180 using dedicated keys (e.g., arrow keys and an OK key) on the remote controller 200. In another example, if the remote controller 200 equipped with a touch pad, the pointer 205 may be controlled using the touch pad. Accordingly, **the user may select a specific item using the pointer 205 and various types of input devices.**

Ex.1005, [0187].

FIG. 17 illustrates a Web page displayed on the display 180. Specifically, FIG. 17(a) illustrates a Web page 710 with a search window 720 displayed on the display 180. **A keyword or search string may be input to the search window 720 using** a keypad displayed on the display 180, local keys provided on the display apparatus, or **character keys provided on the remote controller 200.**

Ex.1005, [0188].

The user may enter an alphanumeric user ID and password into the ID input window 820 and the password input window 825. The user ID and password may be inputted using a keypad displayed on the mail service page 810, character keys provided as local keys, or character keys provided on the remote controller

200. Hence, the user may login to an online mail service using the image display apparatus.

Ex.1005, [0190].

294. A POSITA would understand that Kim's teaching of a "keypad" teaches alphanumeric keys, including keys that correspond to digits (e.g., digits 0-9). Kim, however, further discloses that the various input tools, including the keypad, are optional. For example, the input device "may include a keypad, a plurality of buttons, a touchpad and/or a touch screen." Ex.1005, [0175]. Further, the user input device might be something "other than those set forth, such as a scroll key, a jog wheel, or another appropriate user input device."

295. Accordingly, a POSITA would recognize and understand that Kim teaches examples in which the remote control does not have a keypad (i.e., does not include keys corresponding to digits 0-9), such as the example in which the user input device is a jog wheel. As another example, Kim teaches an example in which the user input device of the remote control is a touchpad. Kim also teaches an example in which the user input device of the remote control is a jog wheel. In each of these example, the remote control of Kim would not have a key corresponding to each of the digits that range from 0-9 but would instead, include a different type of input device or input tool that a user can manipulate to select the digits displayed on Bae's input bar (as described above with respect to element [1.2] and [1.3]).

296. Still further, a POSITA would understand that Kim's teaching of "a plurality of buttons" and its teaching of "character keys" on its remote control separate from its teaching of "a keypad" indicates that buttons or keys other than numeric buttons corresponding to the digits 0-9 could be included on the remote control. For example, a POSITA would find it obvious that Kim's remote control could include character keys used as shortcut/function keys, where these character keys are non-numeric keys such as letter keys (e.g., A-Z).

297. Thus, a POSITA would have found it obvious that Kim's remote control including a "plurality of buttons" and/or "character keys" could include shortcut/function keys in the form of letter keys, such as the A, B, C, and D buttons taught in WD-Manual. *See* Ex.1006, pgs. 26, 138.

298. Further, to the extent element [4.1] encompasses a remote control with keys for only a portion of and not all of the digits 0-9 (e.g., fewer than 10 numeric keys for the digits range 0-9), Kim and WD-Manual render this element obvious because a POSITA would have found it obvious that the "plurality of buttons" and/or "character keys" of Kim's remote control could include some numeric keys for use as shortcut/function keys (e.g., only 1, 2, and 3 buttons, or only 1, 2, 3, and 4 buttons, etc.) in a manner similar to how WD-Manual's remote control includes only 4 letters (e.g., A, B, C, and D) of the full range of the alphabet A-Z. Accordingly, in view of the combined teachings of Kim and WD-Manual, it would

have been obvious for a POSITA to include only a few numeric keys for use as shortcut/function keys as opposed to a key for each digit 0-9.

299. Moreover, POSITAs were implementing remote controls without numeric keys or numeric keys for all digits. *See, e.g.,* Ex.1016, Fig. 3, [0051] (“remote control devices may typically avoid having dedicated alphanumeric inputs,” but such devices could still have “more than 8 or 10 inputs.”).

300. Accordingly, as evidenced by Mock, a POSITA would recognize that a remote control could avoid having numeric buttons corresponding to digits 0-9 (as taught by Kim) while still including additional inputs (e.g., programmable, assignable buttons, as taught by WD-Manual).

301. Thus, the example of Kim’s remote control that do not have a key corresponding to each of the digits renders obvious “*wherein the remote control does not have a key corresponding to each of the digits.*”

302. Further, Kim’s remote control with a “plurality of buttons” and/or “character keys” in light of WD-Manual’s teaching of using only a few keys out of the possible range of alphanumeric keys together render obvious “*wherein the remote control does not have a key corresponding to each of the digits.*”

9. Claim 8

[8.0] A television, comprising,

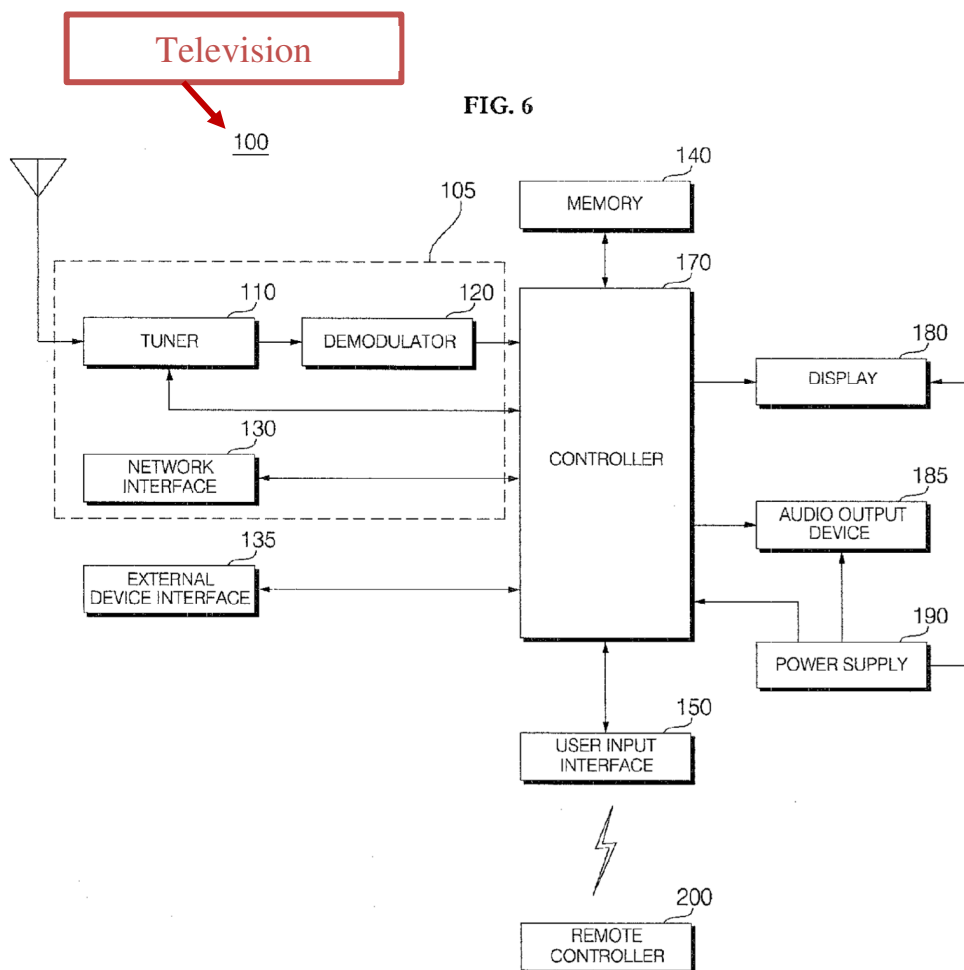
303. To the extent that the preamble is limiting, the combination of Kim,

WD-Manual, and Bae render obvious “[a] television.” See [1.0].

304. Further, Kim discloses an image display apparatus (*television*):

FIG. 6 is a block diagram of the image display apparatus of FIG. 1 or 2 according to another embodiment of the present disclosure. Referring to FIG. 6, the image display apparatus 100 may include a broadcasting receiver 105, an external device interface 135, a memory 140, a user input interface 150, a controller 170, a display 180, an audio output circuit 185, a power supply 190, a camera module, or another appropriate component based on the application of the display apparatus 100. The broadcasting receiver 105 may include a tuner 110, a demodulator 120 and a network interface 130. As needed, the broadcasting receiver 105 may be configured so as to include only the tuner 110 and the demodulator 120 or only the network interface 130.

Ex.1005, [0065].



Ex.1005, Fig. 6 (annotated).

305. Accordingly, the image display apparatus of Kim, along with the teachings of Bae and WD-Manual, render obvious a “television.”

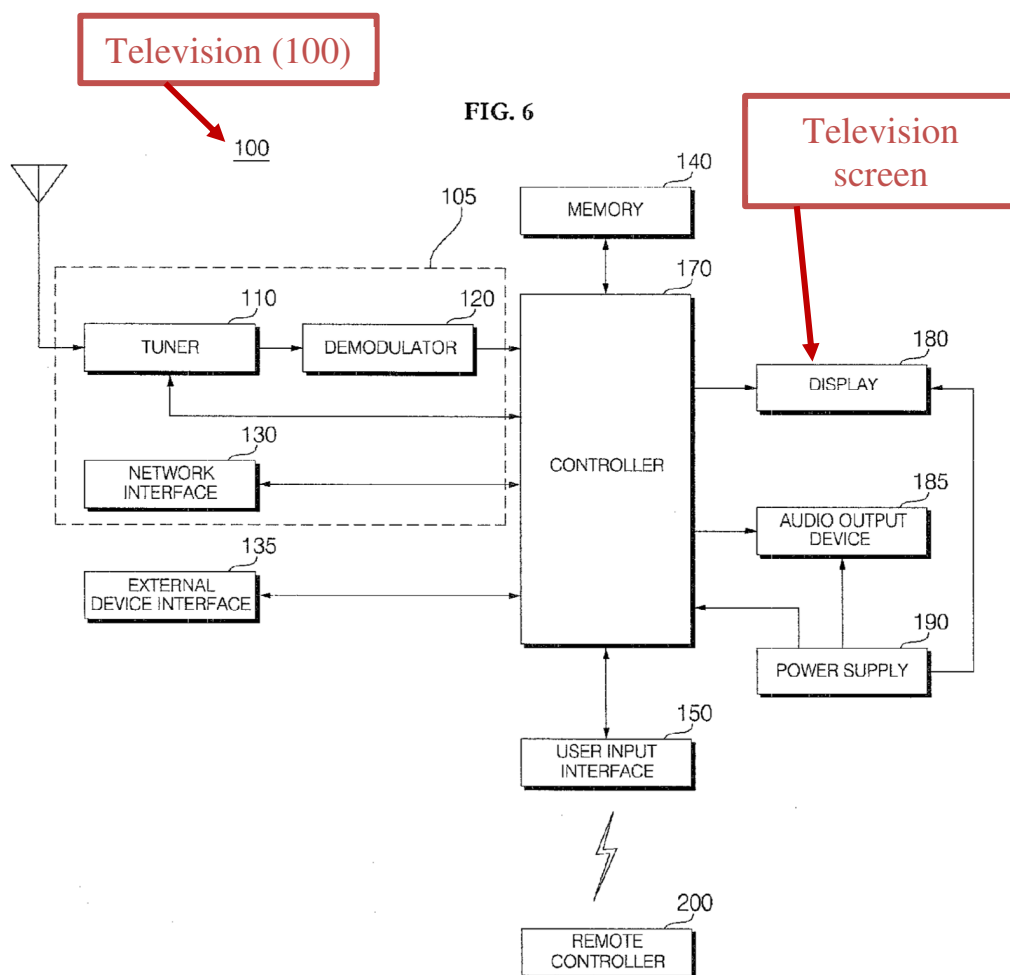
[8.1] *a television screen;*

306. Kim discloses a television screen:

The controller 170 may control the display 180 to display images. For instance, the controller 170 may control the display 180 to display a broadcast image received from the tuner 110, an external input image received through the external device interface 135, an image received through the network interface 130, or an image stored in the memory 140. The image displayed

on the display 180 may be a Two Dimensional (2D) or Three-Dimensional (3D) still image or moving picture.

Ex.1005, [0092].



Ex.1005, Fig. 6 (annotated).

307. Accordingly, Kim's display 180 (e.g., that displays two dimensional and three dimensional images and moving pictures) renders obvious a "*television screen.*"

[8.2] *at least one of an infrared and radio frequency module configured to*

receive wirelessly requests from a remote control of a user, the requests comprising a selected channel or program from a displayed listing; and

308. *See [1.1].*

[8.3] *a microprocessor executable application framework configured to:*

309. *See [1.2].*

[8.4] *receive a request to change a programming channel, display, on the television screen, an on screen channel changer, the on screen channel changer comprising electronic program guide (“EPG”) information and a number input bar comprising digits, wherein the digits range from 0 to 9,*

310. *See [1.2].*

[8.5] *receive, from the remote control and using the on screen channel changer, a channel selection of a user based on digits in the number input bar, wherein the user selects the digits from the number input bar using non-numeric keys on the remote control, and*

311. *See [1.3]*

[8.6] *change to the selected channel,*

312. *See [1.4]*

[8.7] *wherein the remote control comprises:*

313. *See [1.5]*

[8.7.1] *a media center button that, when selected, provides, by the television screen, displayed information regarding one or more of groupings of music, groupings of videos, groupings of photographs, internal computational devices, and external computational devices, the computational devices comprising one or more of personal computers, laptops, tablet computers, wireless phones, and removable computer readable media;*

314. *See [1.5.1]*

[8.7.2] *an application center button that, when selected, provides, by the*

television screen, displayed information regarding pre-installed and downloaded software applications, wherein the downloaded software applications comprise one or more of a web browser, settings control, and content search algorithms;

315. *See [1.5.2]*

[8.7.3] an application panel button that, when selected, displays, by the television screen, an application panel, wherein the application panel comprises an information panel regarding a selected application icon; and

316. *See [1.5.3]*

[8.7.4] a global panel button that, when selected, provides the user, via one or more panels or windows displayed by the television screen, with access to one or more of silos, notifications, a web browser, system settings, and information associated therewith.

317. *See [1.8].*

10. Claim 9

[9.0] The television of claim 8,

318. *See claim 8.*

[9.1] wherein each of the digits are selected using one or more arrow keys and a select button,

319. *See [3.1].*

[9.2] selected is associated with a pre-installed or previously downloaded application icon, and

320. *See [1.5.2] and [1.5.3]*

[9.3] wherein the information panel comprises one or more of identify the selected application, provide a description of the functionality of the selected application, user ratings and/or degree of other user downloading of the selected application, an option to launch, remove, update, and add to favorites the selected application, and provide a listing of selectable links of other (not yet downloaded) recommended applications that provide similar functionality to the

selected application.

321. See [3.2].

11. Claim 10

[10.0] *The method of claim 8,*

322. See [8.0].

[10.1] *wherein the remote control does not have a key corresponding to each of the digits.*

323. See [4.1].

12. Claim 13

[13.0] *The television of claim 8,*

324. See claim 8.

[13.1] *wherein the EPG information corresponds to multiple programs and/or channels, wherein the EPG information comprises, for each program, airtime, program name, program channel, and program description,*

325. See [2.0].

[13.2] *wherein the remote control comprises a media center button that, when selected, provides, by the television screen, displayed information regarding groupings of music, videos, and/or photographs, and/or internal and external computational devices, the computational devices comprising one or more of personal computers, laptops, tablet computers, wireless phones, and removable computer readable media.*

326. See [1.5.1].

13. Claim 14

[14.0] *A tangible and non-transient computer readable medium, comprising microprocessor executable instructions that, when executed, are configured to perform operations comprising:*

327. To the extent that the preamble is limiting, *see* [1.2].

[14.1] *instructions to receive, from a remote control of a user, a request to change a programming channel;*

328. *See* [1.1].

[14.2] *instructions to display, on a television screen, an on screen channel changer, the displayed on screen channel changer comprising electronic program guide (“EPG”) information and a number input bar comprising digits, wherein the digits range from 0 to 9;*

329. *See* [1.2].

[14.3] *instructions to receive, from the remote control, a channel selection based on digits selected by a user using the remote control and the number input bar of the on screen channel changer, wherein the user selects the digits using non-numeric keys of the remote control; and*

330. *See* [1.3].

[14.4] *instructions to change to the selected channel,*

331. *See* [1.4].

[14.5] *wherein the remote control comprises:*

332. *See* [1.5].

[14.5.1] *a media center button that, when selected, provides, by the television screen, displayed information regarding one or more of groupings of music, groupings of videos, groupings of photographs, internal computational devices, and external computational devices, the computational devices comprising one or more of personal computers, laptops, tablet computers, wireless phones, and removable computer readable media;*

333. *See* [1.5.1].

[14.5.2] *an application center button that, when selected, provides, by the television screen, displayed information regarding pre-installed and downloaded software applications;*

334. *See* [1.5.2].

[14.5.3] *an application panel button that, when selected, displays, by the television screen, an application panel; and*

335. *See* [1.5.3].

[14.5.4] *a global panel button that, when selected, provides the user, via one or more panels or windows displayed by the television screen, with access to one or more of silos, notifications, a web browser, system settings, and information associated therewith.*

336. *See* [1.5.4].

14. Claim 15

[15.0] *The computer readable medium of claim 14,*

337. *See* claim 14.

[15.1] *wherein the EPG information corresponds to multiple programs and/or channels, and wherein the EPG information comprises, for each program, airtime, program name, program channel, and program description.*

338. *See* [2.0].

15. Claim 16

[16.0] *The computer readable medium of claim 14,*

339. *See* claim 14.

[16.1] *wherein the downloaded software applications comprise one or more of a web browser, settings control, and content search algorithms,*

340. *See* [1.5.2].

[16.2] *wherein the application panel comprises an information panel regarding a selected (pre-installed or previously downloaded) application icon*

341. *See* [1.5.3].

[16.3] and wherein the information panel comprises one or more of identify the selected application, provide a description of the functionality of the selected application, user ratings and/or degree of other user downloading of the selected application, an option to launch, remove, update, and add to favorites the selected application, and provide a listing of selectable links of other (not yet downloaded) recommended applications that provide similar functionality to the selected application.

342. See [3.2].

16. Claim 17

[17.0] The method of claim 14,

343. See [14.0].

[17.1] wherein the remote control does not have a key corresponding to each of the digits.

344. See [4.1].

B. Ground 2: Claims 6, 12 and 19 are obvious under 35 U.S.C. § 103(a) over Kim, Bae and WD-Manual, further in view of Coburn.

1. Summary of Coburn

345. Like the '254 patent, Coburn relates to “user interfaces in television receiver devices, and more particularly relates to systems and methods for providing graphical adjustment and control of numeric, alphanumeric and/or other symbol-based features provided by a television receiver device.” Ex.1009, [0001]. More specifically, Coburn relates to “a video receiver for presenting imagery on a display in response to viewer input signals provided from a remote control.” Ex.1009, [0008]; *see also id.* at [0007] (“a method is provided for selecting a

channel in a television receiver configured to present imagery on a display in response to viewer instructions transmitted from a remote control”).

346. Coburn describes displaying a keypad on a television to a user and allowing a user to make selections on the keypad by controlling a cursor via two-dimensional inputs entered via a remote control:

Generally speaking, the viewer is able to provide numeric, alpha-numeric or other symbol based inputs to a television receiver using two-dimensional or other user interface features. A keypad representing the various symbols is graphically presented on the display, and the viewer is able to interact with the keypad imagery using a cursor or other interface feature that can be moved in response to two-dimensional inputs applied at a touchpad, motion sensor or other sensor device associated with the remote control.

Ex.1009, [0016].

347. Coburn explains that the user can make inputs (e.g., via the remote control) at the keypad displayed on the television to select channels or programs and that these inputs control and adjust imagery displayed on the television:

Display processor 218 may also generate imagery 110 in response to viewer inputs received (and/or in response to instructions from command logic 205) to thereby make up a user interface that allows the viewer select channels or programs, or to perform other tasks as desired. When the viewer provides inputs at keypad 122, indicator window 126 and/or quick reference area 128, for example, display processor 218 may be operable to draw (or redraw) imagery 110 in response, and/or to present television content identified by the viewer, as appropriate. As receiver 108 receives user inputs 125 from

remote control 112, control logic 205 may direct display processor 218 to adjust any feature(s) of imagery 110 as directed by the viewer. Display processor 218 therefore directs the presentation of imagery 110 in conjunction with one or more navigation features, and adjusts the imagery 110 in response to inputs received from the viewer.

Ex.1009, [0038].

348. Coburn further explains that the inputs “can be processed in a predictive manner” to update the displayed imagery. Ex.1009, [0046]. As one example, Coburn explains that “[a]s the viewer enters the first few digits of the channel number, imagery 110 may be updated as appropriate to present channels (or other objects) that correspond to the initially-entered data.” Ex.1009, [0046].

349. With respect to the two-dimensional inputs used to move the cursor, Coburn explains that these inputs may be generated via “two-dimensional input devices” such as, for example, “touchpads, directional pads, joysticks, trackballs, sets of arrows or other buttons, and/or the like.” Ex.1009, [0025]. Coburn specifically notes that while its techniques “may be used with any sort of remote control or command equipment,” its “various embodiments may be particularly well suited for use with a remote control that includes a touchpad, directional pad, joystick, . . . and/or other feature capable of providing two-dimensional inputs to the receiver.” Ex.1009, [0017].

2. Reasons to Combine Kim, WD-Manual and Bae with

Coburn

350. In my opinion, a POSITA would have been motivated to combine the teachings of Coburn with the teachings of Kim, WD-Manual, and Bae. In particular, in my opinion, before the '254 patent, it would have been obvious, beneficial, and predictable to implement Coburn's techniques—for predictively updating the displayed imagery based on the digits entered by a user—into the television and remote control system of the Kim-WD-Manual-Bae combination.

351. As discussed above, a POSITA considering the problem purportedly identified by and purportedly solved by the '254 patent would have looked to the teachings of Kim, WD-Manual and Bae. Further, such a POSITA would have also looked to Coburn, which is analogous art with respect to the '254 patent.

352. Coburn is analogous to the '254 patent because a POSITA would understand Coburn to be from the same field of endeavor as the '254 patent, or at the very least, reasonably pertinent to the problem faced by the inventor of the '254 patent. As previously discussed above, the '254 patent purports to provide a solution to the need for “intuitive user interfaces . . . with seamless user interaction capability” for televisions. '254 patent, 1:65-66. Coburn explains that it seeks to provide a “more efficient and intuitive user interface[]” with “convenience access to numeric features (e.g., channel numbers) without using a numeric keypad.” Ex.1009, [0004], [0016]. Coburn's techniques may thus be used, for example,

where a remote control does not include a numeric keypad. Accordingly, in my opinion, a POSITA would understand that Coburn is prior art that is analogous to the '254 patent.

353. A POSITA would have been specifically motivated to apply Coburn to the Kim-WD-Manual-Bae combination. As previously discussed, the Kim-WD-Bae combination teaches a method for changing the channel displayed on a television using a remote control (e.g., that includes functionality as taught in WD-Manual) and an on screen channel changer (e.g., as taught by Kim and Bae) having a number input bar for selecting and changing channels using a remote control. *See supra* claim 1; *see also* Ex.1005, [0196], [0060], [0080], Fig. 22, Fig. 38; Ex.1007-8, [0022]-[0027], Fig. 3.

354. For example, Kim discloses updating electronic program guide information/content that is displayed based on a “search keyword” Ex.1005, [0267]-[0269]. Bae discloses an interactive display that updates as the user selects each digit. Ex.1007-8, Abstract, [0007], [0023]. As one example, Bae discloses that the input of a first digit via its channel number input bar updates the display to show only the next-order channel numbers that are “selectable” based on the first digit (the highest-order number). Ex.1007-8, [0007], [0023].

355. Coburn describes known techniques for assisting a user in searching for content when displaying virtual alphanumeric characters on a display device.

Ex.1009, [0016], [0038]. Coburn also describes updating the imagery displayed on screen “[a]s the viewer enters the first few digits of the channel number.” Ex.1009, [0046]. Coburn explains that the “imagery 110 may be updated as appropriate to present channels (or other objects) that correspond to the initially-entered data.” Ex.1009, [0046].

356. Using Coburn’s technique for updating imagery as a user enters the digits of a channel number with the Kim-Bae on screen channel changer (e.g., which includes virtual numeric characters displayed on the screen) would improve this on screen channel changer because Coburn enables the user input that is entered via a display device to “be processed in a predictive manner.” Ex.1009 [0046]. Thus, combining Coburn’s teachings with those of Kim and Bae would yield the predictable result of providing an easy and intuitive interface that allows a user to drill down to the available and selectable media content (e.g., electronic program guide content) based on the user’s entry of the first digit(s) of the channel number.

357. Additionally, a POSITA would have had a reasonable expectation of success in combining Coburn’s technique for updating imagery as a user enters the digits of a channel number with the Kim-Bae on screen channel changer in the Kim-WD-Manual combination because it would have been simply combining a known technique for filtering displayed content based on the input of digits where

each of Kim and Bae already describe updating the content that is displayed in response to user input.

358. Second, as previously discussed, the Kim-Bae on screen channel changer allows a user to use a remote control that does not have a numeric keypad to enter the digits of a channel number. Further, while Bae is generally silent with respect to how these digits may be entered into its channel number input bar, Kim describes generating input by “moving a cursor around the display 180 using dedicated keys (e.g., arrow keys and an OK key) on the remote controller.” Ex.1005, [0187]. Still further, Kim discloses that “manipulation of input device such as the [displayed] pointer 206 . . . may be controlled by a movement of the remote controller 200, a local key of the image display apparatus, a directional key on the remote controller, etc.” Ex.1005, [0223].

359. Accordingly, implementing Coburn’s remote control techniques that include a joystick to provide two-dimensional input for moving a cursor within the television and remote system of the Kim-WD-Manual-Bae combination would have been well within the capabilities of one skilled in the art and would have yielded the predictable result of allowing Kim’s pointer to be controlled via joystick. Further, combining Coburn’s joystick technique with the Kim-Bae combination would have the added benefit of further improving the usability of a remote control without a numeric keypad. For example, using a joystick would

allow a user to move a cursor to the digits of a desired channel number intuitively, easily, and quickly, without requiring the user to operate multiple arrow keys.

360. Still further, implementing Coburn's joystick technique with the Kim-Bae combination would have had a reasonable expectation of success because it would have been simply combining a known technique (e.g., moving a joystick to displace a cursor a proportional amount) with a known system that already accounts for different types of input devices for moving a cursor.

3. Claim 6

[6.0] *The method of claim 1,*

361. *See claim 1.*

[6.1] *wherein, as the user selects each digit, the application framework updates the EPG information to include only those programs and/or channels selectable from the selected digits and*

362. As discussed in connection with element [1.2], Kim discloses an application framework that supports programs and interconnects different components in the display device.

363. Kim also discloses updating the electronic guide as the user performs a search using a key positioned on the display device:

Subsequently, a search may be performed based on a keyword entered in the search window, in step S2220. The search keyword may be entered using an external input device connected to the image display apparatus 100 via the external device interface 135. Moreover, the search keyword may be

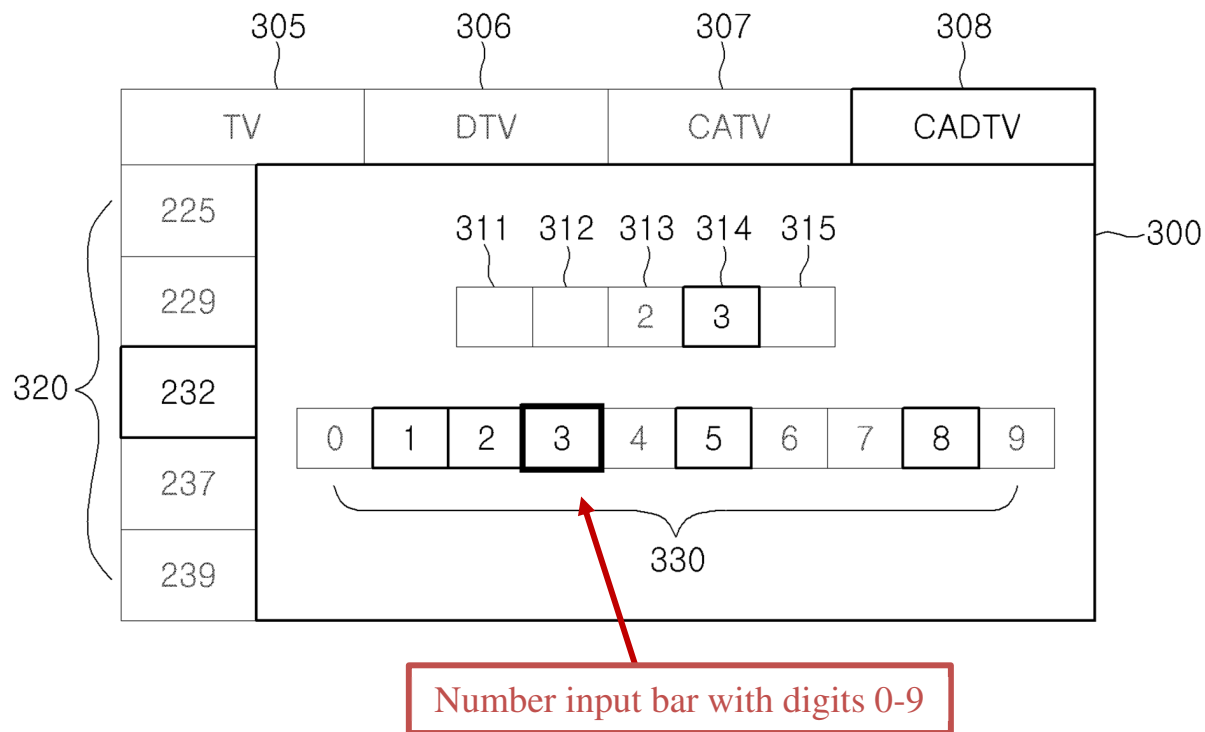
entered through a local key positioned on the display apparatus 100, or through a character key provided on the remote controller 200.

Ex.1005, [0267].

Then, a search result image that includes a plurality of objects 2310 and 2320 (as shown in FIG. 38) which correspond to the search result may be displayed, in step S2230. **Specifically, the controller 170 may perform a search based on the keyword and may display the search results on the display 180.** When the Keyword List button 2391 is selected, the displayed search result may include content which includes the entered search keyword. Moreover, when the Similar List button 2392 is selected, the displayed search result may include content which is similar to contents which includes the entered search keyword. **For example, if “Shutter Island” is entered as a search keyword, as shown in FIG. 38, and the Similar List button 2392 is selected, similar content from the same genre (e.g., thriller) may be displayed as the search result.**

Ex.1005, [00269].

364. As discussed above in [1.2], Bae discloses that the keys displayed on a display screen can be digits:

**Ex.1007-8, Fig. 3 (annotated).**

365. Bae also discloses an interactive display as the user selects each digit:

The video display device of claim 1, wherein the controller controls the display unit to display selectable channel information in a predetermined area of the display unit when inputting sequentially from the channel number of the most significant digit through the user interface unit.

Ex.1007-8, Abstract.

[A] user interface unit that sequentially receives input from the channel of the highest unit according to the displayed channel number input screen; and a control unit that controls to activate and display a selectable next-priority channel number comprising the channel number input through the user interface unit, and to perform channel switching to the selected channel.

Ex.1007-8, [0007].

The channel search screen 300 is displayed divided into categories from which channels for each of TV 305, DTV 306, CATV 307, and CADTV 308 can be selected depending on the broadcast reception status. **In addition, the numbers 0 to 9 are displayed in the channel number selection window 330 for channel search in each category; for each number, only selectable numbers are activated and displayed so that the user can input the corresponding number using the left and right keys** or number keys.

Ex.1007-8, [0023].

366. Accordingly, Bae discloses updating the display to show selectable channel information as the user selects each sequential digit such that the selectable channel information can be narrowed by the user's input.

367. Coburn discloses that it was known to perform a search for media content as a user selects each individual alphanumeric value:

Information entered on keypad 122 and/or displayed in window 124 may be processed in any manner. In various embodiments, the information may be used to select a channel or program for decoding and presentation, for searching a disk, network or the like for content, and/or for any other purpose. **In various embodiments, data entered into window 124 can be processed in a predictive manner.**

Ex.1009, [0046].

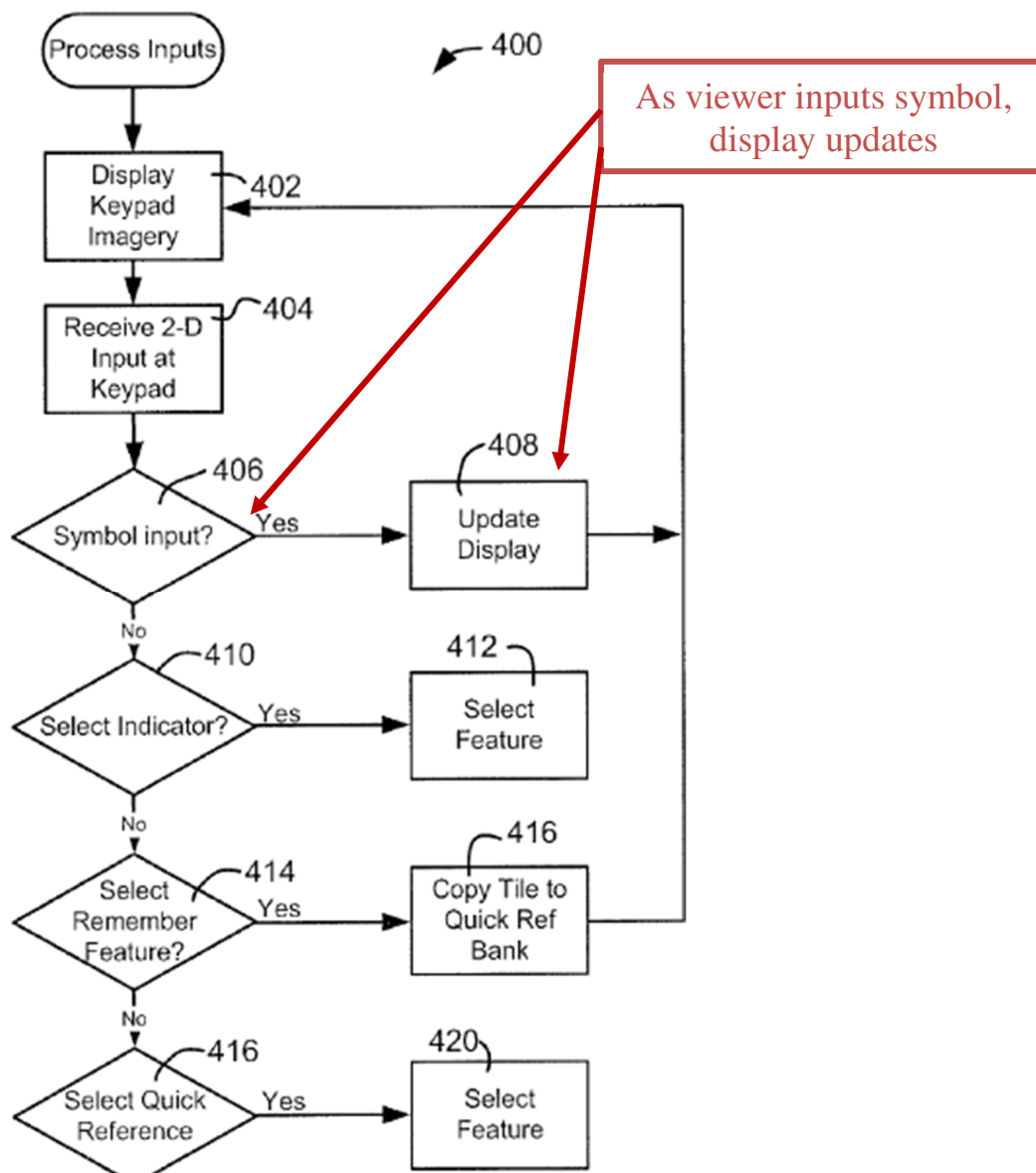
368. Further, Coburn discloses predictively narrowing the channel identifiers displayed based on the user selecting channel numbers sequentially:

In the embodiment shown in FIG. 3, for example, numeric inputs from keypad 122 are used to select a channel to be tuned and

presented by receiver 104. As the viewer enters the first few digits of the channel number, imagery 110 may be updated as appropriate to present channels (or other objects) that correspond to the initially-entered data. As the user enters an initial “1”, for example, the content of identifier window 126 may be updated to show identifiers 308A-D that begin with 1 (e.g., “1”, “10”, “100” or the like). In an implementation that uses three-digit channel numbers (100-999), for example, an initial “1” could be result in window 126 showing identifiers 308A-D including channel 100 (corresponding to the beginning of the number range), channel 150 (corresponding to the approximate middle of the channel range), or any other channel as desired. As the viewer enters additional symbols from keypad 122, the additional data may be used to further refine the identifiers 308A-D presented in window 126. After the viewer entered both numerals “1” and “9, for example, window 126 may be updated to show channel identifiers 308A-D associated with channels in the 190-199 range (e.g., channels 194-197, as shown in the example of FIG. 3). Predictive behaviors may be modified in any manner, or omitted in some embodiments.

Ex.1009, [0046].

369. Thus, Coburn teaches that if the user enters “1,” the content of the window is updated to show identifiers beginning with 1 (e.g., ‘1’, ‘10’, ‘100’ or the like). Ex.1009, [0046]. If the user subsequently enters a “9,” then based on both “1” and “9,” “window 126 may be updated to show...channels in the 190-199 range.” Ex.1009, [0046].



Ex.1009, Fig. 4 (annotated).

370. Accordingly, the display device of Kim that has an application framework to display an electronic program guide to facilitate changing channels in which the electronic program guide is updated based on the user's search parameters, in combination with Bae's technique of displaying a number input bar

and updating the display as the user inputs each digit, further in view of Coburn's technique of displaying media content that matches the digits selected by the user, renders obvious "*wherein, as the user selects each digit, the application framework updates the EPG information to include only those programs and/or channels selectable from the selected digits.*"

[6.2] wherein the remote control further comprises a moveable joystick that, when manipulated by the user, causes a displayed image on the screen to be displaced a proportional amount.

371. As discussed in connection with element [1.1], Kim discloses controlling a television using a remote control. Kim further discloses that the remote control can include various components, such as any "appropriate user input device":

The user input device 235 may include a keypad, a plurality of buttons, a touchpad and/or a touch screen. The user may enter commands to the image display apparatus 100 by manipulating the user input circuit 235. If the user input circuit 235 includes a plurality of hard buttons, the user may input various commands to the image display apparatus 100 by activating the hard buttons. Moreover, if the user input circuit 235 includes a touch screen displaying a plurality of soft keys, the user may input various commands to the image display apparatus 100 by touching the soft keys on the display 180. **The user input device 235 may also include various input tools other than those set forth herein, such as** a scroll key, a jog wheel, or **another appropriate user input device.**

Ex.1005, [0175].

372. Coburn discloses that it was known to move a displayed image (e.g., a cursor displayed on screen) on the television in correspondence with two-dimensional input entered by a user via a remote control:

Generally speaking, the viewer is able to provide numeric, alpha-numeric or other symbol based inputs to a television receiver using two-dimensional or other user interface features. A keypad representing the various symbols is graphically presented on the display, and the viewer is able to interact with the keypad imagery using a cursor or other interface feature that can be moved in response to two-dimensional inputs applied at a touchpad, motion sensor or other sensor device associated with the remote control. In embodiments wherein the remote control includes a touchpad or similar control device but does not include a numeric keypad, for example, a viewer may nevertheless be able to provide numeric (or alphanumeric) inputs to the receiver by directing a cursor presented as part of the on-screen imagery. The cursor may be able to select numbers, letters and/or other features in order to tune channels or perform other tasks as desired. Other conveniences such as quick reference features may be provided as well.

Ex.1009, [0016].

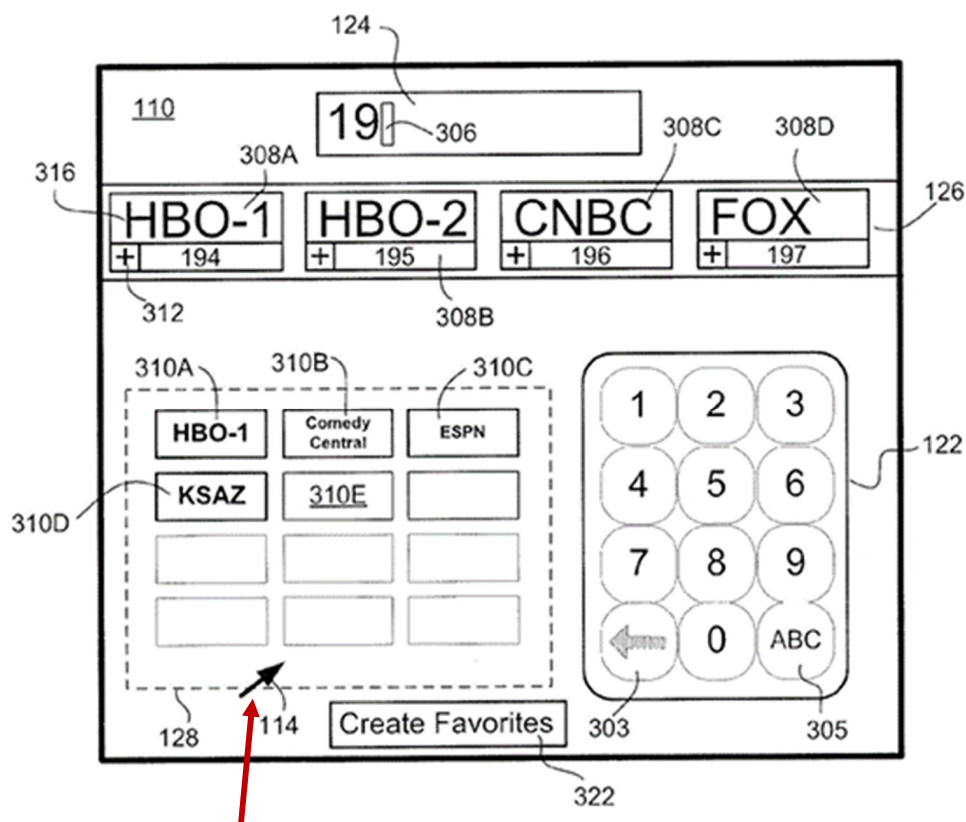
Television imagery is presented on display 102 as desired by the viewer. Further, two-dimensional navigation features may be presented to allow the viewer to enter symbol-type or other data through control of a cursor 114 or other interface feature via remote control 112. In various embodiments, cursor 114 is able to move in response to two-dimensional input signals 125, which are, in turn, generated in response to inputs applied to two-dimensional input device 124. By moving cursor 114 to interact with the two-dimensional navigation features presented on display 102, numeric,

alphanumeric and/or other data may be entered, recalled and/or otherwise manipulated as desired.

Ex.1009, [0020].

Inputs may be received with respect to keypad 122 in any manner (step 404). In various embodiments, **receiver 104 receives two-dimensional inputs from remote control 112 relating to a position of a cursor 114**, as described above. The viewer is therefore able to position the cursor 114 over one or more key images and then indicate a selection of the key image in any manner.

Ex.1009, [0055].



Cursor (“displayed image”)

Ex.1009, Fig. 3 (annotated).

373. Further, Coburn teaches that a joystick is one type of two-dimensional input device that can be used to move a cursor:

As the user depresses or otherwise interacts with the features, remote control 112 suitably produces wireless signals 125 in response. In further embodiments, remote control 112 includes a two-dimensional input device 124 that is able to receive inputs from the user in any multi-dimensional format (e.g., “X,Y”, “r,Θ”), and/or the like). **Examples of two-dimensional input devices 124 that could be used** in various embodiments **include**, without limitation, touchpads, directional pads, **joysticks**, trackballs, sets of arrows or other buttons, and/or the like.

Ex.1009, [0025].

374. Coburn also teaches that the movement of the cursor is proportional to the movement of the two-dimensional input device (i.e., the joystick):

Television imagery is presented on display 102 as desired by the viewer. Further, two-dimensional navigation features may be presented to allow the viewer to enter symbol-type or other data through control of a cursor 114 or other interface feature via remote control 112. In various embodiments, **cursor 114 is able to move in response to two-dimensional input signals 125, which are, in turn, generated in response to inputs applied to two-dimensional input device 124.** By moving cursor 114 to interact with the two-dimensional navigation features presented on display 102, numeric, alphanumeric and/or other data may be entered, recalled and/or otherwise manipulated as desired.

Ex.1009, [0020].

375. For example, Coburn explains that the signals provided by two-dimensional input device 124 (e.g., a joystick) are “decoded” to cause movement of the cursor:

In a typical implementation, two-dimensional input device 124 provides coordinates or other signals 125 that indicate absolute (e.g., “X,Y”) and/or relative (e.g., “ $\Delta X, \Delta Y$ ”) movement in two or more dimensions. Such signals 125 may be decoded at controller 108 or elsewhere to coordinate the viewer's actions with respect to input device 124 to movement of cursor 114 or other features presented on display 102.

Ex.1009, [0025].

376. A POSITA would understand that Coburn teaches that (i) the joystick provides two-dimensional input signals to the television and (ii) those signals indicate the relative movement of the cursor on the television display (e.g., “ $\Delta X, \Delta Y$ ” movement). “[T]o coordinate” the movement of the joystick with the relative movement of the cursor (e.g., the displayed image) means that a user moving the joystick causes the cursor on the television to be moved by a proportional amount.

377. As further evidence of how a POSITA would understand Coburn’s teaching, Fukuhara shows that POSITAs knew how to correlate joystick movement with movement of a cursor on a television. *See* Ex.1017, [0028],[0033], [0047], [0048], Fig. 5. Fukuhara teaches that POSITAs knew that a joystick would have a base section and a movable stick member and that the xy coordinates of the stick member and the angle of inclination of the stick member determine positioning of

the cursor. Ex.1017, [0047] (“The xy coordinates and inclination detected by the operating position detection section 43 are outputted to the display device 2 via the communication section 34.”). Specifically, a POSITA would understand that the xy coordinates and inclination of Fukuhara’s stick member would be the types of “coordinates or other signals¹²⁵” that could be provided by a joystick, as described above in Coburn and that this information would indicate the “relative (e.g., “ $\Delta X, \Delta Y$ ”)” amount that the cursor would need to be correspondingly moved and positioned on a television.

378. Lastly, the plain and ordinary meaning of “proportional” is understood to be “having due proportion; corresponding” and “of, pertaining to, or based on proportion; relative.” Ex.1018, pg. 1083. Similarly, Coburn teaches that, when the joystick is moved, the cursor correspondingly with “relative (e.g., ‘ $\Delta X, \Delta Y$ ’) movement.” Ex.1009, [0025].

379. As discussed above, a POSITA would have combined the television of Kim with the two-dimensional input device techniques of Coburn because it would be applying known techniques (e.g., Coburn’s two-dimensional input device techniques) to a known system (the television of Kim) to achieve a predictable result (a television controllable by a remote control having a joystick as a form of user input).

380. With respect to the “proportional amount” aspect of this claim

limitation, the specification of the '254 patent describes a remote control having a “moveable joystick” that “when manipulated, can cause a displayed image on the Intelligent TV 100 screen to be displaced a proportional amount. In other words, the displayed image is displaced substantially simultaneously with displacement of the joystick 900 within the joystick aperture 904 in the bottom housing of 712 of the remote control.” '254 patent, 25:63-26:2.

381. The specification contains no other references to “proportion” or “proportional.” The specification does not describe image distances, scaling, ratios or measurements in connection with the movement of displayed image and the joystick. Further, there is no description of *how far* the displayed image needs to be displaced, nor is there a description of any proportionality between *how far* the joystick is displaced with respect to *how far* the displayed image needs to be displaced.

382. The only relationship between the displacement of the image and the displacement of the joystick described in the specification is merely a cause-and-effect correlation of in which displacing the joystick by some distance causes the displayed image to be displaced on the screen by some distance. '254 patent, 25:63-26:24.

383. Thus, Kim's remote control that can include various input tools, in view of Coburn's teaching of moving a cursor on the screen relative to movement

of a two-dimensional input device (i.e., joystick), renders obvious “*wherein the remote control further comprises a moveable joystick that, when manipulated by the user, causes a displayed image on the screen to be displaced a proportional amount.*”

4. Claim 12

[12.0] *The television of claim 8,*

384. *See claim 8.*

[12.1] *wherein, as the user selects each digit, the application framework updates the EPG information to include only those programs and/or channels selectable from the selected digits and*

385. *See [6.1]*

[12.2] *wherein the remote control further comprises a moveable joystick that, when manipulated by the user, causes a displayed image on the screen to be displaced a proportional amount.*

386. *See [6.2]*

5. Claim 19

[19.0] *The computer readable medium of claim 14,*

387. *See claim 14.*

[19.1] *wherein, as the user selects each digit, the application framework updates the EPG information to include only those programs and/or channels selectable from the selected digits and*

388. *See [6.1]*

[19.2] *wherein the remote control further comprises a moveable joystick that, when manipulated by the user, causes a displayed image on the screen to be displaced a proportional amount.*

389. See [6.2]

VIII. CONCLUSION

390. This declaration and my opinions herein are made to the best of my knowledge and understanding, and based on the material available to me, at the time of signing this declaration. I declare that all statements made herein on my own knowledge are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 or Title 18 of the United States Code.

Date: 19 December, 2023



Andrew Lippman