UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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LG ELECTRONICS, INC., LG ELECTRONICS U.S.A, INC.,
Petitioner

U.S. Patent No. 9,510,040

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**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. 9,510,040 ("the '040 patent") to Selim *et al*.

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 1-6, 11-16, and 21-22 ("the Challenged Claims") of the '040 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 elements of the Challenged Claims would have been obvious to a POSITA.

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

a. the '040 patent, Ex.1001;

b. the prosecution history of the '040 patent ("'040 File History"), Ex.1002;

c. U.S. Patent Pub. No. 2012/0054794 to Kim et al. ("Kim"), Ex.1005;

d. U.S. Patent No. 9,008,190 to Lee et al. ("Lee-1"), Ex.1006;

e. U.S. Patent Pub. No. 2013/0057764 to Choi et al. ("Choi"), Ex.1007;

f. U.S. Patent No. 9,398,339 to Lee et al. ("Lee-2"), Ex.1010; and

g. U.S. Patent Pub. No. 2013/0176415, Ex.1011.

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 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 '040 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 '040 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 ’040 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 ’040 patent.

IV. RELEVANT LEGAL STANDARDS

21. I am not an attorney. In preparing and expressing my opinions and considering the subject matter of the ’040 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 ’040 patent includes patents and printed publications in the relevant art that predate the priority date of the alleged invention recited in the ’040 patent. For purposes of this Declaration, I am applying August 17, 2012 as the earliest possible priority date of the ’040 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 ’040 PATENT

A. Overview of the ’040 Patent

25. The ’040 patent is directed to “methods and systems of displaying content on a television.” ’040 patent, abstract. The ’040 patent states that “[t]here

is a need for an Intelligent TV with intuitive user interfaces and with seamless user interaction capability." '040 patent, 2:30-31. The purported solution to this need is a user interface that provides a panel listing several content sources represented by icons and text from which a user may select. With reference to Figure 15C, reproduced below, "[t]he global panel 1404 may include one or more sources represented by icons and text, or shortcuts, 1504A-E." Ex.1001, 30:27-28. "[E]ach icon and text 1504A-E may be associated with one or more sources of content." Ex.1001, 30:30-32.

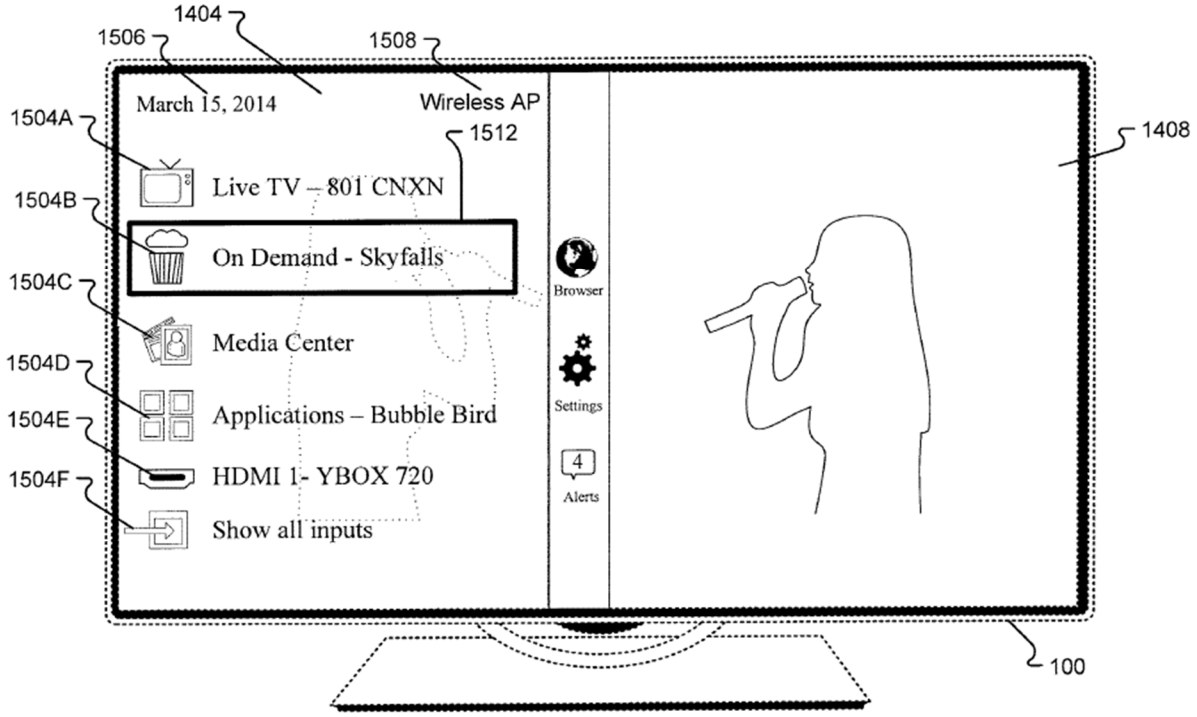


Fig. 15C

Ex.1001, Fig. 15C (annotated).

26. In the above figure, the global panel 1404 includes icon and text

1504A "associated with Live TV application 452" representing a "*live television source,*" icon and text 1504B "associated with video on demand 456" representing a "*video on demand source,*" icon and text 1504C "associated with media center application 460" representing a "*media center source,*" icon and text 1504D "associated with application center application 464" representing an "*applications source*," and icon and text 1504E "associated with one or more sources of content, either internal or external" representing an "*electrical input associated with the television*." Ex.1001, 30:32-39.

27. The global panel 1404 includes information related to content, such as "information related to a displayed image and/or content (e.g., title, date/time, audio/visual indicator, rating, and genre)." '040 patent, 25:41-44; *see also* '040 patent, 27: 29-31 ("suitable information about the content (such as name, duration, and/or remaining viewing duration of content)."); Ex.1001, 30:57-64 ("for Live TV a program name and/or current program playing may be displayed; for on demand a name of the media and/or media that is currently on VOD may be displayed; for media center, a name of the media and/or media that is currently on, and/or names of videos or albums may be displayed; for application center, a name of the application and/or the application that is currently playing may be displayed; and for inputs, custom names may be displayed.")

28. The "global panel" may also highlight a source with an indicator upon

a user selection and/or indication. For example, the global panel 1404 may use an indicator 1512 comprising a box positioned around the icon and text 1504B to highlight a "*video on demand source,*" as shown in the figure above. The indicator 1512 may also be "moved to a different source." Ex.1001, 32:9-12. The '040 patent additionally explains, instead of using a box, "other methods or configuration which provide for icon selection and/or identification may be used." Ex.1001, 30:44-46. For example, ways to highlight may include adjusting color, shade, hue, or displayed size of the respective icon and text to make the icon and text visually different. *See* Ex.1001, 30:47-51.

29. Representative independent claim 1 is shown below.

> **1**. A method of displaying content on a television, comprising:
>
> receiving, by a processor, an indication associated with a selection by a user;
>
> determining, by the processor, based on the received indication, a global panel to display via the television;
>
> retrieving, by the processor, from memory, a first content information for display in the global panel; and
>
> displaying, via the television, the retrieved content information in the global panel, wherein the global panel includes a list of sources of content for the intelligent television, wherein at least one of the sources is highlighted as being associated with the first content information, and wherein the sources include a live television source, a video on demand source, a media center source, an applications source, and an electrical input associated with the television.

B. File History of the '040 Patent

30. The '040 patent was filed on August 24, 2015. It claims priority to a series of provisional applications, the earliest of which was filed on August 17, 2012.

31. In a first Office Action dated January 14, 2016, the Examiner rejected the claims as unpatentable over U.S. Patent Publication No. 2005/0097622 to Zigmond in view of U.S. Patent No. 7,152,236 to Wugofski. Ex. 1002, 127-136. The Applicant then amended all three independent claims, exemplified by the amended to independent claim 23 shown below:

> 23. (Currently Amended) A method of displaying content on a television, comprising:
>
> receiving an indication associated with a selection by a user;
>
> determining, based on the received indication, a global panel to display via the television;
>
> retrieving from memory, a first content information for display in the global panel; and
>
> displaying, via the television, the retrieved content information in the global panel, wherein the global panel includes a list of ~~two or more~~ sources of content for the intelligent television, and wherein at least one of the ~~two or more~~ sources is highlighted as being associated with the first content information, wherein the ~~two or more~~ sources include ~~two or more of~~ a live television source, a video on demand source, a media center source, an applications source, and an electrical input associated with the television.

32. The Applicant then argued that Wugofski "provide[s] only two sources of content – a live television channel and a web source" and fails to show the claimed five sources. Ex. 1002, 120. The Examiner allowed the claims based

on this distinction. Ex. 1002, 84-86. The Applicant later submitted an Amendment After Allowance pursuant to 37 CFR §1.312 to clarify certain ambiguity in the claims. Ex. 1002, 33-43.

33. However, for the reasons explained below, a global panel including all five sources of content, as well as the other claim limitations of the ’040 patent, were well-known in the art.

VI. CLAIM CONSTRUCTION

34. It is my understanding that in order to properly evaluate the ’040 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.

35. I have reviewed the entirety of the ’040 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. 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.

36. In fact, the ’040 patent provides explicit definitions for various terms and phrases, including various claim terms of the Challenged Claims. For example, from column 3, line 49 to column 10, line 37, the ’040 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 ’040 patent for terms in the Challenged Claims. One example of a claim term definition is described below:

A. “at least one”

37. Claims 1, 6, 11, 21, 22 each recite the phrase “*at least one*.”

38. I note that in the ’040 patent, the inventor provided a special meaning for the term “*at least one*.”

> 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.

Ex.1001, 3:49-56.

39. Accordingly, in view of the express definition provided in the ’040 patent, a claim limitation that recites a list of “*at least one*” items is met by teaching any item in that list alone or together with any other items in that same list.

VII. IDENTIFICATION OF HOW THE CLAIMS ARE UNPATENTABLE

40. I have been asked to provide my opinion as to whether the Challenged Claims of the ’040 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 elements of the Challenged Claims of the ’040 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 ’040 patent.

41. 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.

A. Ground 1: Claims 1-5, 11-15, and 21 are obvious over Kim in view

of Lee-1 and Choi.

1. Summary of Kim

42. The primary reference that I rely upon is U.S. Patent Publication No. 2012/0054794 to Kim et al. (Ex.1005, "Kim"), which was filed on March 9, 2011, claims priority to Provisional application No. 61/379,369, filed on September 1, 2010, and published on March 1, 2012.

43. Like the '040 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 smart TV:

> 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].

44. 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]. Kim further describes controlling the content of the image display apparatus 100 (smart TV) 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].

45. Kim's image display apparatus 100 (smart TV) 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.

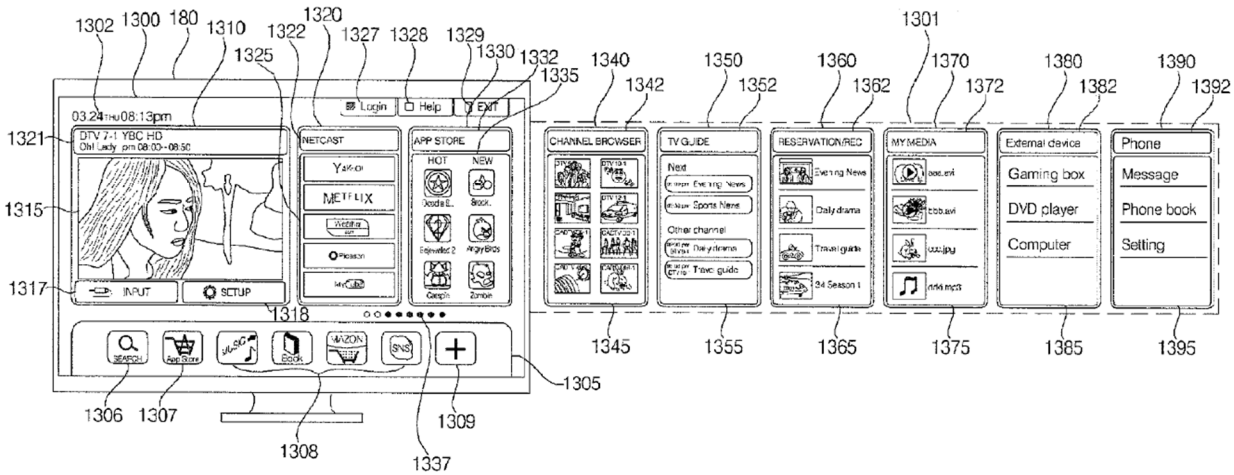
Ex.1005, [0137].

46. The remote control 200 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]. These local keys on 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).

47. For example, Kim's remote control can be used to access, and cause to be displayed on the image display apparatus 100 (smart TV), a home screen with different types of content sources and corresponding content information. Ex.1005, [0094], [0192], Fig. 19.

FIG. 19



Ex.1005, Fig. 19.

2. Summary of Lee-1

48. U.S. Patent No. 9,008,190 to Lee et al. (Ex.1006, "Lee-1") was filed on January 4, 2010, and issued on April 14, 2015.

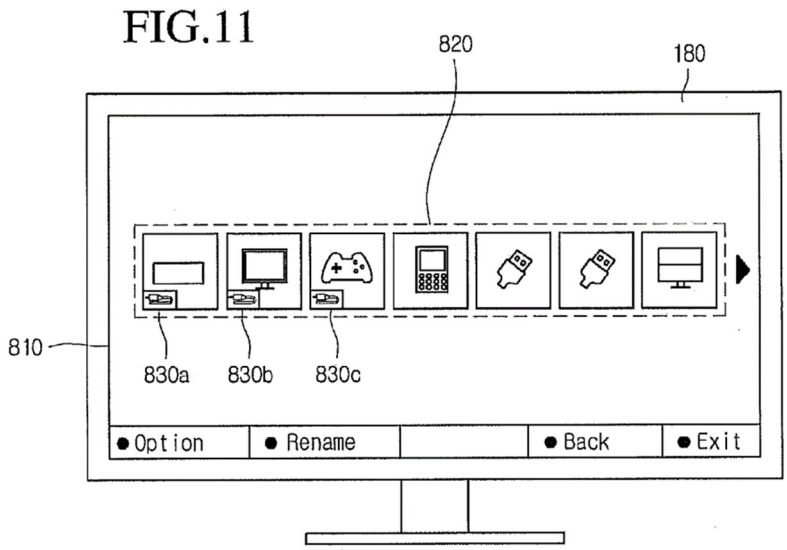
49. Lee-1 provides additional details regarding the thumbnails described by Kim. Kim cites to and incorporates by reference "application Ser. No. 127651,730," which is filed herein as Ex.1006 ("Lee-1"). Ex.1005, [0106]. In particular Kim incorporates Lee-1's "[e]xamples of thumbnails and methods of using the same." Ex.1005, [0106]. Regarding methods of using thumbnails, Lee-1 discloses that a "displayed thumbnail image may be a…previously stored image." Ex.1006, 12:65-67.

3. Summary of Choi

50. U.S. Patent Publication No. 9,008,190 to Choi et al. (Ex.1007, "Choi") was filed on June 28, 2012, and was published on March 7, 2013.

51. Choi generally discloses methods and systems of displaying content on a television. Ex.1007, [0002]-[0004]. In this context, Choi discloses that devices externally connected to an input port of the television may be represented by icons with specific symbols to distinguish connected devices. Ex.1007, [0250] ("As shown in FIG. 11, a plurality of external device icons 820 representing a plurality of external devices are displayed… the control unit 170 determines which external device icons 820 are connected to the image display device 100 in order to display specific symbols 830a, 830b and 830c on the external device icons that are being connected to the image display device 100.").

52. Choi at Figure 11 illustrates that external devices are represented by icons 820 with specific symbols (e.g., 830a, 830b and 830c) indicating that a given device is connected to an input port of the image display device 100, as shown below:



Ex.1007, Fig. 11.

4. Reasons to Combine Kim and Lee-1

53. A POSITA when considering Kim would have also considered the teachings of Lee-1, which are incorporated by reference by Kim. Ex.1005, [0106]. In so doing, a POSITA would have combined Lee-1's thumbnail teachings with Kim to successfully implement Kim's system and method thereof, which uses thumbnails. It would have been obvious to a POSITA, to apply the thumbnail teachings of Lee-1 because they provide implementation details directly applicable to successfully implementing Kim's system and method. This reason is sufficient to explain why a POSITA would have sought and combined the identified disclosures of Lee-1 and Kim. Nevertheless, additional reasons for combining the relevant teachings are provided in the claim analysis below.

54. Lastly, I note that the proposed combination relies on the teachings of

the references, and I do not suggest that physical incorporation of Lee-1's elements (e.g., thumbnails or memory) into Kim's display device 100 is required; however, it is permitted in the proposed combination.

5. Reasons to Combine Choi and Kim

55. A POSITA when considering the teachings of Kim would have also considered the teachings of Choi. As noted above in the respective summaries, both references address methods and systems of displaying content on a television. Ex.1005, [0038]; Ex.1007, [0002]-[0004]. Also, both references address the problem of connecting external devices to an input port of the television. Ex.1005, [0077], [0196], [0205]-[0211]; Ex.1007, [0002], [0099].

56. A POSITA would have combined the teachings of Choi with Kim to obtain beneficial and predictable results.

57. Kim discloses that its home screen includes an EXTERNAL DEVICE card object 1380 with a list of external devices that may be connected to the image display apparatus 100 via an input port such as HDMI port, USB port, etc. Ex.1005, [0077], [0196], [0205]-[0210], Fig. 19. The list of external device identifies the external devices that may be connected with text, e.g., "Gaming box," "DVD player," "Computer." Ex.1005, [0210], Fig. 19. Choi complements Kim's disclosure by teaching that external devices may be represented by icons with "specific symbols" to distinguish devices connected to an input port such as

HDMI port, USB port, etc. Ex.1007, [0099], [0250].

58. It would have been obvious to a POSITA to implement Kim's EXTERNAL DEVICE card object 1380, which provides a list of external devices which may be connected to the image display apparatus 100, to include icons representing external devices and specific symbols representing an input port connection. This would inform the user as to which external device is connected to an input port of the display apparatus 100 and which external device is not connected. The information would also be beneficial because it would allow the user, in certain instances, to determine if there is a problem with a connected external device. For example, in an instance where an external device has a specific symbol indicating an input port connection, but the external device is not providing an input signal, the user would understand that the port connection is not the problem. On the other hand, if the external device has no specific symbol, then the user would understand that it needs to be plugged in.

59. The combination of Choi with Kim is merely combining prior art elements (an external device icon with a specific symbol, per Choi, with Kim's EXTERNAL DEVICE card object 1380, which provides a list of external devices) according to known methods (Choi describes exemplary methods and it was known how to generate thumbnails), as evidenced by Kim) to yield predictable results (allow the user to be informed which external device is presently connected

to the image display apparatus 100 via an input port such as HDMI port, USB port, etc.).

60. Additionally, the combination is nothing more than applying a known technique (e.g., using an external device icon with a specific symbol to indicate that an external device is connected to an input port, per Choi) to improve the similar system of Kim (e.g., inform the user of Kim that an external device listed in the EXTERNAL DEVICE card object 1380 is connected to an input port, e.g., HDMI port, USB port, etc.).

61. The results would have been predictable and there would have been a reasonable expectation of success in the combination given that both Choi and Kim illustrate similar televisions, and both provide external devices connected via an input port, e.g., HDMI port, USB port, etc. A POSITA would have been able to successfully implement a Kim with thumbnail icons that have specific symbols representing input ports, per Choi, as a matter of routine software programming.

62. I note that the proposed combination relies on the teachings of the references, and I do not suggest that physical incorporation of Choi's elements (e.g., thumbnail icons or specific symbols) into Kim's display device 100 is required; however, it is permitted in the proposed combination.

6. Claim 1

[1.0] ***A method of displaying content on a television, comprising:***

63. **First**, Kim discloses a method of displaying content, e.g., multimedia, broadcast, still or video images, and other various types of content on a display apparatus, such as a smart television:

> The image display apparatus and the **method** of controlling the same, as embodied and broadly described herein, may increase user convenience and overall effectiveness of the user interface (UI) by providing a more intuitive graphical interface. The image display apparatus may be a multifunctional display device. **The image display apparatus may be equipped to provide multimedia content received over a network as well as broadcast content** received from a broadcast provider. Thus, the image display apparatus may be provided with various types of user-friendly input devices such as a handwriting input device, a touch screen, a pointing device, or another appropriate type of input device. 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].

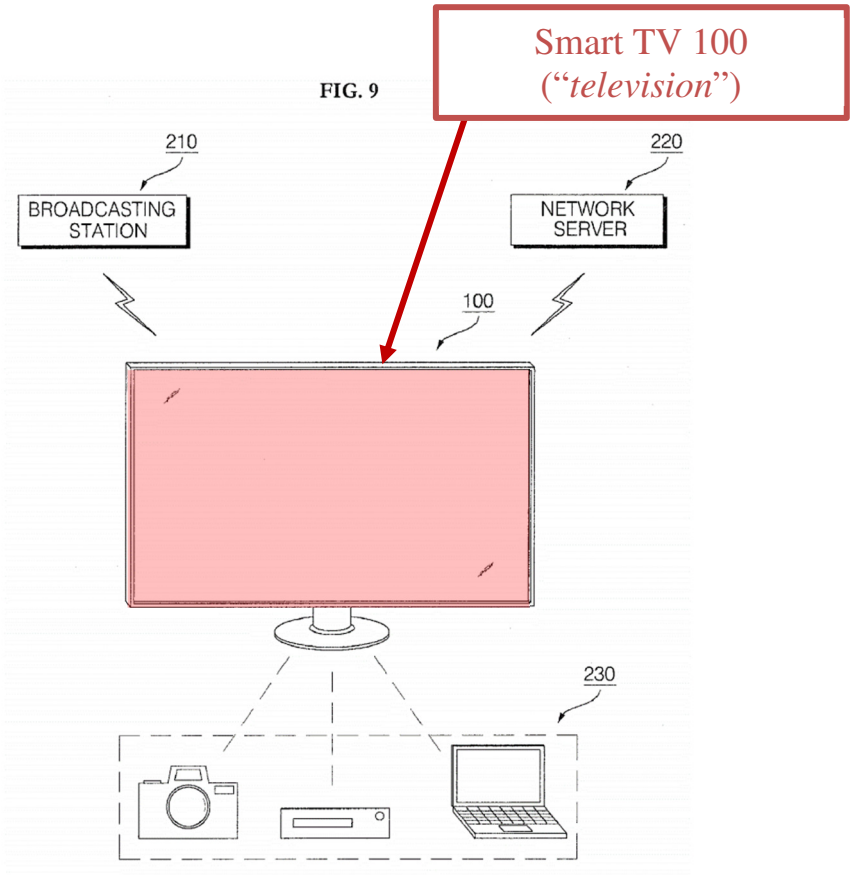
> Various applications may be freely added to or deleted from, for example, a general-purpose OS kernel in the image display apparatus. Hence, **the image display apparatus may be configured as a**

> **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].

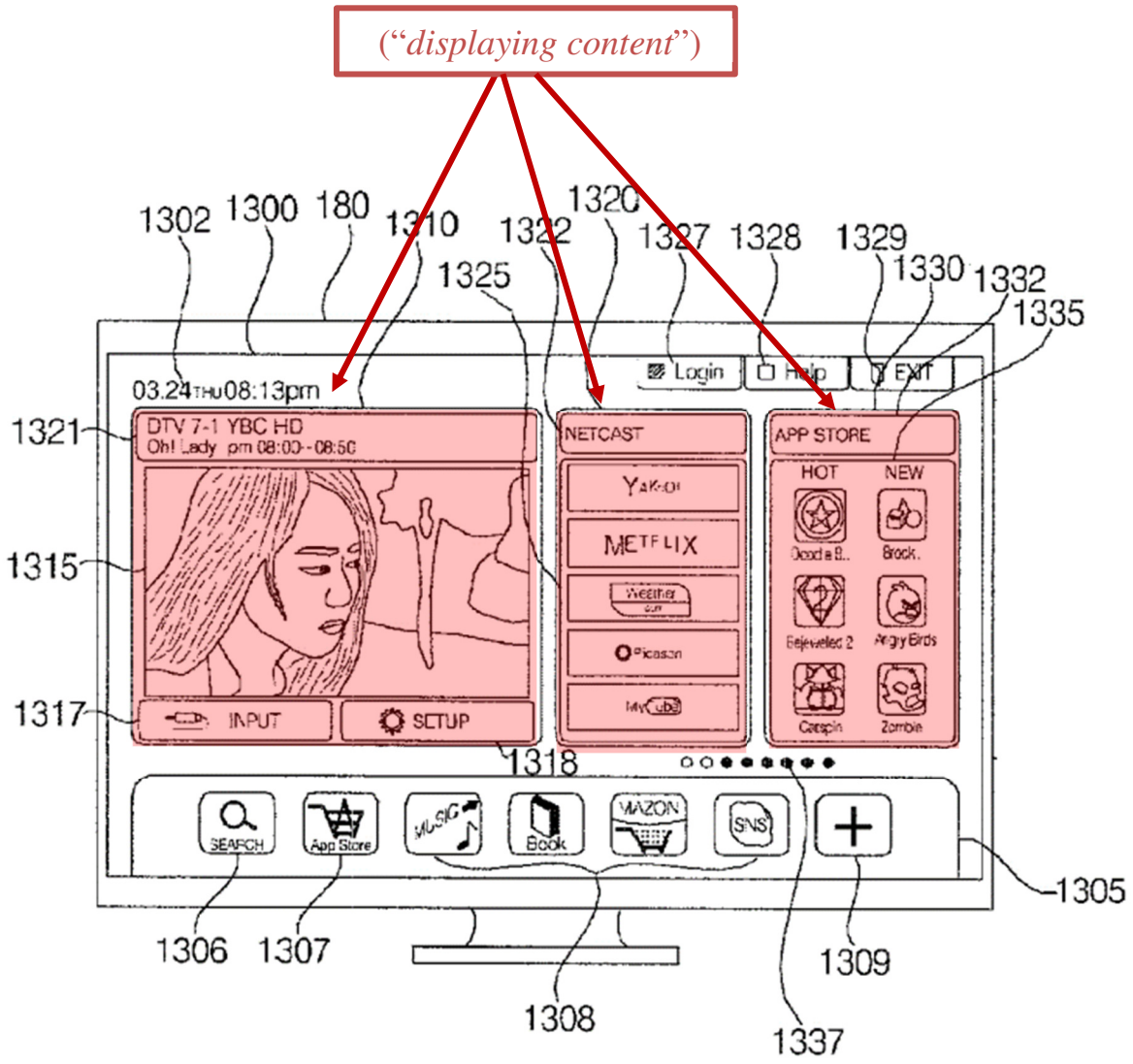
> **The image display apparatus may display various types of content including still or video images as well as multimedia content**. The image display apparatus may also **display broadcast programs** which may be selected from among a plurality of broadcast programs transmitted from broadcasting stations. The broadcast programs may be digital content.

Ex.1005, [0284]; *see also* Ex.1005, [0287]-[0289]. An example of Kim's image display apparatus 100 (e.g., a smart TV) is illustrated at Figure 9, reproduced below:



Ex.1005, Fig. 9 (annotated).

64. Furthermore, Kim's Figure 19 illustrates that the smart TV 100 displays various exemplary content, including a broadcast image (1315), Netcast content (1320), and APP Store content (1330). *See, e.g.,* Ex.1005, [0193]-[0202]. Additional content for display will also be discussed in the analysis below:



Ex.1005, Fig. 19 (partial, annotated).

65. Thus, Kim discloses a method of displaying content (e.g., multimedia content, broadcast content, still or video images, and other various types of content) on an image display apparatus 100 (e.g., smart TV), which renders obvious "*a method of displaying content on a television*" as recited in the preamble.

[1.1] ***receiving, by a processor, an indication associated with a selection by a user;***

66. **First**, Kim discloses "*a processor.*" Kim explains that a controller 170 provides overall control:

> 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].

67. Controller 170 provides control using multiple processors, such as a video processor, an audio processor, and a data processor:

> 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].

68. Kim's controller 170 utilizes a software platform with operating system ("OS") that enables the controller 170 to implement display apparatus operations:

> A platform for **the image display apparatus may have OS-based software to implement the above-described operations**. Referring to

> FIG. 11, a platform for the image display apparatus may be a separate type. For example, the platform may be designed separately as a legacy system platform 400 and a smart system platform 405. An OS kernel 410 may be shared between the legacy system platform 400 and the smart system platform 405.

Ex.1005, [0145].

> The platforms of FIGS. 11 and 12 may be general-purpose platforms that can be implemented in many other electronic devices as well as in the image display apparatus as disclosed herein. **The platforms may be stored or loaded in the memory 140, <u>the controller 170</u>, or any other processor. To execute applications, an additional <u>application processor</u> may be further provided**.

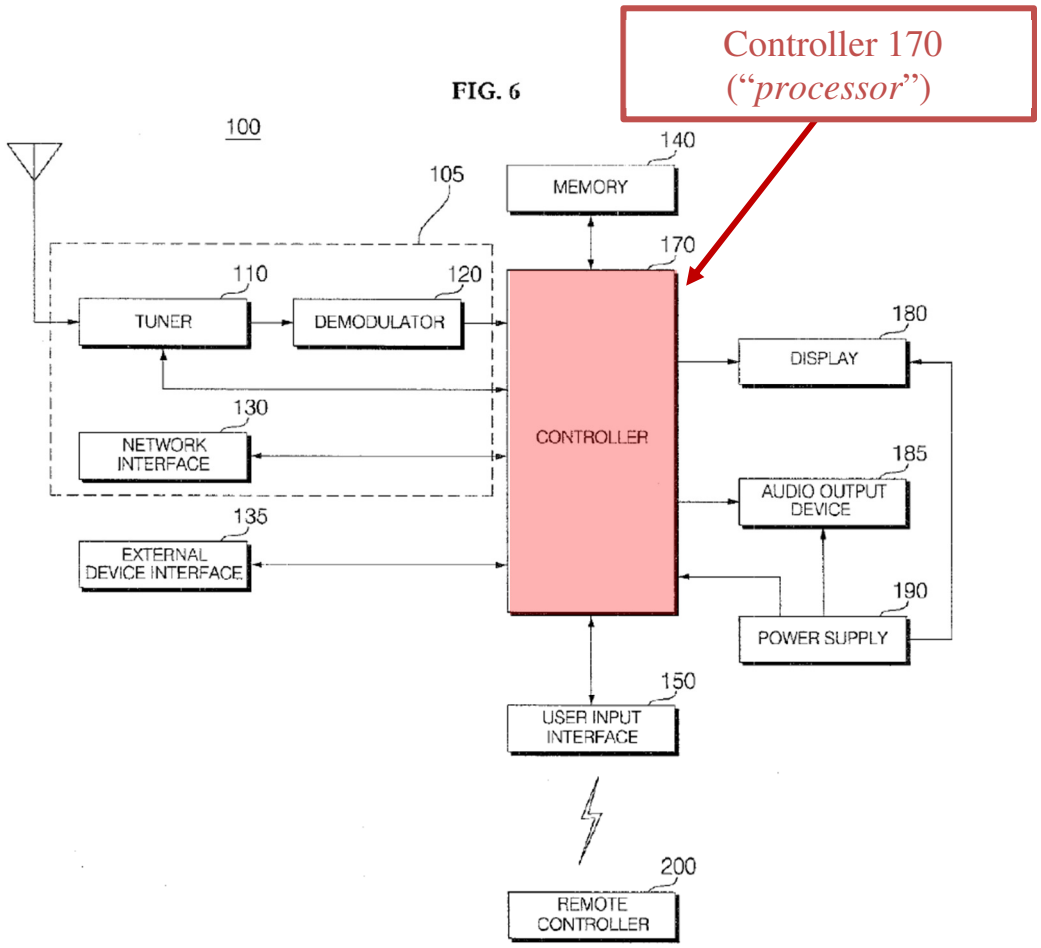
Ex.1005, [0166].

> 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 **<u>controller 170</u>**.

Ex.1005, [0085].

69. A POSITA would have understood that the controller 170 corresponds to multiple processors (e.g., video processor, audio processor, data processor, application processor) that execute OS-based software, among other software, to implement the operations of the image display apparatus 100 (smart TV).

70. Kim's controller 170 (including one or more processor, e.g., a video processor, an audio processor, a data processor, and an application processor) corresponds to a "*processor*," as claimed. In this declaration, I will primarily refer to controller 170 as the claimed "*processor*." Kim's controller 170 ("*processor*") is illustrated at Figure 6, reproduced below:



Ex.1005, Fig. 6 (annotated).

71. I note that Kim's disclosure of the controller 170 being implemented with multiple processors is consistent with the '040 patent's embodiment, which states that a processor "may include multiple virtual processors ... [or] multiple

physical processors." Ex.1001, 17:5-9.

72. **Additionally**, a POSITA would have understood that Kim's teaching that "**<u>the controller 170, or any other processor</u>**" (Ex.1005, [0166]) may perform functions for controlling the image display apparatus, contemplates that a single processor may be used instead. In such an implementation, the controller 170 would be replaced by the "other processor" (e.g., a single processor) that all of the performs the functions for controlling the display apparatus. In such an implementation, the other processor would correspond to claimed "*processor*."[1]

73. **Second**, Kim discloses "*a selection by a user*." For example, Kim discloses that a user provides an input selection (e.g., home screen selection) via an input device (e.g., remote controller 200):

> 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. **<u>In another example, if the remote controller</u>**

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[1] My analysis in this Declaration will identify controller 170 as corresponding to the "*processor*," with the understanding that Kim's disclosed "any other processor" alternatively corresponds to the claimed "*processor*." Kim, [0166].

> **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]; *see also* Ex.1005, [0167]-[0171]-[0175], Fig. 14.

> **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, [0086].

> 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.**

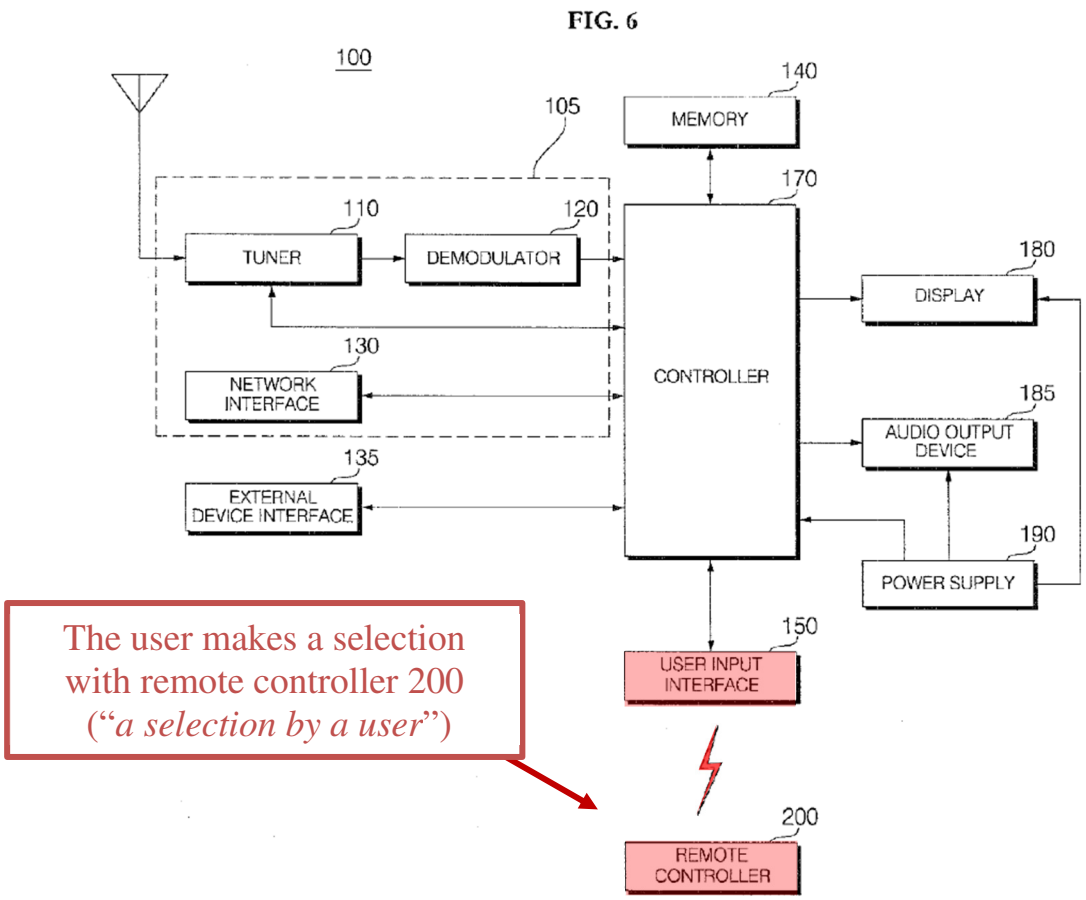
Ex.1005, [0192].

> 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].

74. As illustrated below at Kim's Figure 6, in one example, the user makes a selection (e.g., home screen selection) with a remote controller 200 that is sent to a user input interface 150:



Ex.1005, Fig. 6 (annotated).

75. Kim's disclosure of a user making a selection (e.g., home screen selection) via an input device (e.g., remote controller 200) corresponds to "*a selection by a user.*"

76. **Third**, Kim discloses "*receiving, by a processor, an indication associated*" with the user selection. For example, Kim discloses that user input interface 150, which receives the user selection signal (e.g., "input signals or control signals") from the remote controller 200, transmits a corresponding signal to 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 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], Fig. 14; *see also* Ex.1005, [0109]-[0110], [0112]-[0113] (disclosing that the user may utilize other devices to provide an input).

77. Based on the received user selection signal, controller 170 controls the display apparatus 100 (smart TV):

> **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.

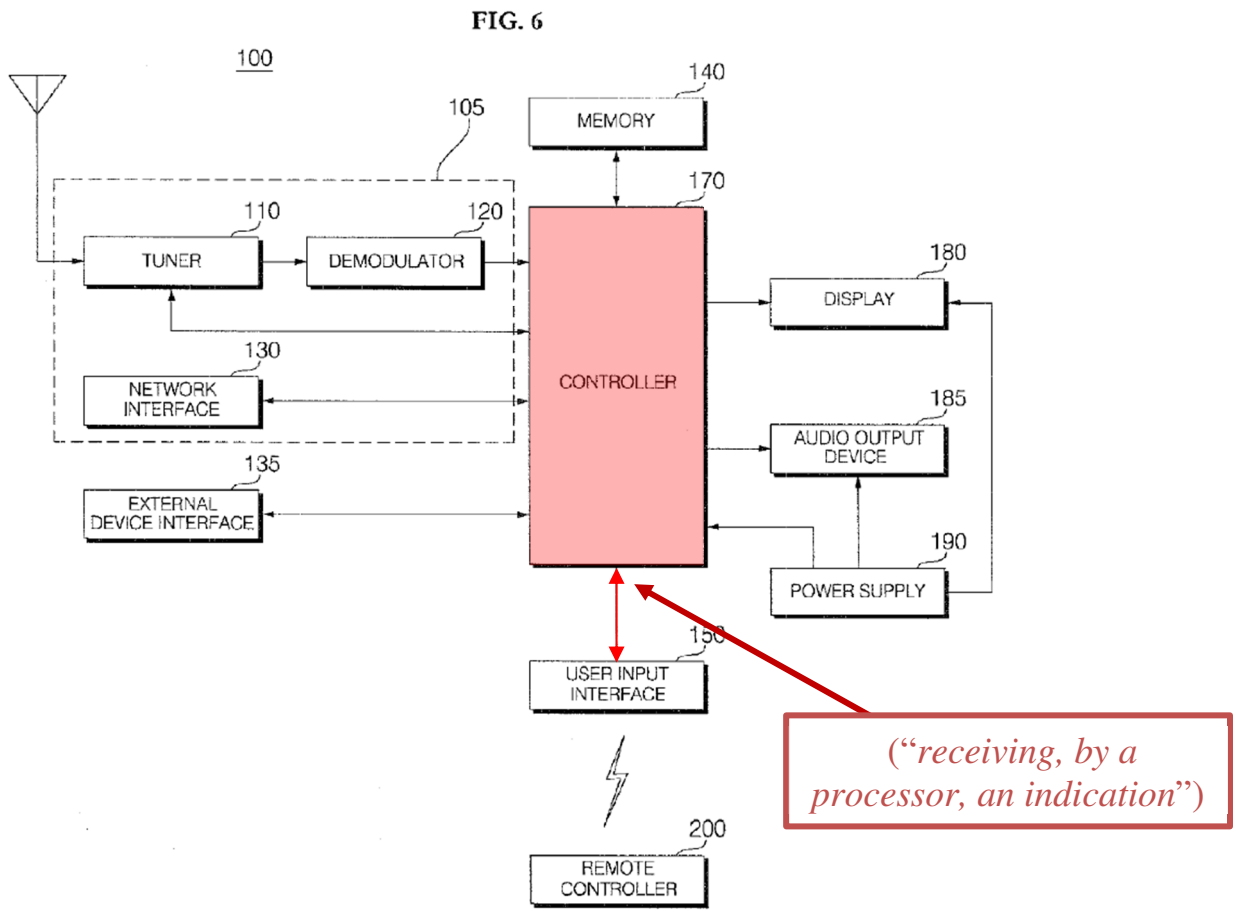
Ex.1005, [0090].

> 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].

78. As shown below at Figure 6, Kim's controller 170 ("*processor*") has an input arrow ("*receiving*") from the user input interface 150 a signal ("*an indication*") associated with a user selection via the remote controller 200:



Ex.1005, Fig. 6 (annotated).

79. Thus, Kim discloses that controller 170 (or "other processor") receives a signal (e.g., home screen selection signal) associated with a user selection from an input device (e.g., user pressing the home key on remote controller 200), which renders obvious "*receiving, by a processor, an indication associated with a selection by a user*" as claimed.

[1.2] *determining, by the processor, based on the received indication, a global panel to display via the television;*

80. **First**, as discussed in connection with element [1.0], Kim discloses a

smart TV 100 ("*the television*"). As discussed in connection with element [1.1], Kim discloses that controller 170 ("*the processor*") receives a signal (e.g., home screen selection signal) ("*received indication*") associated with a user selection from an input device (e.g., user pressing the home key on remote controller 200).

81. Second, Kim discloses "*determining, by the processor, based on the received indication, a global panel to display via the television.*" Specifically, Kim discloses that based on a received user selection signal (e.g., a go-to-home screen input selection), controller 170 determines to display a "home screen" (e.g., default home screen) on the display 180 of the smart TV 100:

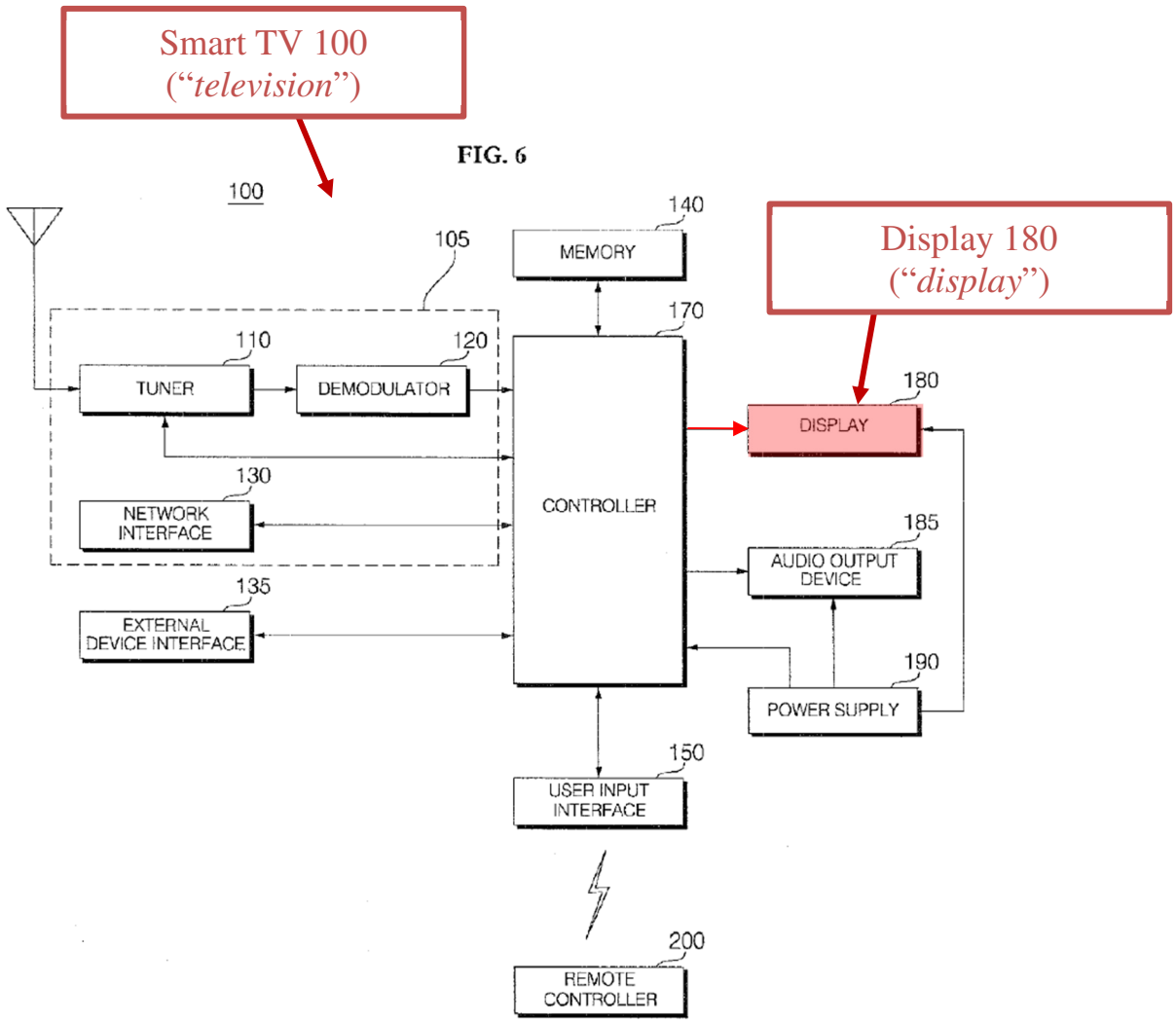
> In one embodiment, **upon receipt of a go-to-home screen input, the controller 170 may control display of the home screen on the display 180. The home screen may include a plurality of card objects classified according to content sources**. The card objects may include at least one card object representing 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].

> **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.**

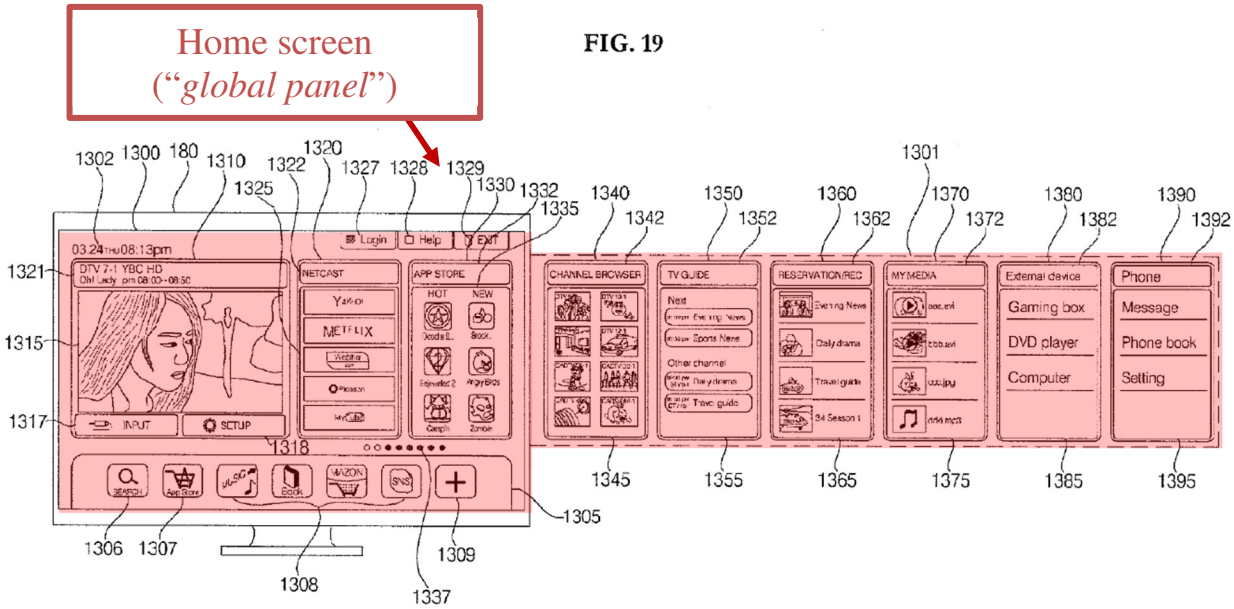
Ex.1005, [0192].

82. As shown below at Figure 6, Kim's controller 170 sends a display signal (illustrated as an arrow) to display a home screen on display 170 ("*display*") of the smart TV 100 ("*television*"):



Ex.1005, Fig. 6 (annotated).

83. Kim's Figure 19 illustrates that the display provides a home screen 1300 and hidden area 1301 (that may be scrolled to be viewable on the display), which collectively will be referred to in this declaration as the "home screen" and which corresponds to the claimed "*global panel*":



Ex.1005, Fig. 19 (annotated).

84. It would have been obvious to a POSITA for controller 170 (which "provide[s] overall control") to "*determine*," based on the received signal (e.g., home screen selection signal), a corresponding home screen to transmit to display 180 so that the home screen can be seen by the user (per the selection) on the smart TV 100. Ex.1005, [0089]; see also Ex.1005, [0094], [0096], [0193], [0196], Figs. 19-23; *infra*, [1.4].

85. I note that '040 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 '040 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).").

86. Thus, Kim discloses determining by the controller 170, based on the received signal (e.g., go-to-home screen selection signal), a home screen to display via the display 180 of the smart TV 100, which renders obvious "*determining, by the processor, based on the received indication, a global panel to display via the television*" as claimed.

[1.3] *retrieving, by the processor, from memory, a first content information for display in the global panel; and*

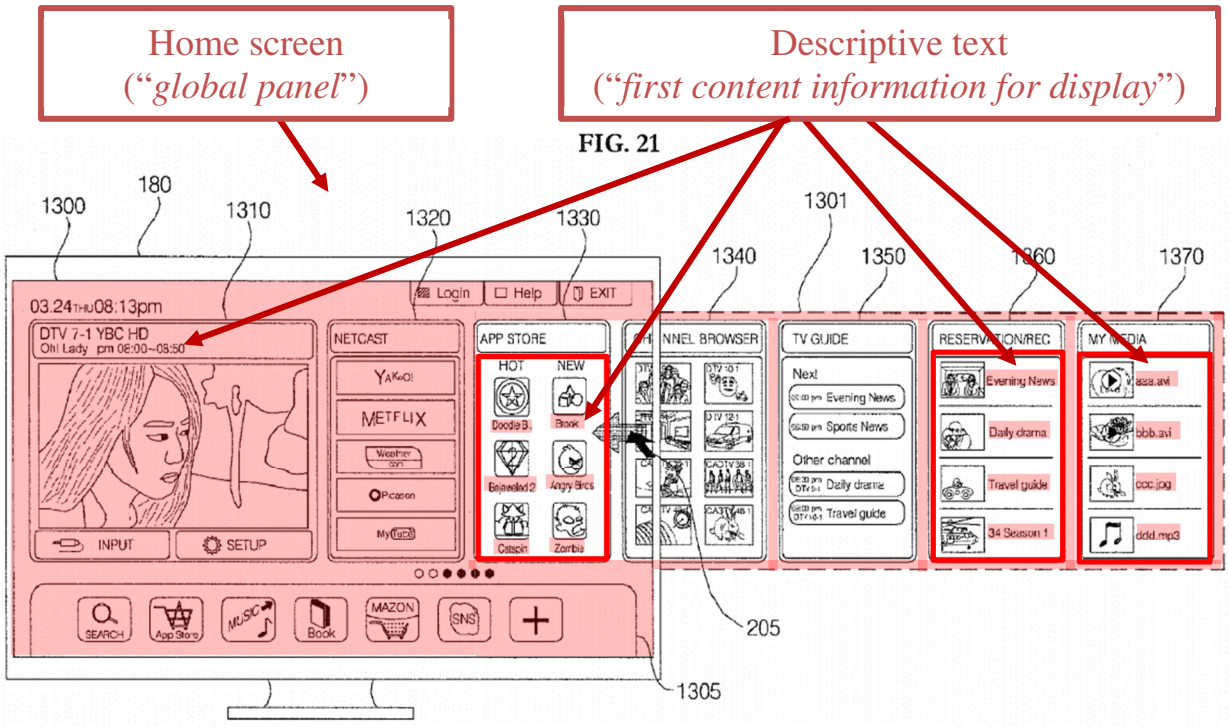
87. **First**, as discussed in connection with elements [1.1]-[1.2], Kim discloses that controller 170 ("*the processor*") determines a home screen ("*the global panel*") to display on the television.

88. **Second**, In the context of the '040 patent, exemplary content information includes "title, date/time, audio/visual indicator, rating, and genre" and "name… of content." Ex.1001, 25:41-49, 27:23-30. Kim discloses such content information.

89. In more detail, as analyzed below, Kim discloses the two different types of content information for display in objects on the home screen: **(1)** descriptive text (e.g., such as application names, video genre, video title, and audio/visual indicator), and **(2)** thumbnails.

(1) descriptive text: "*a first content information"*

90. Kim at Figure 21, reproduced below, illustrates that the home screen objects 1330, 1360, and 1370 have descriptive text informing the user of available content. Ex.1005, [0137], [0208]. One or more of the descriptive texts in a card object corresponds to "*first content information*":



Ex.1005, Fig. 21 (partial, annotated).

91. For example, card object 1330 descriptive text "Angry Birds" and "Bejeweled 2" corresponds to a "title" or "name" of application available to the user. Kim's disclosure is within the scope of the '040 patent. Ex.1001, 25:41-49, 27:23-30; *see also* Ex.1001, Fig. 15C ("Bubble Bird" for Application 1504D).

92. As another example, card object 1360 descriptive text descriptive text "Evening News," "Daily Drama," and "34 Season 1" correspond to content

information in the ’040 patent, such as “title” “genre” or “name” of content. Ex.1001, 25:41-49, 27:23-30.

93. Additionally, the card object 1370 descriptive text of “aaa.avi” “ddd.mp3” represent the title or name (e.g., “aaa” or “ddd”) and the audio/visual format (e.g., audio mp3 format), which corresponds to content information in the ’040 patent, such as “title” “name” or “audio/visual indicator” of content. Ex.1001, 25:41-49, 27:23-30.

94. Accordingly, Kim’s descriptive text in one or more the above noted card objects corresponds to the claimed “*first content information*.”

(2) thumbnails: “*a first content information”*

95. Furthermore, Kim’s home screen card objects include thumbnails (e.g., icons, images, moving pictures) that are “related to” and are “a representation of” “corresponding content”:

> Furthermore, in certain embodiments, the **icons may be thumbnails. While icons may include images which are related to the corresponding content (e.g., name or logo of a content server, an image representing a category, etc.), thumbnails may include a representation of the corresponding content (e.g., an image of the content).** For example, if the thumbnail corresponds to a still image, a reduced sized version of the still image may be displayed on the thumbnail.

Ex.1005, [0186], Fig. 19; *see also* Ex.1005, [0184] (“**The icons may include**

identifying information related to the corresponding application to facilitate identification of the application."), [0185] ("[T]he icons or the descriptions may include additional indicia to differentiate the remote and local applications.").

> The card object 1330 may include a card object name 1332 (APP STORE) and an application list 1335. The application list 1335 may display a **plurality of icons representing applications available** on a server, for example, for download or purchase from the display apparatus 100. Application icons may be sorted into predetermined categories in the application list 1335. As shown in FIG. 19, applications may be sorted by popularity (HOT), by time (NEW), and/or another appropriate category group.

Ex.1005, [0202], Fig. 19.

> The card object 1360 which represents a reserved (e.g., a scheduled recording) or recorded program list may include a card object name 1362 (RESERVATION/REC) and a scheduled or recorded program list 1365. The scheduled or recorded program list 1365 may include scheduled recordings or scheduled programs which have been recorded. Moreover, while **a thumbnail image is displayed for each program** as shown in FIG. 19, the present disclosure is not limited thereto and the program listing may be displayed in various formats.

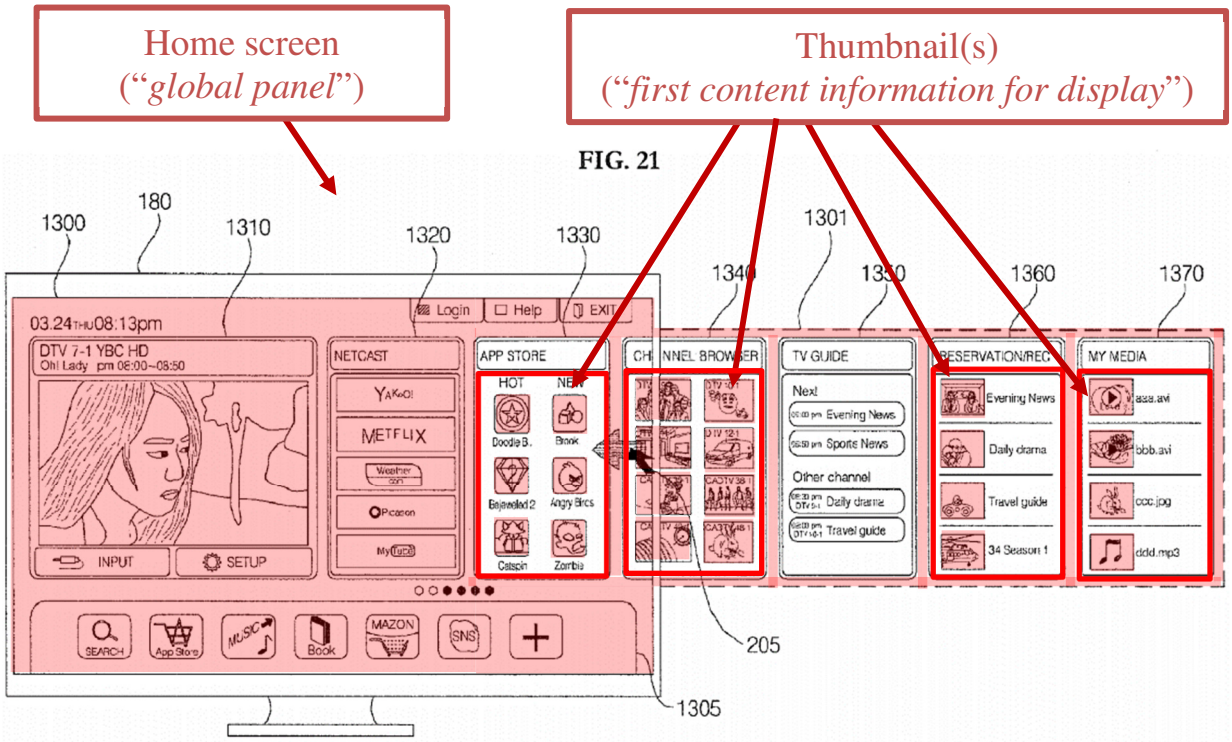
Ex.1005, [0208], Figs. 19-21; *see also* Ex.1005, [0137].

> 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.

Ex.1005, [0209],

96. Kim illustrates at Figure 21, reproduced below, that each of the APP STORE card object 1330, the RESERVATION/REC card object 1360, and the MY MEDIA card object 1370, include thumbnails informing the user of available content:



Ex.1005, Fig. 21 (partial, annotated).

97. In the above figure, the APP STORE card object 1330 displays various thumbnails, each of which informs the user of applications available.

Ex.1005, [0084], [0208]. For example, the thumbnail image informs the user that the application "Angry Birds" is available. Kim's example of content information is within the scope of the '040 patent, which discloses content information "Bubble Bird" for Application 1504D. Ex.1001, Fig. 15C.

98. Similarly, as another example, the thumbnail images in the CHANNEL BROWSER card object 1340 informs the user of available pre-stored favorites channels that may be selected for display. *See, e.g.,* Ex.1005, [0206] ("[T]he thumbnail images may correspond to pre-stored user channels (e.g., favorite list)…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.").

99. As another example, the thumbnail image in the RESERVATION/REC card object 1360 informs the user that a program pertaining to helicopters is available.

100. As yet another example, the audio/video moving picture in the MY MEDIA card object 1370 informs the user that a video pertaining to "Love is." is available. Kim's audio/video moving pictures or images is within the scope of the '040 patent, which discloses that content information includes an "audio/visual indicator." Ex.1001, 25:41-49.

101. Accordingly, Kim's thumbnails in one or more the above noted card objects corresponds to the claimed "*first content information*."

102. **Second**, Kim discloses "*retrieving, by the processor, from memory*" the noted content information "*for display in the global panel*." For example, Kim's controller 170 reproduces content stored in memory 140 on the home screen on display 180:

> 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.

Ex.1005, [0065].

> **The memory 140** may store various programs necessary for the controller 170 to process and control signals, and may also **store processed video, audio and data signals. The memory 140 may temporarily store a video, audio and/or data signal received from the external device interface 135 or the network interface 130. The memory 140 may store information about broadcast channels by the channel-add function. The memory 140 may store applications or a list of applications** received from the external device interface 135 or the network interface 130. The memory 140 may also store a variety of platforms. In one embodiment, when the image display apparatus 100 executes a game application, the memory 140 may store user-

> specific information and game play information about a user terminal used as a game controller.

Ex.1005, [0084].

> 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).

Ex.1005, [0085].

> 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**.

Ex.1005, [0094]; *see also* Ex.1005, [0092]-[0093].

103. As already noted, Kim's controller 170 "provide[s] overall control to the image display apparatus 100." Ex.1005, [0089]. It would have been obvious to a POSITA, for controller 170 to "*retrieve*[]" the content stored in memory 140 so that it may be reproduced on the home screen on display 180. Ex.1005, [0085]. Also, it would have been obvious for the retrieved content to include the descriptive text that is reproduced in the card objects of the home screen, as

displayed at Kim's Figures 19 to 23.

104. For example, it would have been obvious to a POSITA for the displayed application listing of card object 1330, e.g., "Bejeweled 2," "AngryBirds," etc., to correspond to the "list of applications" stored in memory 140. *See* Ex.1005, [0084]-[0085] ("The memory 140 may store applications or a list of applications…The image display apparatus 100 may reproduce content stored in the memory 140."). The same applies to all of the other descriptive text in each card object 1360 and 1370, which correspond to content in memory 140. Because Kim reproduces content stored in memory 140, and the descriptive text is reproduced on the display 180, it would have been obvious to a POSITA to retrieve the descriptive text from memory 140 so that it may be reproduced on the displayed card objects of the home screen. *See infra* [1.4]. This is consistent with Kim's disclosure that "**[t]he controller…may store** and manage (e.g., sort and arrange a display order of the card objects), **and display the card objects**." Ex.1005, [0213].

105. Further, regarding the above noted thumbnails, Kim discloses that the controller 170 controls how images stored in memory 140 are displayed on the home screen on display 180:

> **The <u>controller 170 may control the display 180</u> to display images. For instance, the controller 170 may control the display 180 to display** … **an <u>image stored in the memory 140</u>**. 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]; *see also* Ex.1005, [0117].

> 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**.

Ex.1005, [0094].

> **The image display apparatus 100 is an example of image signal processing apparatus that processes a stored image** or an input image.

Ex.1005, [0117].

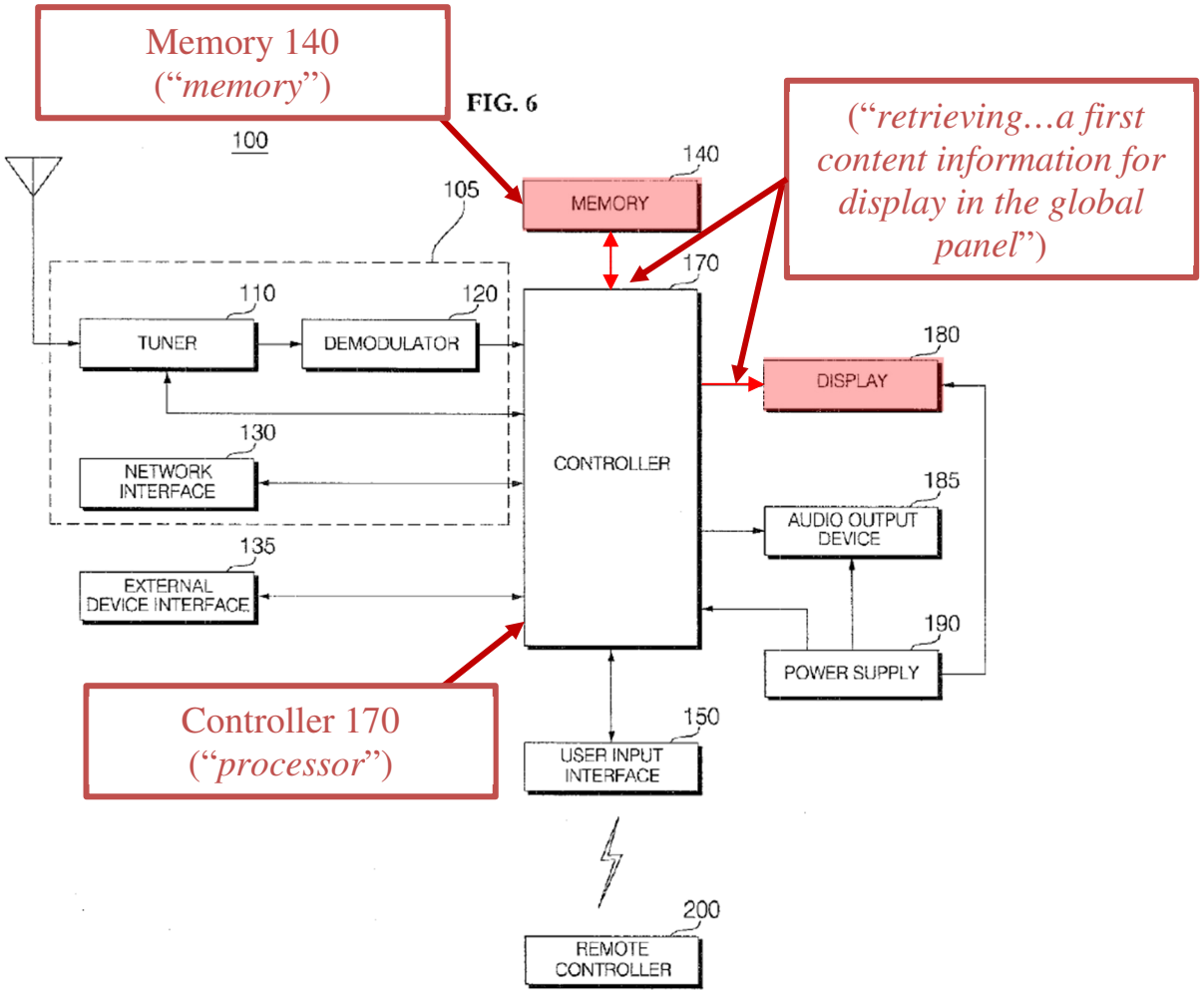
> **Moreover, the thumbnail images may correspond to pre-stored user channels (e.g., favorite list)** or to channel numbers relative to the channel being displayed in the card object 1310 (e.g., channels which are numbered higher or lower than the displayed channel). Although eight channel thumbnail 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].

106. It would have been obvious to a POSITA for the "image[s] stored in the memory 140" to include thumbnails, which are types of images that are

displayed on the home screen. Ex.1005, [0092], [0117]. It also would have been obvious to retrieve the thumbnails from memory 140 so that they are available to be reproduced (Ex.1005, [0065]) when the user presses the home key (Ex.1005, [0192]), thereby informing the user of available content (e.g., video files, still image files, music files, text files, favorite channels, or application files). This is consistent with Kim's disclosure that "**[t]he controller…may store** and manage (e.g., sort and arrange a display order of the card objects), **and display the card objects**." Ex.1005, [0213]; *see also* Ex.1005, claim 11 ("…thumbnail corresponding to…content stored on the storage device."), claim 13 ("…selection of the at least one thumbnail causes…content stored on the storage device to be retrieved for display on the display."), [0293] ("A selection of the at least one thumbnail may cause…content stored on the storage device to be retrieved for display on the display.").

107. Figure 6 of Kim, reproduced below, illustrates (with bidirectional arrows) that the controller 170 retrieves ("*retrieving, by the processor*") content such as descriptive text and thumbnails ("*first content information*") stored in memory 140 ("*memory*") for display (arrow) on the home screen of display 180 ("*display in the global panel*"). *See also infra*, [1.4] (disclosing that the retrieved content is displayed to the user when the home screen card objects are shifted or scrolled).



Ex.1005, Fig. 6 (annotated).

108. Additionally, as already noted above, Kim incorporates by reference Lee-1. Ex.1005, [0106]. Kim states that "[e]xamples of thumbnails and methods of using the same are disclosed in" Lee-1. Ex.1005, [0106]. Regarding methods of using thumbnails, Lee-1 discloses that the "**displayed thumbnail image may be a…previously stored image**." Ex.1006, 12:65-67. It would have been obvious to a POSITA, when implementing Kim's smart TV 100, to store thumbnails in its memory 140 and subsequently display the stored thumbnails to the user, as Lee-1

teaches. That is, it would have been obvious to a POSITA, in view of Lee-1, to store Kim's thumbnails in memory 140. Storing the thumbnails would avoid repeatedly generating the thumbnails (e.g., resizing images as thumbnails) each time the home screen is displayed, thereby reducing processing requirements. For example, the "Hot" or "New" thumbnails in the APP STORE card object 1330 may be updated at a predetermined time (e.g., "a day, a week, a month, a quarter, a halfyear, a year" Ex.1005, [0239]), and after the update the corresponding thumbnails would be stored in memory 140 for display to the user, without additional processing. This would allow the controller 170 to quickly retrieve the thumbnails, once stored in memory 140, so that the images are reproduced (with reduced processing delay) on the card objects of the home screen when the user presses the home key. Ex.1005, [0065], [0192]; Ex.1006, 12:65-67; *see also* Reasons to Combine Kim and Lee-1.

109. Accordingly, Kim in combination with Lee-1 discloses that the controller 170 retrieves from memory 140 thumbnails and descriptive text (associated with the APP STORE card object 1330, the RESERVATION/REC card object 1360, and the MY MEDIA card object 1370) for display in the home screen. In the present example, any combination of the thumbnails and descriptive text associated with the APP STORE card object 1330 or the RESERVATION/REC card object 1360 corresponds to the "*first content*

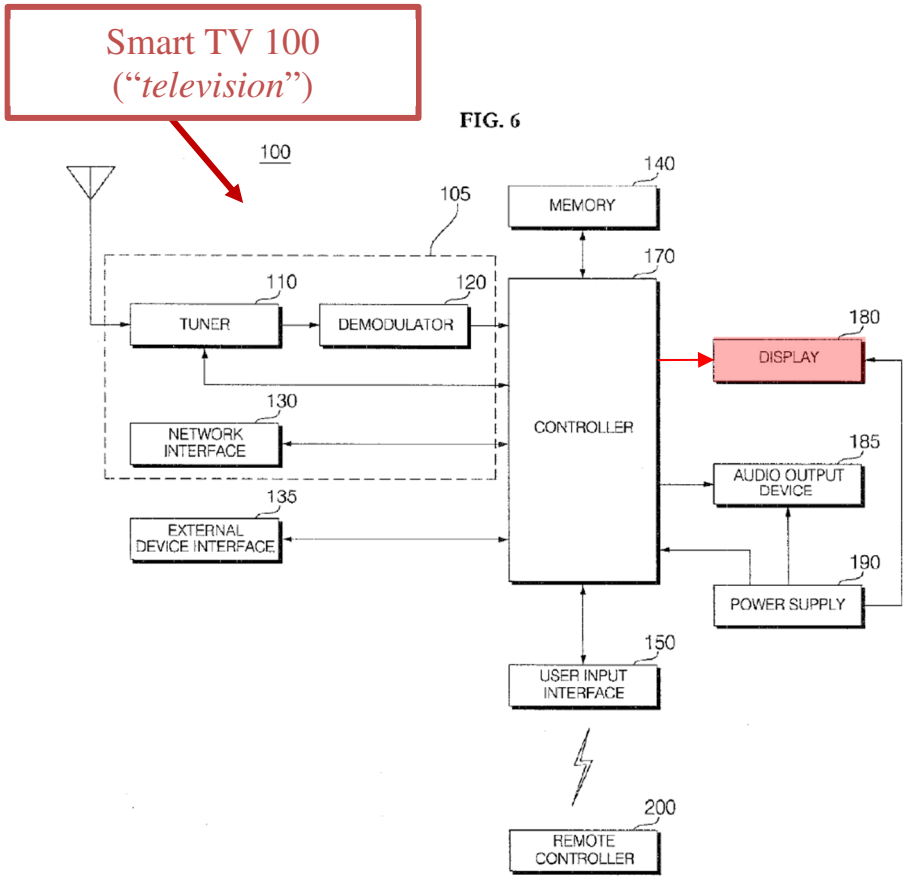
information."

110. Thus, Kim in combination with Lee-1 renders obvious "*retrieving, by the processor, from memory, a first content information for display in the global panel,*" as claimed.

[1.4] *displaying, via the television, the retrieved content information in the global panel,*

111. **First**, as discussed in connection with element [1.0], Kim discloses a smart TV 100 ("*television*") and as discussed in connection with element [1.2], Kim discloses a home screen ("*global panel*"). Further, as discussed in connection with element [1.3], Kim discloses that the controller 170 retrieves from memory 140 thumbnails and descriptive text ("*retrieved content information"*).

112. **Second**, Kim discloses "*displaying, via the television, the retrieved content information*." Consistent with the discussion at element [1.3], Kim discloses that the controller 170 controls the display of the home screen (which includes the thumbnails and descriptive text) via the display 180. *See e.g.,* Ex.1005, [0094] ("[T]he controller 170 may control display of the home screen on the display 180."), [0065] ("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)."). Figure 6 of Kim, shown below, illustrates that the controller 170 outputs retrieved content information (shown as an arrow) so that it is reproduced on the display 180 of the smart TV 100:



Ex.1005, Fig. 6 (annotated).

113. Third, Kim discloses that the retrieved content information is displayed "*in the global panel*."

114. Kim explains that the global panel card objects may be moved (e.g., shifted or scrolled) so that the contents are displayed the user:

> Upon receipt of a card object move input, **<u>the controller 170 may control movement of a card object corresponding to the card object move input on the display 180</u>, or if the card object is not displayed on the display 180, the controller 170 may control the display to show the card object on the display 180.** When a card object is selected from among the card objects on the home screen, the controller

> 170 may control display of an image corresponding to the selected card object on the display 180.

Ex.1005, [0096]; *see also* Figs. 20-23 (illustrating shifting card objects).

> 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**.

Ex.1005, [0196].

> 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].

> 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].

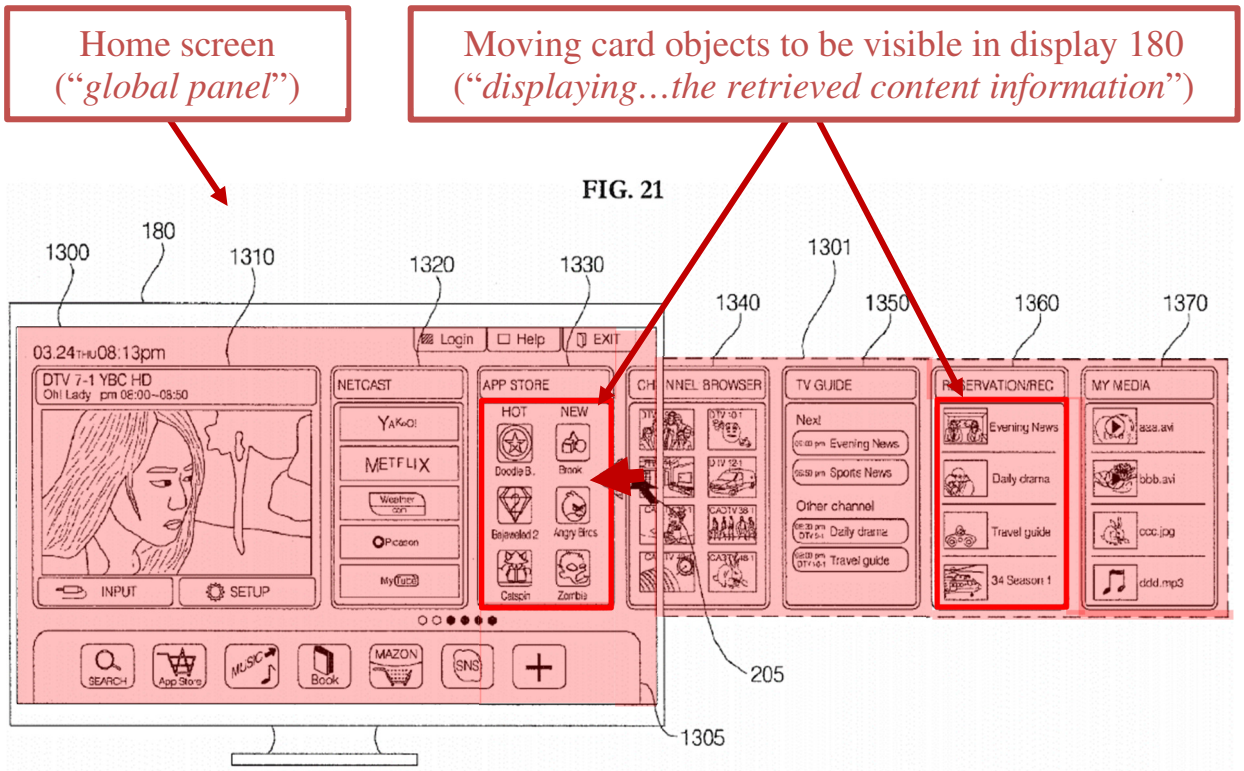
115. Additionally, Kim explains that the broadcast image 1315 may be resized (reduced) to display more (e.g., four) card objects to the user:

> Moreover, the broadcast image 1315 may be scaled or resized. For instance, a size of the broadcast image 1315 may be enlarged or reduced by dragging the broadcast image 1315 with the pointer 205 of the remote controller 200. **As the broadcast image 1315 is scaled up or down, the number of the displayed card objects may be changed accordingly. For example, the number of card objects displayed on the display 180 may be changed from three to either four** or two card objects.

Ex.1005, [0198].

116. It would have been obvious to a POSITA to reduce the size of the broadcast image 1315 or scroll or shift the card objects such that the display 180 presents more or different card objects, such as card objects 1360 and 1370 when these specific card objects are desired to be accessed by the user.

117. Kim at Figure 21, reproduced below, illustrates that the thumbnails and descriptive text ("*retrieved content information*") in the home screen ("*in the global panel*") objects 1330 and1360 would be displayed once shifted or scrolled. Ex.1005, [0137], [0208]; *see also* Ex.1005, Fig. 22.



Ex.1005, Fig. 21 (partial, annotated).

118. Thus, Kim discloses that the thumbnails and descriptive text in card objects (e.g., 1330 and 1360) on the home screen are either initially displayed via the smart TV 100 or are moved (e.g., shifted or scrolled) so that they are displayed via the smart TV 100, which renders obvious "*displaying, via the television, the retrieved content information in the global panel,*" as claimed.

[1.5] *wherein the global panel includes a list of sources of content for the intelligent television,*

119. First, I note that the claim's recitation of "*intelligent*," does not have antecedent basis in the earlier recited elements. Nevertheless, as discussed in connection with element [1.0], Kim discloses a smart TV 100 ("*the television*"). *See also* Ex.1005, [0192], [0282]-[0283], Figs.1, 19. Kim's smart TV 100 is within the scope of an "*intelligent*" TV of the '040 patent. Ex.1001, 6:56-59 ("intelligent TV" corresponds to "a television configured to provide one or more intuitive user interfaces and interactions based on a unique application platform and architecture"), 7:14-17 ("**Intelligent TV encompasses** a broader range of technology than that of the **smart TV**."). Accordingly, Kim's smart TV 100 corresponds to an "*intelligent television,"* as recited in the claim.

120. Second, as discussed in connection with element [1.2], Kim discloses a home screen ("*global panel*"). Kim further discloses that home screen "*includes a list of sources of content for the … television.*" For example, Kim teaches that the home screen includes a plurality of card objects that correspond to a list of content sources for the smart TV 100:

> 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. **<u>The home screen may include a plurality of card objects classified according to content sources</u>**. The card objects may include at least one card object representing a thumbnail list of broadcast

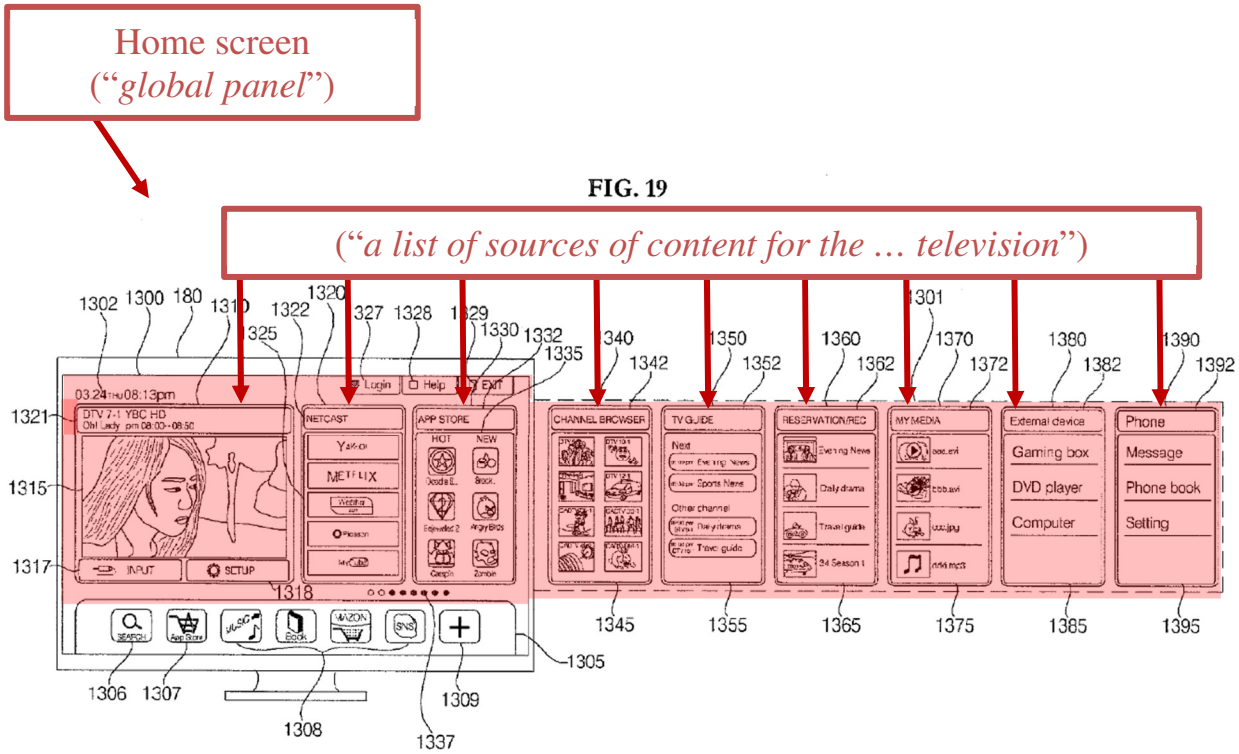
> channels, a card object representing a broadcast program guide, a card object representing a program reservation list or a program recording list, or a card object representing a media list of a device connected to the image display apparatus 100. The card objects may further include at least one of 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].

> 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].

121. As illustrated at Figure 19, reproduced below, the home screen BROADCAST card object 1310, NETCAST card object 1320, APP STORE card object 1330, CHANNEL BROWSER card object 1340, TV GUIDE card object 1350, RESERVATION/REC card object 1360, MY MEDIA card object 1370, EXTERNAL DEVICE card object 1380, and PHONE card object 1390, separately and together, disclose a "*list of sources of content*" as claimed:



Ex.1005, Fig. 19 (annotated).

122. The NETCAST card object 1320 includes a list of network content sources, such as Yakoo, Metflix, weather.com, Picason, MyTube, etc.:

> Referring again to FIG. 19, the card object 1310 may be named BROADCAST and may display a broadcast image. The card object 1320 may be named NETCAST and may provide a list of CPs, e.g., a list of CPs available through NetCast. The card object 1330, which may be named APP STORE, may provide a list of applications.

Ex.1005, [0195]; *see also* Ex.1005, [0197]-[0202].

123. Also, the CHANNEL BROWSER card object 1340 includes a list of broadcast channel or station sources, such as DTY 9, DTY 10-1, DTY 11-1, DTY, 12-1, etc., and the EXTERNAL DEVICE card object 1380 includes a list of

auxiliary content sources, such as a gaming box, a DVD player, a computer, camera, or another appropriate device, etc.:

> 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]; *see also* Ex.1005, [0205]-[0210].

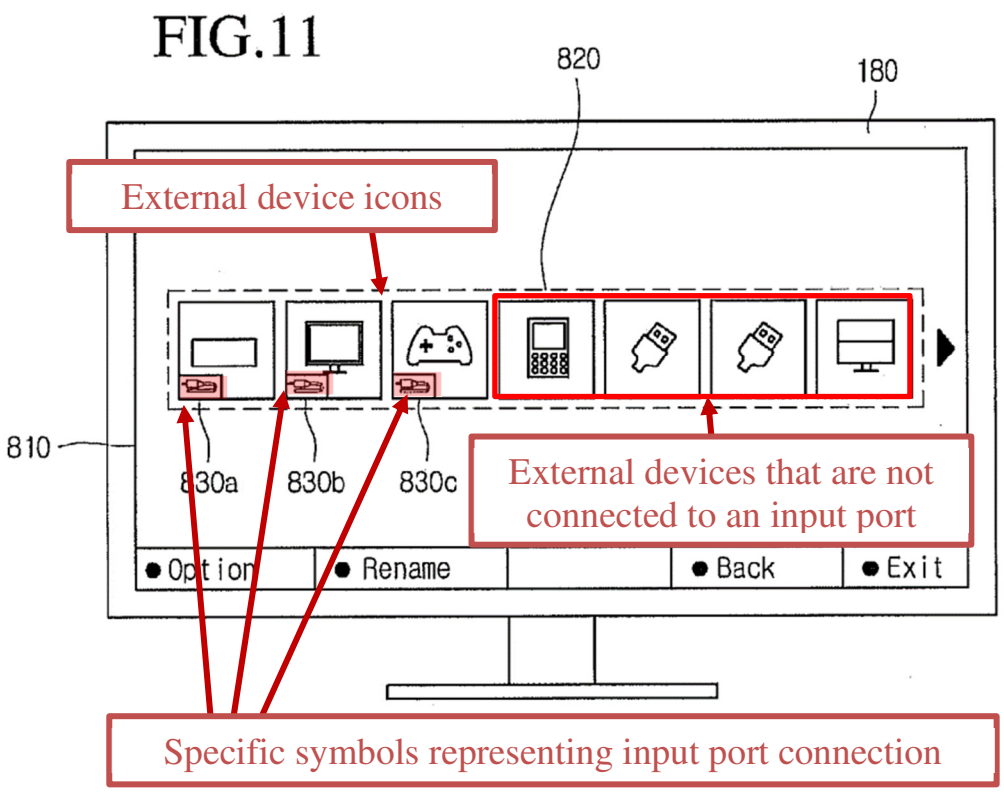
> The card object 1390 may display call-related information and may include a card object name 1392 (PHONE) and a call-related list 1395. The call-related list 1395 may be a listing related to calls placed or received from a portable phone, a computer, or the image display apparatus 100 capable of placing calls.

Ex.1005, [0211].

124. Third, Choi discloses that external devices may be represented by icons with specific symbols to distinguish connected devices. Ex.1007, [0250] ("As shown in FIG. 11, a plurality of **external device icons 820 representing a plurality of external devices are displayed**… the control unit 170 determines

which external device icons 820 are connected to the image display device 100 in order to display **specific symbols 830a, 830b and 830c on the external device icons** that are being connected to the image display device 100.”). It would have been obvious to a POISTA for the specific symbols 830a, 830b and 830c to correspond to the different types of ports being used.

125. Choi’s Figure 11 is reproduced below, illustrates that external devices are represented by icons with specific symbols indicating that a given external device is connected to an input port of the image display device 100:



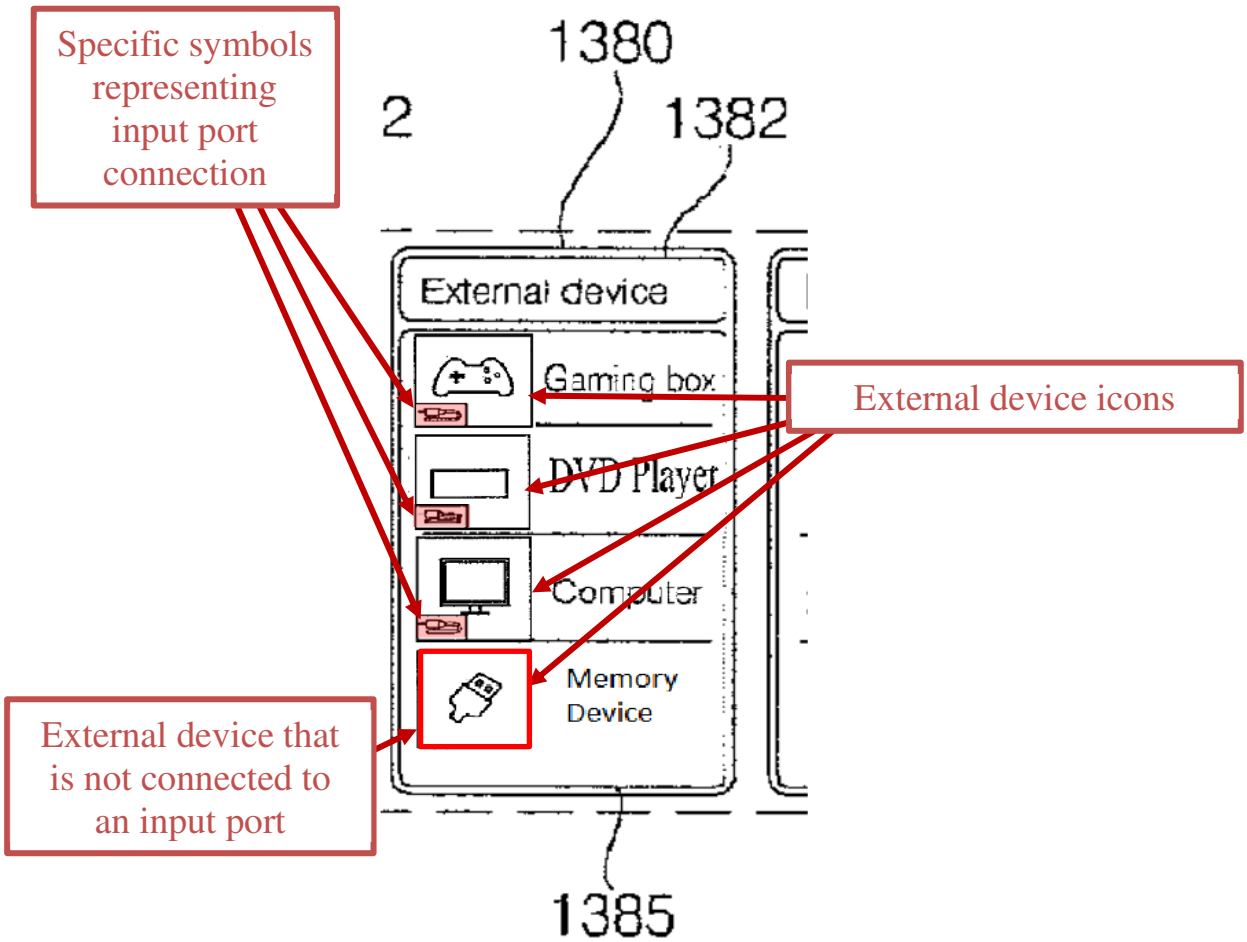
Ex.1007, Fig. 11 (annotated).

126. Like Kim, Choi’s external devices may correspond to a DVD player, a

Blue Ray player, a game console, a personal computer (PC), a camera, a camcorder, a memory device, or any other appropriate device. Ex.1005, [0076], [0131]; Ex.1007, [0249]. Also, like Kim, Choi's external devices may be connected to an input port of the image display device 100, including a USB port, a CVBS port, a component port, an S-video port, a DVI port, a HDMI port, an RGB port, and a D-SUB port. Ex.1005, [0077], Ex.1007, [0099].

127. It would have been obvious to a POSITA to implement Kim's EXTERNAL DEVICE card object 1380 ("**which may provide a list of external devices which may be connected** to the image display apparatus 100", Ex.1005, [0196]), to include icons representing external devices with specific symbols for input port connected devices. This would inform the user as to which external device is connected to an input port of the smart TV 100 and which external device is not connected.

128. In the proposed combination, a POSITA would have implemented Kim's EXTERNAL DEVICE card object 1380 such that external devices that are connected to an input port are represented by an icon with "specific symbols" as I have shown below in Kim's modified Figure 19:



Ex.1005, Fig. 19 (partial, modified in view of Choi).

129. It would have been obvious for Kim's EXTERNAL DEVICE card object 1380 to include both icons and descriptive text of the connected device, consistent with Kim's other card objects (e.g., 1360 and 1370), so that the user can readily discern the connected device. Also, it would have been obvious to include only icons (as Choi illustrates), so that more or larger icons for external devices can be shown on the EXTERNAL DEVICE card object 1380. It further would have been obvious to utilize only letters to identify input port connected devices. *See, e.g.,* Ex.1007, [0250] ("Here, displaying a specific symbol on an external

device icon is used as one example of a method of distinguishing icons from each other, but the present invention is not limited thereto. That is, **any one of letters**, symbols, colors, and flashing lights may be used for distinction."). For example, when using letters, it was known in the art to present a specific input port description next to an external device connected thereto, e.g., "**HDMI-DVD Player**." *See,* Ex.1011, Fig. 17(d). In an implementation with letters, therefore, it would have been obvious to a POSITA to distinguish input port connected devices shown on the EXTERNAL DEVICE card object 1380 by identifying a corresponding input port, e.g., HDMI port, USB port, a CVBS port, etc., so that the user has an understanding of which device is connected to which port.

130. The proposed combination is merely combining prior art elements (an external device icon with a specific symbol representing an input port (or letters), per Choi, with the EXTERNAL DEVICE card object 1380, of Kim) according to known methods to yield predictable results of informing the user which external device is connected to an input port. The combination also represents the use of known technique (above noted technique of Choi) to improve Kim's similar image display apparatus 100 in the same way (e.g., inform the user which external device is connected to an input port).

131. Thus, Kim in combination with Choi discloses that the home screen includes a list of content sources (see above analysis) for the smart TV 100, which

renders obvious "*wherein the global panel includes a list of sources of content for the intelligent television,*" as claimed. *See also infra* [1.7], which addresses how the prior art content sources correspond to five different claimed sources.

[1.6] *wherein at least one of the sources is highlighted as being associated with the first content information,*

132. As discussed in the Claim Construction section, the recitation of "*at least one of*" requires only one of the sources to be highlighted. *See* Ex.1001, 4:60-67 ("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.").

133. First, as discussed in connection with element [1.3], Kim discloses thumbnails and descriptive text in each card object 1330 and 1360 (separately and together "*first content information*."). Further, as discussed in connection with element [1.5], Kim discloses content sources ("*the sources*").

134. Second, Kim discloses that at least one of the sources "*is highlighted as being associated with the first content information*." Kim gives an example where a card object is highlighted if it is already displayed on the display 180:

> 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.**

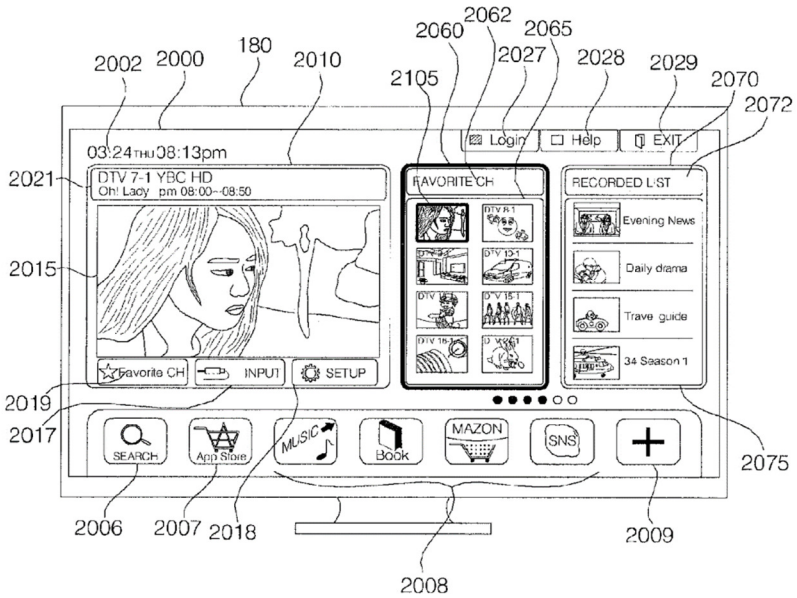
Ex.1005, [0211]. Accordingly, Kim discloses "*highlighting,*" as recited in the claim.

135. Although Kim provides a highlighting example in the context of presently displayed card object 1390, it would have been understood by a POSITA that this teaching generally applies to Kim's other card objects. For example, in the circumstance where the APP STORE card object 1330 is already displayed on the display 180 (see Figure 21), it would have been obvious to a POSITA for the APP STORE card object 1330 to be highlighted so that it is distinguished from the other card objects and readily identified by the user. *See, e.g.,* Ex.1010, 38:7-11 ("The home screen 2000 may include the [a] card object 2060…[that] **may be highlighted…[so] the user can readily view** the…card object 2060."), Fig. 33B.

Kim's card object 1330 being highlighted associates the APP STORE ("*at least one of the sources*") with the respective application thumbnails and descriptive text (separately and together "*first content information*").

136. A POSITA would have understood that Kim's card object may be highlighted with a box surrounding the card object, as was known in the art. *See e.g.,* Ex.1010, Figs. 33B (illustrating how it was known to highlight a card object with a surrounding box).

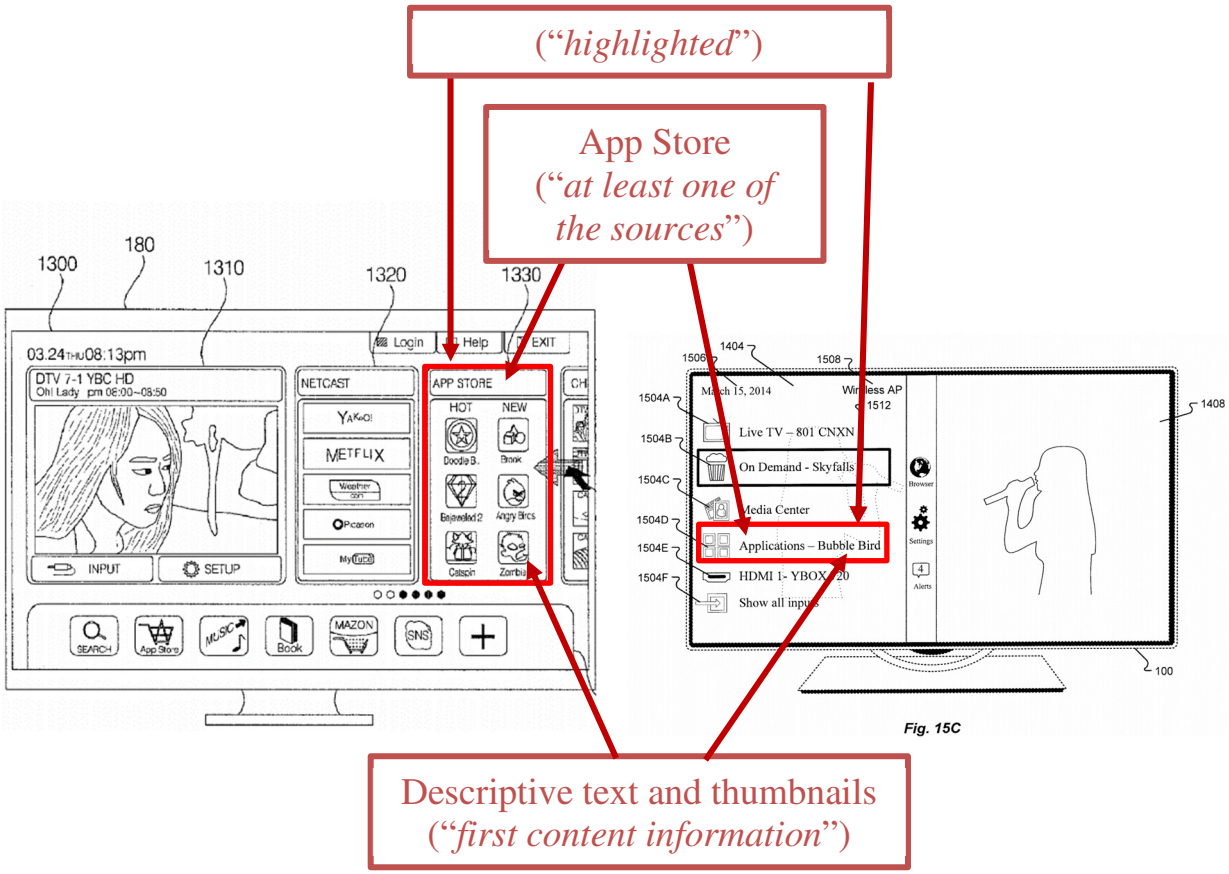
FIG. 33B



Ex.1010, Figs. 33B.

137. For reference, I have provided below Kim's Figure 21 with the '040 patent Figure 15, in a side-by-side comparison. This comparison shows an example of how Kim's highlighting an already displayed card object (e.g., card object 1330) results in the "APP STORE" content source "*highlighted as being associated with*"

the application thumbnails and descriptive text (e.g., "Angry Birds") consistent with how the '040 patent would highlight the content source "Applications" and associated content information "Bubble Bird":



Ex.1005, Fig. 21 (partial, annotated). **Ex.1001, Fig. 15C (annotated).**

138. The same reasoning applies to Kim's other card objects. For example, when card object 1360 is already displayed the RESERVATION/REC content source would be highlighted as associated with the thumbnails and descriptive text that identifies the available content. As another example, when card object 1370 is already displayed, the MY MEDIA content source would be highlighted as

associated with the thumbnails and descriptive text that identifies the available audio or video content. Similarly, the same reasoning would apply to the remaining card objects.

139. Thus, in numerous ways, Kim renders obvious "*wherein at least one of the sources is highlighted as being associated with the first content information*."

140. **Additionally**, Kim discloses that active card objects are distinguished from partially displayed card objects:

> **The partially displayed card objects may be further distinguished from the active card objects by distinguishing a color, tint, brightness, shading, fading, or another appropriate characteristic to further distinguish the partially displayed card objects**. For example, the image of the partially displayed card objects may be faded such that the partially displayed card objects are less noticeable. Other graphic effects may be provided, such as gradually fading the partially displayed card object towards the edge of the display, to further distinguish these card objects while minimizing their potential distraction to a user.

Ex.1005, [0228].

141. Kim's technique of distinguishing partially displayed card objects (e.g., using **color**, **tint**, brightness, **shading**, fading, or another appropriate characteristic) to bring into focus the active card objects renders obvious

"*highlighting*." Exemplary "*highlighting*" in the '040 patent includes using "a box…adjusting the background of an icon and text…such that the **color, shade, or hue** is different…[and] may comprise enlarging or magnifying the icon and text." Ex.1001, 30:41-51.

142. Thus, distinguishing an active card object (e.g., by using one or more of color, tint, brightness, shading, etc.), the respective content source (of a given card object) would be highlighted as associated with its respective thumbnails and descriptive text, which renders obvious "*wherein at least one of the sources is highlighted as being associated with the first content information,*" as claimed.

[1.7] *and wherein the sources include a live television source, a video on demand source, a media center source, an applications source, and an electrical input associated with the television.*

143. As a threshold matter, I note that the claim does not require that all of the recited sources be displayed at the same time. On the contrary, the '040 patent's embodiments contemplate that the "[i]f there is too much information (e.g., too many silos or applications) 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)." Ex.1001, 32, 60-64; *see also*, Ex.1008, *generally* (Patent Owner's infringement contentions asserting that a menu that does not display sources all on the same screen nonetheless corresponds to the claimed sources).

144. As analyzed below, Kim's card objects include the following content sources: **(1)** a live television source, **(2)** a video on demand source, **(3)** a media center source, **(4)** an applications source, and **(5)** an electrical input associated with the smart TV 100.

(1) "*a live television source*"

145. Each of Kim's BROADCAST card object 1310 and CHANNEL BROWSER card object 1340 correspond to a live ("real time") television broadcast source:

> **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 real time broadcast content may be referred to as a linear Audio/ Video (A/V) content.

Ex.1005, [0038].

> **If real-time streaming data is transmitted over RTP/RTCP, the service delivery manager 703 may parse the received real-time streaming data using RTP and output the parsed real-time streaming data to the DEMUX 705**. The service deliver manager 703

> may also store the parsed real-time streaming data in the SI & metadata DB 711 under the control of the service manager 713.

Ex.1005, [0056].

> 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).**

Ex.1005, [0063].

> **The BROADCAST card object 1310 may display a broadcast image 1315 received through the tuner 110 or the network interface 130**, an information object 1321 that displays information about the broadcast image 1315, a device object 1317 representing an external device, and a setup object 1318. Moreover, the BROADCAST card object 1310 maybe fixed in size by a lock function such that the broadcast image 1315 may be viewed while the other displayed card objects 1320, 1330 may be scrolled.

Ex.1005, [0197].

> **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].

> 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].

146. BROADCAST card object 1310 and CHANNEL BROWSER card object 1340 would be understood by a POSITA to allow the user to view live ("real-time") television broadcasting content. For example, a user would be able to select a thumbnail (representative of a broadcast channel) from card object 1340 so that the selected channel with live broadcasting may be displayed in the card object 1310 on the display 180. Kim's "live" ("real-time") television broadcasting is within the scope of the term "Live TV," as used in the '040 patent, which "refers to a television production broadcast in real-time, as events happen, in the present." Ex.1001, 7:39-41.

147. Thus, Kim's BROADCAST card object 1310 and CHANNEL BROWSER card object 1340, separately and together, that provide live television broadcasting sources, render obvious that "*the sources include a live television source*," as claimed.

(2) "*a video on demand source*"

148. Kim's NETCAST card object 1320 includes a plurality of content providers ("CP") that provide Video on Demand content:

> Referring again to FIG. 19, the card object 1310 may be named BROADCAST and may display a broadcast image. **The card object 1320 may be named NETCAST and may provide a list of CPs, e.g., a list of CPs available through NetCast**.

Ex.1005, [0195].

> **The card object 1320 may contain a card object name 1322 (NETCAST) and a CP list1325 that displays a list of CPs. While Yakoo, Metflix, weather.com, Picason, and MyTube are listed as available CPs in the CP list 1325, as shown in FIG. 19**, it should be appreciated that many other CPs may be listed in the CP list 1325. Upon selection of the card object name 1322, the card object 1320 may be displayed as a full screen image on the display 180. The same may apply to the other card objects 1330, 1340, 1350, 1360, 1370, 1380, 1390. Moreover, if a specific CP is selected from the CP list 1325, a list of content available from the selected CP may be displayed on the display 180.

Ex.1005, [0201].

> 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].

> The network interface 130 may access a specific Web page over a connected network or another network linked to the connected network. That is, the network interface 130 may access a specific Web page over a network and transmit or receive data to or from a server. Additionally, the network interface 130 may receive content or data from a CP or an NP. Specifically, the network interface 130 may receive content such as movies, advertisements, games, **VoD files, broadcast signals as well as information related to the content from a CP or an NP**.

Ex.1005, [0082].

149. In view of the above disclosure, a POSITA would have understood Kim's CP's (e.g., "Yakoo," "Metflix," and "MyTube")[2] in the NETCAST card

[2] It appears that "Yakoo," "Metflix," and "MyTube" are different spellings for well-known content providers "Yahoo," "Netflix," and "YouTube," respectively.

object 1310 are content sources that allow the user to select to watch VoD content. Kim's examples are within the scope of the term "video on demand (VOD)," as used in the '040 patent, which "refers to systems and processes which allow users to select and watch/listen to video or audio content on demand." Ex.1001, 8:4-6.

150. Thus, Kim's NETCAST card object 1320 (including one or more of the CPs) that provides video on demand, renders obvious that "*the sources include…a video on demand source*," as claimed.

(3) "*a media center source*"

151. Each of Kim's RESERVATION/REC card object 1360 and MY MEDIA card object 1370 allow for the user to access different sources to obtain media (e.g., recorded programs, multimedia files, moving pictures, still images, audio, text, e-books, etc.):

> **[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**.

Ex.1005, [0196].

> **The card object 1360 which represents a reserved (e.g., a scheduled recording) or recorded program list may include a card object name 1362 (RESERVATION/REC)** and a scheduled or recorded program list 1365. The scheduled or recorded program list 1365 may

> include scheduled recordings or scheduled **programs which have been recorded**.

Ex.1005, [0208].

> **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].

152. Kim's examples are within the scope of the '040 patent's "*media center source*," which similarly "allows for the access of different sources," including "displaying pictures or audio." Ex. 1001, 20:39-45.

153. Thus, RESERVATION/REC card object 1360 and MY MEDIA card object 1370, separately and together, that allows for accessing multimedia files, moving pictures, audio, text, e-books, etc., renders obvious that "*the sources include… a media center source*," as claimed.

(4) "*an applications source*"

154. Kim's APP STORE card object 1330 provides a list of applications that the user may purchase, download, and use:

> **The card object 1330 may include a card object name 1332 (APP STORE) and an application list 1335. The application list 1335 may display a plurality of icons representing applications available on a server, for example, for download or purchase from the display apparatus 100**. Application icons may be sorted into predetermined categories in the application list 1335. As shown in FIG. 19, applications may be sorted by popularity (HOT), by time (NEW), and/or another appropriate category group. Upon selection of an application icon from the application list 1335, information related to the selected application may be displayed on the display 180.

Ex.1005, [0202]; *see also* Ex. 1005, [0195] ("The card object 1330, which may be named **APP STORE, may provide a list of applications**."); Ex.1005, [0185].

155. I note that '040 patent's "*applications source*" similarly "allows for the provision, storage and use of applications." Ex. 1001, 20:46-47.

156. Thus, Kim's APP STORE card object 1330, which allows for purchasing and downloading applications, renders obvious that "*the sources include… an applications source*," as claimed.

(5) "*an electrical input associated with the television*"

157. **First**, Kim's EXTERNAL DEVICE card object 1380 corresponds one or more external devices (e.g., a gaming box, a DVD player, or another appropriate

device) electrically connected to a television port (e.g., USB, HDMI, etc.):

> **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 135 may be connected to an external device such as a Digital Versatile Disk (DVD) player, a Blu-ray player, a game console, a camera, a camcorder, or a computer (e.g., a laptop computer), wirelessly or by wire. Then, **the external device interface 135 externally receives video, audio, and/or data signals from the external device and transmits the received input signals to the controller** 170.

Ex.1005, [0076].

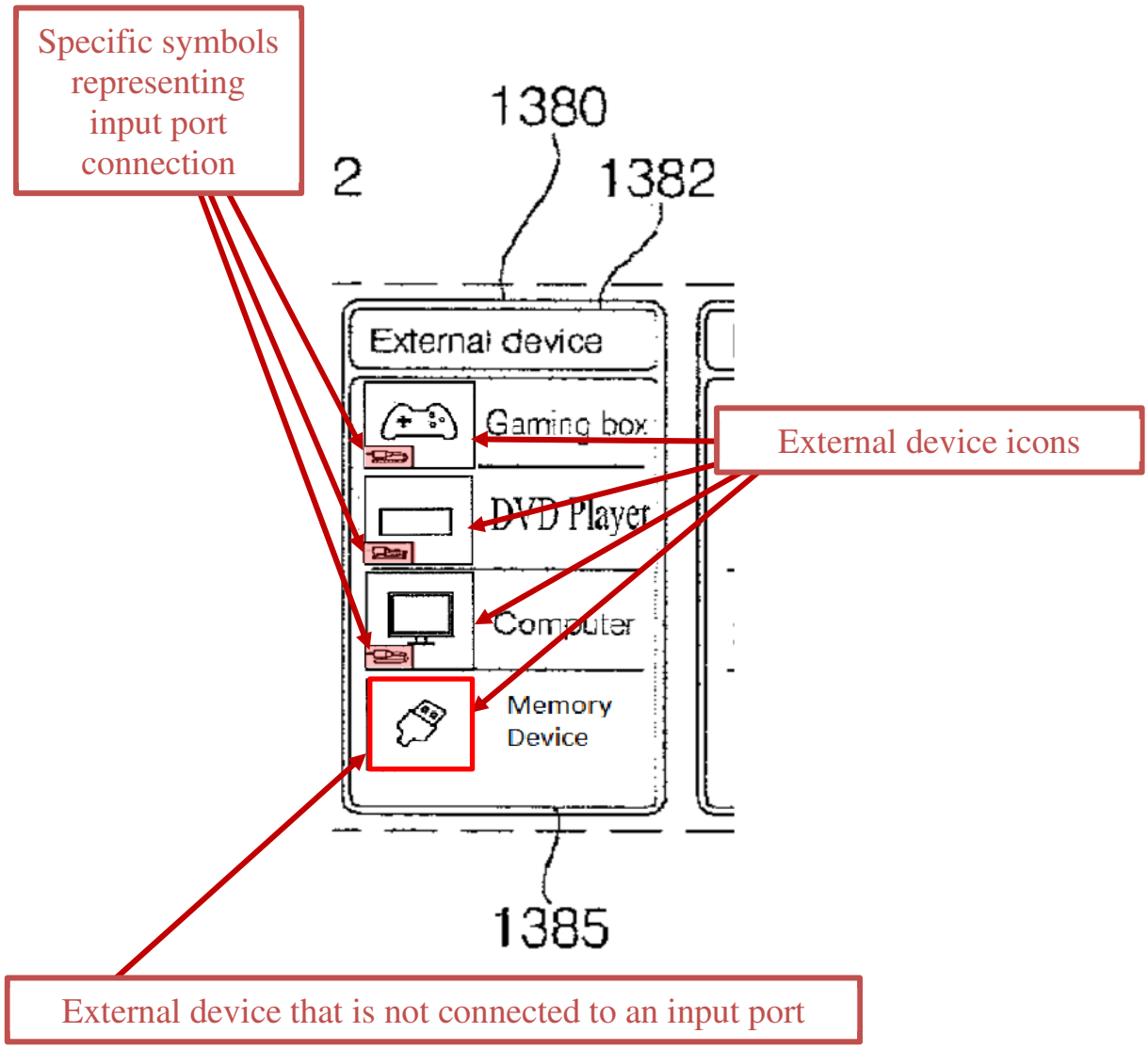
> **The A/V I/O interface of the external device interface 135** may include a Universal Serial Bus (USB) port, a Composite Video Banking

> Sync (CVBS) port, a Component port, a Super-video (S-Video) (analog) port, a Digital Visual Interface (DVI) port, a High-Definition Multimedia Interface (HDMI) port, a Red-Green-Blue (RGB) port, a D-sub port, or another appropriate port for connecting to an external device.

Ex.1005, [0077]; *see also* Ex.1005, [0075]-[0080], Fig. 6 (illustrating that the smart TV 100 includes an external device interface 135 and network interface 130); Ex.1005, [0128], [0131]-[0132], Fig. 9 (illustrating that the smart TV 100 is connected to various external devices 230 that provide an input electrical signal wirelessly or by wire).

158. Second, as discussed in connection with element [1.5], it would have been obvious to a POSITA to implement Kim's EXTERNAL DEVICE card object 1380 ("which may provide a list of external devices which may be connected to the image display apparatus 100", Ex.1005, [0196]), to include icons representing external devices with specific symbols that distinguish connected devices from devices that are not connected.

159. As shown below at in Kim's modified Figure 19, in the proposed combination with Choi, EXTERNAL DEVICE card object 1380 would include, for each externally connected device, an icon with a specific symbol representing an input port of the smart TV 100 and devices not connected have no symbol:



Ex.1005, Fig. 19 (partial, modified in view of Choi).

160. Additionally, to the extent argued that the claim requires the specific input port be referenced by name, e.g., "HDMI," such would have been obvious as analyzed in connection with element [1.5].

161. Each external device (e.g., Gaming Box, DVD player, etc.), renders obvious "*an electrical input associated with the television*." *See* Ex.1001, 6:16-20. ("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.)"). Additionally, each specific symbol representing an electrical input port (e.g., USB, HDMI, etc.) associated with the smart TV 100, separately and together with an electrically connected external device, renders obvious "*an electrical input associated with the television*." *See* Ex.1001, 6:20-22 ("Rather than a device or devices, the input could be configured as an electrical or physical connection to one or more devices.").

162. Thus, Kim in combination with Choi discloses that the EXTERNAL DEVICE card object 1380 includes an extern device and an electrical input associated with the smart TV 100, which renders obvious that "*the sources include…an electrical input associated with the television,*" as claimed.

7. Claim 2

[2.0] ***The method of claim 1, further comprising:***

163. *See* claim 1.

[2.1] ***identifying a user associated with the received indication;***

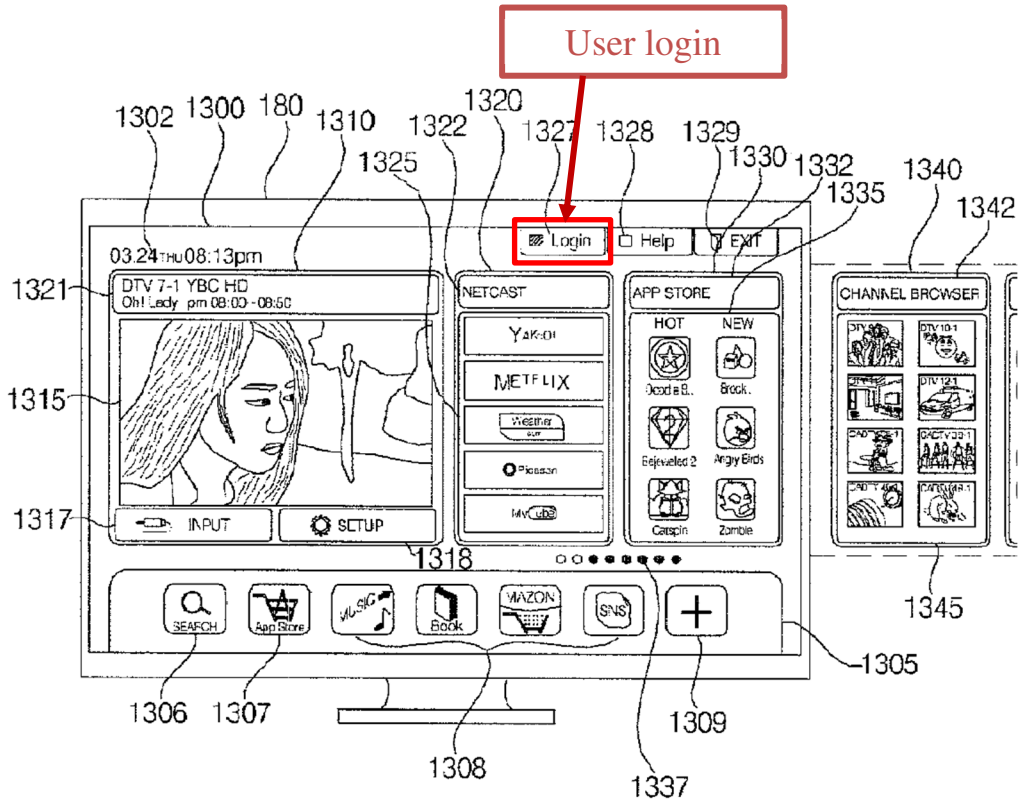
164. **First**, as discussed in connection with element [1.1]-[1.2], a user makes a selection (e.g., go-to-home screen selection) which is received by the processor ("*the received indication*").

165. **Second**, Kim discloses that the user may login through a Login menu item 1327 on the home screen:

> A Login menu item 1327, a Help menu item 1328, and an Exit menu item 1329 may be displayed above the card objects 1320 and 1330. **<u>The user may login to the APP STORE or a network connected to the image display apparatus 100 using the Login menu item 1327</u>.** The Help menu item 1328 may provide guidance regarding operation of the image display apparatus 100. The Exit menu item 1329 may be used to exit the home screen 1300. When the Exit menu item 1329 is selected, a full screen image of the received broadcast image may be displayed on the display 180.

Ex.1005, [0203].

166. Kim's Login menu item 1327 is illustrated at Figure 19, reproduced below:



Ex.1005, Fig. 19 (partial, annotated).

167. Additionally, Kim discloses that the "**users or electronic devices [may be] pre-registered with the image display apparatus 100**." Ex.1005, [0081].

168. A POSITA would have recognized that logging into the smart TV 100's APP STORE includes the user providing unique identification information, e.g., username and password, because such information was well-known to be used for login. *See*, *e.g.,* Ex.1005, Fig. 18 (illustrating logging into an online email account with username and password). Also, it would have been obvious to a POSITA that there are instances where the user that made the initial home screen selection (and therefore is "*associated with the received indication"*) proceeds to enter login information in the home screen Login menu item 1327 to log into the smart TV 100's APP STORE. Thus, Kim discloses identifying a user associated with the received indication (via a login procedure or preregistering), which renders obvious "*identifying a user associated with the received indication*," as claimed.

[2.2] ***retrieving one or more settings associated with the identified user;***

169. **First**, as discussed in connection with element [2.1], a user is identified by preregistering or logging into the smart TV 100's APP STORE ("*the identified user*").

170. **Second**, Kim discloses that the home screen application menu 1305

has "user-set application menu items 1308."

> In certain embodiments, an Internet application menu item and a mail application menu item may be added as mandatory application menu items in the application menu 1305. **The user-set application menu items 1308 may be changed to display applications menu items for applications which are frequently accessed. It should be appreciated that, while the application menu 1305 is disclosed herein as having a predetermined specific set of mandatory application menu items and user-set application menu items, the present disclosure is not limited thereto, and any number or types of application menu items may be designated as being mandatory or optional**.

Ex.1005, [0217]; *see also* Ex.1005, [0215] ("The application menu items 1306 to 1309 may be divided into mandatory application menu items 1306, 1307, and 1309 (Search, App Store, and '+') and optional application menu items 1308 (e.g., Music, Book, MAZON, and SNS).")

171. Accordingly, the user-set application menu items 1308 correspond to "*one or more settings associated with the identified user*," as claimed.

172. **Third**, as discussed in connection with element [1.3], Kim's controller 170 provides overall control to the smart TV 100, including reproducing content stored in memory 140. *See also*, Ex.1005, [0065], [0089]. It would have been obvious to a POSITA, for controller 170 to "*retrieve*[]" from memory 140 the user's settings for the application menu item 1308 (e.g., which applications the

user has elected to include in the menu) so that the corresponding application thumbnails would be retrieved from memory 140 and displayed on the home screen. *See infra*, [2.3]-[2.4].

[2.3] ***retrieving, from memory, content information associated with the identified user; and***

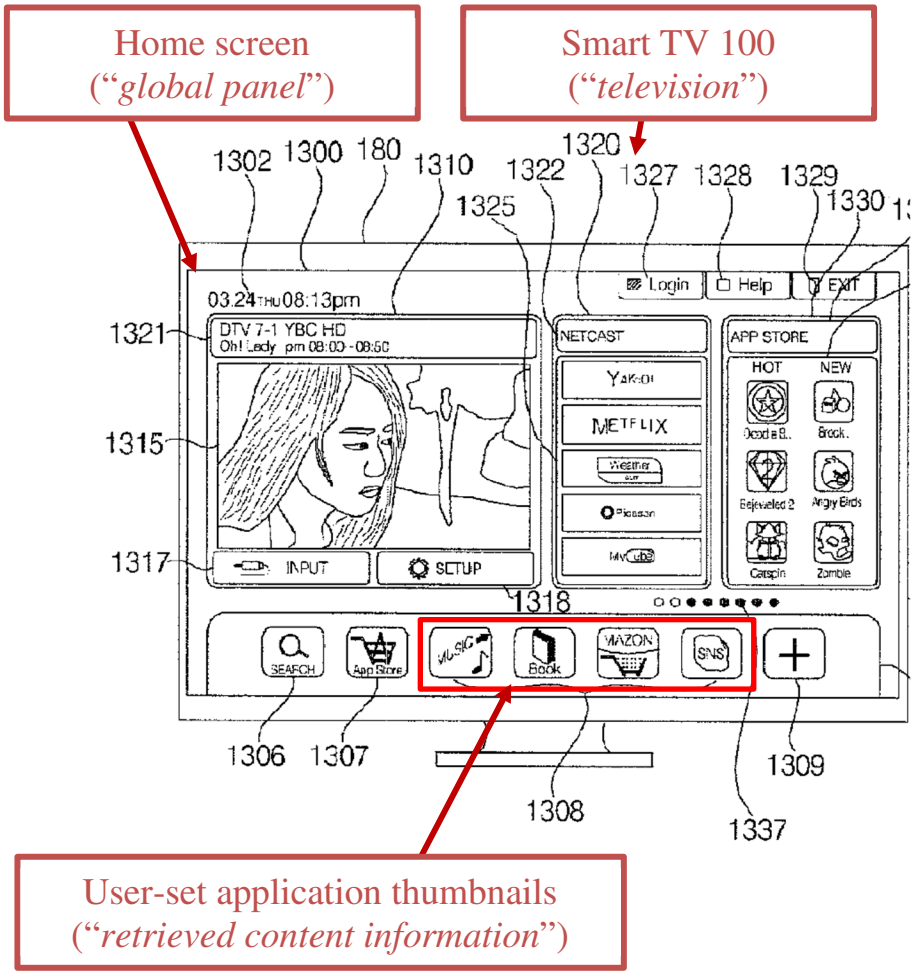
173. As discussed in connection with element [2.2], the prior art discloses that the application menu items 1308 (e.g., applications such as Music, Book, MAZON, and SNS, etc.) are user-set. The application menu items 1308 are represented as thumbnails. *See* Ex.1005, [0206], Fig. 19. Consistent with the analysis at element [1.3], Kim's thumbnails correspond to "*content information*." Because the thumbnails, in this instance, represent user-set applications, the thumbnails are "*associated with the identified user.*" Further, consistent with the analysis at element [1.3], it would have been obvious in the combination of Kim and Lee-1 for stored thumbnails to be retrieved from memory 140 so that they may be displayed. *See infra*, [2.4].

174. Thus, Kim in combination with Lee-1 discloses retrieving, from memory 140, application thumbnails associated with the identified user, which renders obvious "*retrieving, from memory, content information associated with the identified user.*"

[2.4] ***displaying, via the television, the retrieved content information in the global panel.***

175. First, as discussed in connection with element [2.3], the prior art discloses retrieving thumbnails (e.g., user-set thumbnails corresponding to applications such as Music, Book, MAZON, and SNS) ("*the retrieved content information*").

176. Second, Kim discloses that the application menu items 1308 thumbnails are displayed, via the smart TV 100, in the home screen. *See e.g.,* Ex.1005, [0205]-[0206], [0215]-[0218], Figs. 19-23.



Ex.1005, Fig. 19 (partial, annotated).

177. Thus, Kim discloses displaying, via the smart TV 100, the retrieved application thumbnails in the home screen, which renders obvious "*displaying, via the television, the retrieved content information in the global panel*."

8. Claim 3

[3.0] ***The method of claim 1, further comprising:***

178. *See* claim 1.

[3.1] ***identifying a user associated with the received indication;***

179. *See* [2.1].

[3.2] ***retrieving, from memory, one or more settings associated with the identified user;***

180. As discussed in connection with element [2.3], the prior art discloses retrieving, from memory 140, one or more settings associated with the identified user.

[3.3] ***retrieving, from memory, content information associated with the identified user and the one or more settings associated with the user; and***

181. As discussed in connection with element [2.3], the prior art discloses retrieving, from memory 140, application thumbnails associated with the identified user. Additionally, consistent with the discussion at elements [2.2]-[2.3], the retrieved application thumbnails are also associated to the one or more settings associated with the user because the thumbnails correspond to the user settings for application menu items 1308. Thus, Kim in combination with Lee-1 renders

obvious "*retrieving, from memory, content information associated with the identified user and the one or more settings associated with the user*."

[3.4] ***displaying, via the television, the retrieved content information in the global panel.***

182. *See* [2.4].

9. Claim 4

[4.0] ***The method of claim 1, further comprising:***

183. *See* claim 1.

[4.1] ***receiving a second indication associated with a selection by a user;***

184. **First**, as discussed in connection with element [1.1], the prior art discloses that controller 170 (or "any other processor") is operable to receive selection signals associated with a user selection from an input device (e.g., remote controller 200).

185. **Second**, Kim discloses this element in two different ways, for example, in the context of: (1) the CHANNEL BROWSER card object 1340 ("second card object"), and (2) the MY MEDIA card object 1370 ("third card object").

(1) CHANNEL BROWSER card object 1340 ("second card object")

186. Kim, discloses that its home display may provide a plurality of objects, where "**a second card object in a second area of the display… ha[s] at least one link for connecting to a content provider**." Ex.1005, [0287]-[0289].

"**The at least one link corresponds to a channel in a broadcast signal.**" Ex.1005, [0292]. "**The at least one link is an icon" that may be "*select[ed]*" by the user**. Ex.1005, [0292].

187. Because the second card object includes at least one link (or icon) that corresponds to a broadcast channel, a POSITA would have understood that the second card object corresponds to Kim's earlier disclosed CHANNEL BROWSER card object 1340, which includes thumbnails (or icons) of broadcast channels.

188. This is consistent with Kim's disclosure that the user may select a thumbnail (or icon) from the CHANNEL BROWSER card object 1340.

> **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].

> 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]; *see also* Ex.1005, [0086] ("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."); Ex.1005, [0060]-[0061].

189. Kim's disclosure that the user selects a thumbnail or icon in the CHANNEL BROWSER card object 1340 (e.g., a second card object) using the remote control 200 and the controller 170 receives a corresponding signal from the user input interface 150, renders obvious "*receiving a second indication associated with a selection by a user*," as claimed.

(2) MY MEDIA card object 1370 ("third card object")

190. Kim further discloses that the home screen includes "a third card object in a third area of the display." Ex.1005, [0289]. The third card object includes selectable thumbnails.

> [T]he third card object may include at least one thumbnail corresponding to at least one of a broadcast content, content stored on the content server, or content stored on the storage device, wherein the at least one thumbnail includes a still image or a video image representative of the corresponding content. **A selection of the at least one thumbnail may cause the at least one of a broadcast content, content stored on the content server, or content stored on the storage device to be retrieved for display on the display**. Moreover, the displayed content is displayed as a full screen image on the display. Alternatively, if the thumbnail corresponds to a video content, the video content may be displayed in the first card object.

Ex.1005, [0293].

191. Because the third card object's "thumbnail includes a still image or a video image representative of the corresponding content," a POSITA would have understood that the third card object corresponds to Kim's earlier disclosed MY MEDIA card object 1370, which includes thumbnails as still or video images, as shown at Figure 19.

192. This is also consistent with Kim's disclosure that the user may select a thumbnail from the MY MEDIA card object 1370 to view content stored in memory 140 or from external device (e.g., content server).

> **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**.

Ex.1005, [0196].

> 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

> **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).

Ex.1005, [0085].

193. In view of the above disclosure, it would have been obvious to a POSITA for one or more thumbnails in MY MEDIA card object 1370 to correspond to one of broadcast content, content stored on external device (e.g., on the content server) or content stored on in memory 140 (internal content source).

194. When the user selects a thumbnail in the MY MEDIA card object 1370 (e.g., a third card object) using the remote control 200, the controller 170 receives a corresponding signal from the user input interface 150, which renders obvious "*receiving a second indication associated with a selection by a user*," as claimed.

[4.2] *determining, based on the second indication, a source of content information to be displayed in the global panel based;*

195. The prior art, in two different ways, discloses this limitation, as analyzed below.

(1) CHANNEL BROWSER card object 1340 ("second card object")

196. As discussed at b[4.1], Kim discloses that the user selects to a thumbnail or icon (corresponding to a "**link for connecting to a content provider**") in the CHANNEL BROWSER card object 1340. Ex.1005, [0287]-[0289]. The "**link may include a URL configured to retrieve a multimedia content stored on the content server**." Ex.1005, [0292]. The retrieved content (e.g., video) is displayed in a "first card object" on the home screen.

> The video image displayed in the first card object may also be at least one of a broadcast video received at a tuner provided in the multifunctional display device, a streaming video received at a network interface provided in the multifunctional display device, or a video stored on a storage device provided in the multifunctional display device.

Ex.1005, [0294].

197. In the context the CHANNEL BROWSER card object 1340, a broadcast channel is also displayed in the card object 1310 of the home screen.

> **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].

> **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].

198. It would have been obvious to a POSITA for the CHANNEL BROWSER card object 1340, to include a "link for connecting to a content provider" with "a URL configured to retrieve a multimedia content stored on the content server" so that the smart TV 100 would be able to determine the content source for receiving content (e.g., a selected channel) and related content information (e.g., program title) to display in the home screen. See Ex.1005, [0090] ("The controller 170 may output the processed video or audio signal **along with information about the user-selected channel**."), [0097] ("The controller 170 may control display of an input broadcast image and an object representing **information about the broadcast image** in a card object representing broadcast images."). As shown at Kim's Figure 19, the home screen includes card object 1310 that displays video content (1315) as well as related content information, such as a title in an information object (1321).

199. Thus, Kim discloses determining, based on the received selection of a thumbnail or icon (corresponding to a link with a URL) in the CHANNEL BROWSER card object 1340, a content source that provides information about the user-selected channel to be displayed in the home screen, which renders obvious, "*determining, based on the second indication, a source of content information to be displayed in the global panel*," as claimed.

(2) MY MEDIA card object 1370 ("third card object")

200. Kim further discloses that the thumbnails in the third card object correspond to "**at least one of a broadcast content, content stored on the content server content stored on the content server, or content stored on the storage device**." Ex.1005, [0293]. The selection of a thumbnail causes "**the at least one of a broadcast content, content stored on the content server content stored on the content server, or content stored on the storage device to be retrieved for display on the display."** Ex.1005, [0293]. "**[I]f the thumbnail corresponds to a video content, the video content may be displayed in the first card object**." Ex.1005, [0293].

201. Additionally, in the context of the MY MEDIA card object 1370, Kim discloses that selecting a thumbnail displays content stored in memory 140 or from external device (e.g., content server).

> **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**.

Ex.1005, [0196].

> 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, [0196].

> **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).

Ex.1005, [0085].

202. It would have been obvious to a POSITA (because the thumbnails in the MY MEDIA card object 1370 represent content stored on an external device or content stored on in memory 140) for the external device to correspond to a content server and for the memory 140 to correspond to the storage device disclosed in the context of the third card object. When the user selects a given thumbnail, it would have been obvious for the controller 170 to determine the corresponding content source (e.g., external content server or internal storage device) so that the content (e.g., video) and related content information (e.g., title or file name) may be displayed in the home screen card object 1310 (e.g., a first card object). *See, e.g.,* Ex.1005, [0090] ("The controller 170 may output the processed video or audio signal **along with information about the user-selected**

channel."), [0097] ("The controller 170 may control display of an input broadcast image and an object representing **information about the broadcast image** in a card object representing broadcast images."), [0082] ("[T]he network interface 130 may receive content such as movies, advertisements, games, VoD files, broadcast signals as well as **information related to the content** from a CP or an NP.").

203. It would have been obvious to a POSITA that when the content corresponds to video, for the information related to the content to include at least the video title (e.g., movie name) and the file name. As shown at Kim's Figure 19, the home screen card object 1310 displays the video (1315) as well as related content information, such as title in an information object (1321). It would have been obvious to a POSITA to display a title (or file name) related to a retrieved video content so that the user is informed regarding the currently displayed video.

204. Thus, Kim discloses determining, based on the received selection of a thumbnail in the MY MEDIA card object 1370, a content source (e.g., external content server or internal storage device) that is the source of information about the video to be displayed in the home screen, which renders obvious, "*determining, based on the second indication, a source of content information to be displayed in the global panel*," as claimed.

[4.3] ***retrieving at least a portion of content information from the determined source; and***

205. The prior art, in two different ways, discloses this limitation, as

analyzed below.

(1) CHANNEL BROWSER card object 1340 ("second card object")

206. Consistent with the discussion in connection with element [4.2], Kim discloses that the link (corresponding to a thumbnail) in CHANNEL BROWSER card object 1340, "may include a URL configured to **retrieve** a multimedia content stored on the content server" and that the "link corresponds to a channel in a broadcast signal." Ex.1005, [0292].

207. It would have been obvious to a POSITA that when the URL is used to retrieve a multimedia content corresponding to a broadcast channel, for the retrieved content to include both the multimedia content (e.g., video) and related content information (e.g., program title). *See, e.g.,* Ex.1005, [0090] ("The controller 170 may output the processed video or audio signal **along with information** about the user-selected channel."), [0097] ("The controller 170 may control display of an input broadcast image and an object representing **information about the broadcast image** in a card object representing broadcast images."), [0082] ("[T]he network interface 130 may receive content such as movies, advertisements, games, VoD files, broadcast signals as well as **information related to the content from a CP or an NP**.").

208. Thus, Kim discloses retrieving related content information from the determined content source, which renders obvious "*retrieving at least a portion of*

content information from the determined source," as claimed.

(2) MY MEDIA card object 1370 ("third card object")

209. Consistent with the discussion in connection with element [4.2], Kim discloses that the thumbnail in MY MEDIA card object 1370 causes "the at least one of a broadcast content, content stored on the content server, or content stored on the storage device to be **retrieved** for display on the display." Ex.1005, [0292]. It would have been obvious to a POSITA for the retrieved content to include both the content (e.g., video) and related content information (e.g., title). *See, e.g.,* Ex.1005, [0090] ("The controller 170 may output the processed video or audio signal **along with information** about the user-selected channel."), [0097] ("The controller 170 may control display of an input broadcast image and an object representing **information about the broadcast image** in a card object representing broadcast images."), [0082] ("[T]he network interface 130 may receive content such as movies, advertisements, games, VoD files, broadcast signals as well as **information related to the content from a CP or an NP**.").

210. Thus, Kim discloses retrieving related content information from the determined content source, which renders obvious "*retrieving at least a portion of content information from the determined source*," as claimed.

[4.4] ***displaying, via the television, the content information associated with the determined source.***

211. The prior art, in two different ways, discloses this limitation, as

analyzed below.

(1) CHANNEL BROWSER card object 1340 ("second card object")

212. Consistent with the discussion in connection with element [4.3], Kim discloses that the retrieved content is displayed in a "first card object" on the home screen.

> **The video image displayed in the first card object** may also be at least one of a broadcast video received at a tuner provided in the multifunctional display device, a streaming video received at a network interface provided in the multifunctional display device, or a video stored on a storage device provided in the multifunctional display device.

Ex.1005, [0294]; *see also* Ex.1005, [0206] ("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.").

213. It would have been obvious to a POSITA for the related content information (see [4.3]) to also be displayed so that the user is informed about the currently displayed content. *See, e.g.,* Ex.1005, [0090] ("The controller 170 may output the processed video or audio signal **along with information about** the user-selected channel."), [0097] ("The controller 170 may control display of an input broadcast image and an object representing **information about the broadcast image** in a card object representing broadcast images."). [0082] ("[T]he network

interface 130 may receive content such as movies, advertisements, games, VoD files, broadcast signals as well as **information related to the content** from a CP or an NP."). For example, as shown at Kim's Figure 19, the smart TV 100 home screen includes card object 1310 (e.g., a first card object) that displays video content (1315) as well as related content information, such as a title in an information object (1321).

214. Thus, Kim renders obvious, "*displaying, via the television, the content information associated with the determined source*," as claimed.

(2) MY MEDIA card object 1370 ("third card object")

215. As discussed above, Kim discloses that the retrieved content is displayed in a "first card object" on the home screen.

> A selection of the at least one thumbnail may cause the at least one of a broadcast content, content stored on the content server, or content stored on the storage device to be **retrieved for display on the display**. Moreover, the displayed content is displayed as a full screen image on the display. Alternatively, if the thumbnail corresponds to a video content, **the video content may be displayed in the first card object**.

Ex.1005, [0293].

> **The video image displayed in the first card object** may also be at least one of a broadcast video received at a tuner provided in the multifunctional display device, a streaming video received at a network interface provided in the multifunctional display device, or a video

> stored on a storage device provided in the multifunctional display device.

Ex.1005, [0294]; *see also* Ex.1005, [0085] ("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)"), [0196] ("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.").

216. It would have been obvious to a POSITA for the related content information (see [4.3]) to also be displayed so that the user is informed about the currently displayed content. *See, e.g.,* Ex.1005, [0090] ("The controller 170 may output the processed video or audio signal **along with information about** the user-selected channel."), [0097] ("The controller 170 may control display of an input broadcast image and an object representing **information about the broadcast image** in a card object representing broadcast images."). [0082] ("[T]he network interface 130 may receive content such as movies, advertisements, games, VoD files, broadcast signals as well as **information related to the content** from a CP or an NP."). For example, as shown at Kim's Figure 19, the smart TV 100 home screen includes card object 1310 (e.g., a first card object) that displays video content (1315) as well as related content information, such as a title in an

information object (1321).

217. Thus, Kim renders obvious, "*displaying, via the television, the content information associated with the determined source*," as claimed.

10. Claim 5

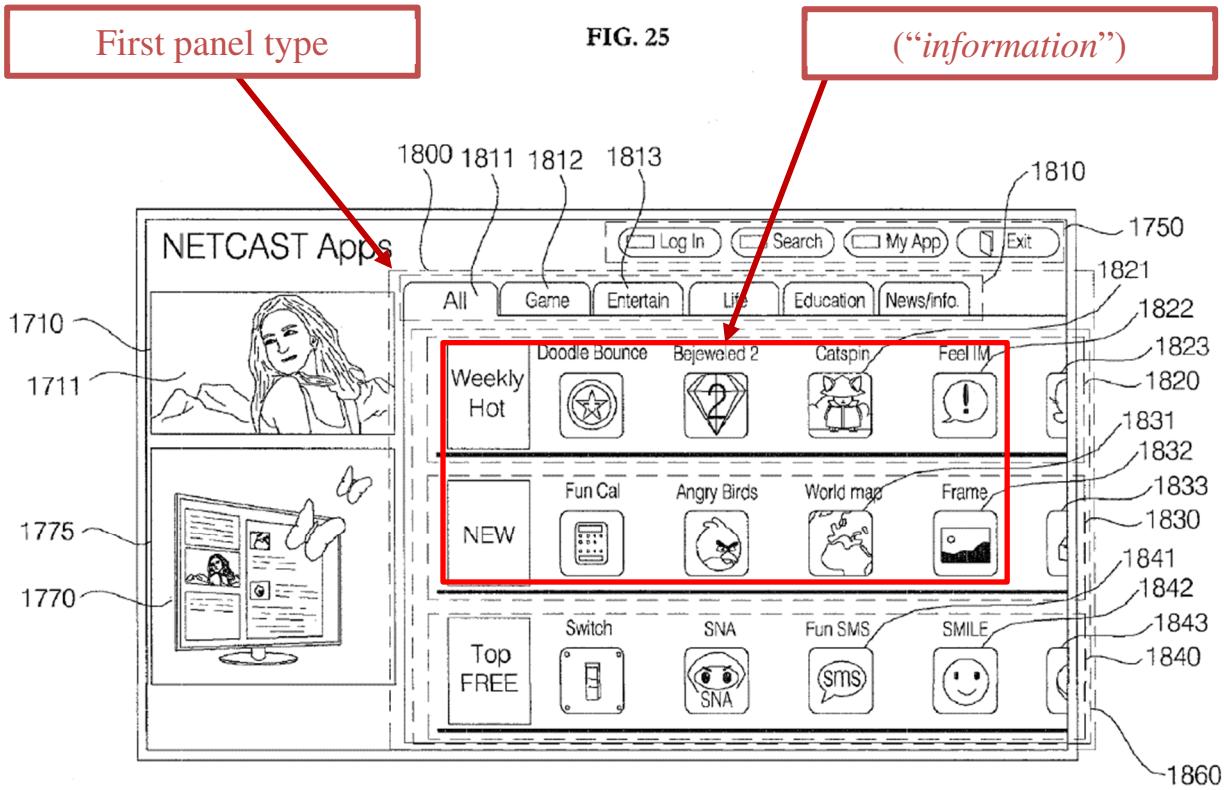
[5.0] ***The method of claim 1,***

218. *See* claim 1.

[5.1] ***wherein the global panel comprises information from at least two different panel types.***

219. **First**, as explained at claim element [1.2], the prior art discloses a home screen ("*the global panel*").

220. **Second**, Kim at Figure 25, reproduced below, discloses an application store screen displayed on a display area 1800 (which is a first type of panel). The application store screen shows available applications classified into various categories, such as "Weekly Hot," "NEW," etc.:



Ex.1005, Fig. 25 (annotated).

> **<u>Referring to FIG. 25, tabbed menus which may represent categories into which a plurality of applications are classified may be displayed in a first area 1800 of the display 180</u>.** The large number of available application may make identification of newly added applications difficult. Accordingly, the applications may be classified into various categories (e.g., game, news, sport, etc.) based on the type of application, as illustrated in FIG. 25, a user may search for a desired application more easily.

Ex.1005, [0236].

> FIG. 25 illustrates an example in which a category 1811 'ALL' with all applications is selected. The selected category 1811 may be displayed differently from other categories 1812 and 1813 in color, size, etc. One

> of the tabbed menus may be selected based on pre-stored settings or by a user input. For example, the category 1811 'All' may be set by default. In this case, when an app store (application market) is accessed, the application icons included in the category 'All' may be automatically sorted and displayed according to predetermined criteria, as illustrated in FIG. 25. Accordingly, when the tabbed menus are displayed, the category 'All' may be selected by default according to an embodiment of the present disclosure.

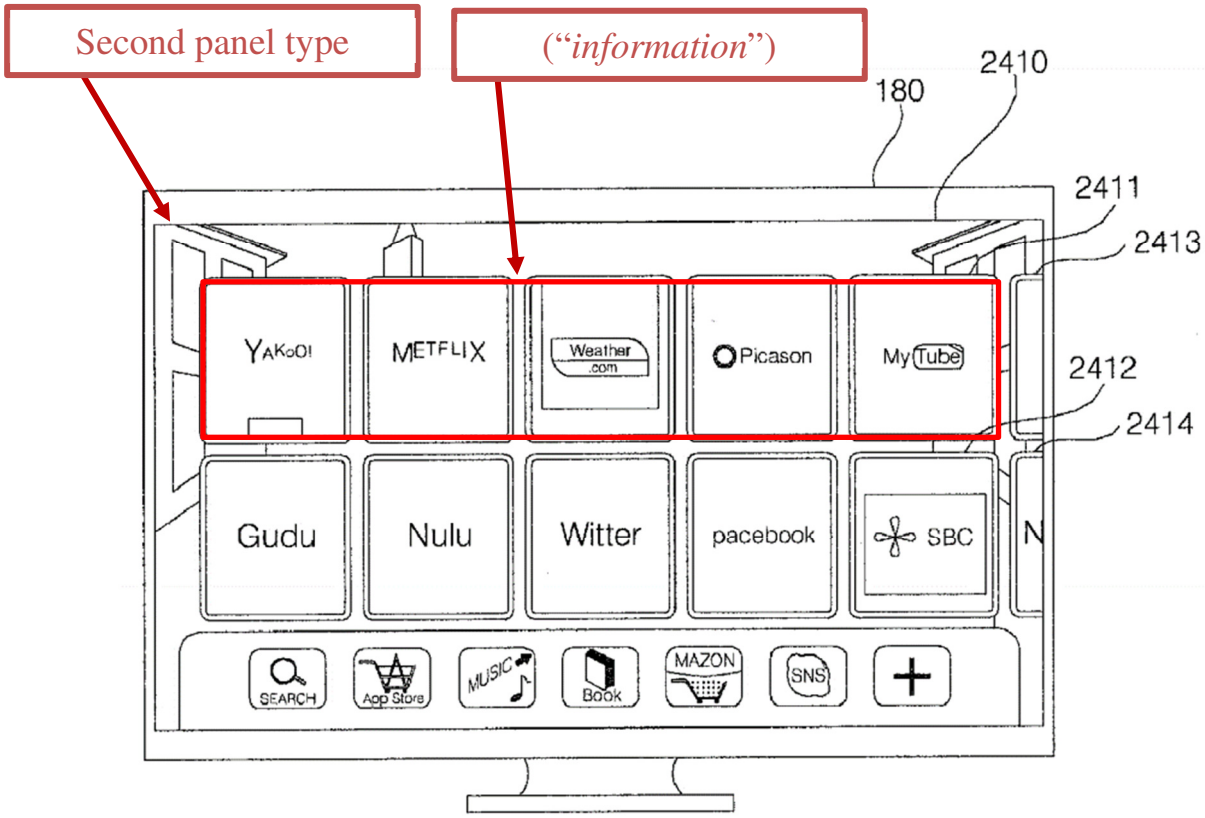
Ex.1005, [0238].

> **The sub-categories may be based, for example, on a total popularity ranking 1820 (Weekly Hot), new application 1830 (New),** free application ranking 1840 (Top FREE), or paid application ranking, for a predetermined time period. The predetermined time period may be, for example, a day, a week, a month, a quarter, a half year, a year, or a custom time period, and may be set to be different for each sub-category. For instance, a top ranking list which may list the download or installation rankings of applications may be ranked and displayed on a weekly basis, whereas the numbers of downloads or installations of free or paid applications may be accumulated for an indefinite period and tabulated as a top free application list or a top paid application list. A new application list including new applications released within a predetermined time may also be made based on a different statistical period from those of other sub-categories.

Ex.1005, [0239].

221. Additionally, Kim at Figure 42, reproduced below, discloses Netcast display area 2410 (which is a second type of panel):

FIG. 42



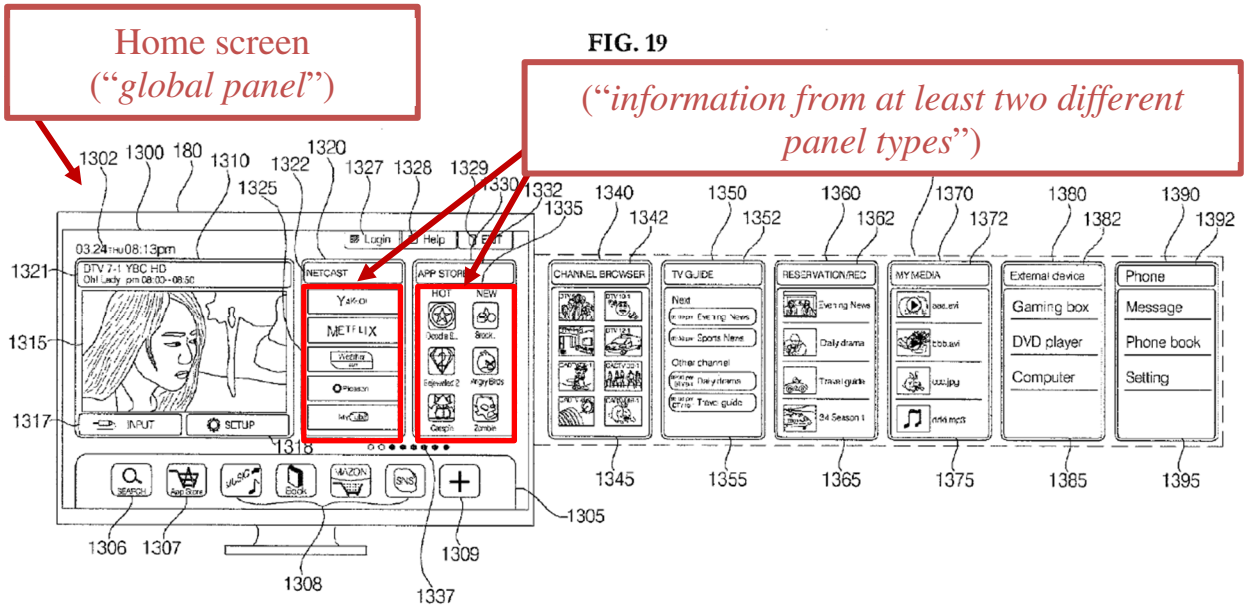
Ex.1005, Fig. 42 (annotated).

> When a card object 1320 is selected that represents CPs on the home screen of FIG. 19 (e.g., the Netcast card object), additional CP objects may be displayed on the display 180, as illustrated in FIG. 42. The CP objects may be icons that include identifying information (e.g., logos, names, video clips, etc.). Thus, the plurality of displayed CPs may easily be identified. While a CP list is shown in FIG. 42 as listing 10 CPs objects (Yakoo, Metflix, Weather.com, Picason, My Tube, Gudu, Nulu, Witter, pacebook, and SBC), the number of CP objects listed on a single screen may be changed.

Ex.1005, [0277].

222. As illustrated below, Kim's home screen includes an APP STORE

card object 1330 with information from the application store display area 1800 and a NETCAST card object 1320 with information from the Netcast display area 2410:



Ex.1005, Fig. 19 (annotated).

223. Therefore, Kim's home screen includes information from the application store display area 1800 and the Netcast display area 2410, which renders obvious "*wherein the global panel comprises information from at least two different panel types,*" as claimed.

11. Claim 11

224. Claim 11 is substantially similar to claim 1 except for preamble [11.0], which is addressed below. For limitations [11.1]-[11.7] see analysis at [1.1]-[1.7].

[11.0] ***A non-transitory computer readable information storage medium having stored thereon instructions that cause a computing system to execute a method of displaying content on a television, comprising:***

225. To the extent limiting, the prior art renders obvious the preamble.

226. **First**, as discussed in connection with element [1.0], Kim discloses a method of displaying content (e.g., multimedia content, broadcast content, still or video images, and other various types of content) on an image display apparatus 100 (e.g., smart TV).

227. **Second**, Kim discloses that its method may be implemented using computer readable recording medium having stored computer-readable codes that are executed by a processor.

> **The method for operating an image display apparatus according to the foregoing exemplary embodiments may be implemented as code that is written on a computer-readable recording medium and, can thus, be read by a processor. The computer-readable recording medium may be any type of recording device in which data is stored in a computer-readable manner. Examples of the computer-readable recording medium may include a ROM, a RAM, a CD-ROM, a magnetic tape, a floppy disc, an optical data storage**, and a carrier wave (e.g., data transmission through the Internet). The computer-readable recording medium may be distributed over a plurality of computer systems connected to a network so that computer-readable code is written thereto and executed therefrom in a decentralized manner. Functional programs, code, and code segments

needed to realize the embodiments herein may be construed by one of ordinary skill in the art.

Ex. 1005, [0299]; *see also* [1.1] (analyzing how a processor controls the display apparatus 100).

228. Kim's exemplary computer-readable recording medium including ROM, RAM, CD-ROM, magnetic tape, floppy disc, optical data storage, would be understood to be non-transitory and within the scope of the '040 patent's "*non-transitory computer readable information storage medium*." *See e.g.,* Ex.1001, 4:32-40. ("The term 'computer-readable medium,' as used herein, refers to any tangible storage and/or transmission medium that participate in providing instructions to a processor for execution…Non-volatile media includes, for example, NVRAM, or magnetic or optical disks."); *see also* Ex.1001, 4:40-49.

229. Thus, Kim discloses a non-transitory computer readable recording medium having stored codes that cause a processor to operate a smart TV to show content on its display, which renders obvious "*a non-transitory computer readable information storage medium having stored thereon instructions that cause a computing system to execute a method of displaying content on a television*" as recited in the preamble.

[11.1] ***receiving an indication associated with a selection by a user;***

230. *See* [1.1].

[11.2] ***determining, based on the received indication, a global panel to display via***

the television;

231. *See* [1.2].

[11.3] ***retrieving from memory, a first content information for display in the global panel; and***

232. *See* [1.3].

[11.4] ***displaying, via the television, the retrieved content information in the global panel,***

233. *See* [1.4].

[11.5] ***wherein the global panel includes a list of sources of content for the intelligent television,***

234. *See* [1.5].

[11.6] ***wherein at least one of the sources is highlighted as being associated with the first content information,***

235. *See* [1.6].

[11.7] ***and wherein the sources include a live television source, a video on demand source, a media center source, an applications source, and an electrical input associated with the television.***

236. *See* [1.7].

12. Claim 12

[12.0] ***The non-transitory computer-readable medium of claim 11, wherein the instructions further comprise:***

237. *See* claim 11.

[12.1] ***identifying a user associated with the received indication;***

238. *See* [2.1].

[12.2] ***retrieving one or more settings associated with the identified user;***

239. *See* [2.2].

[12.3] ***retrieving, from memory, content information associated with the identified user; and***

240. *See* [2.3].

[12.4] ***displaying, via the television, the retrieved content information in the global panel.***

241. *See* [2.4].

13. Claim 13

[13.0] ***The non-transitory computer-readable medium of claim 11, wherein the instructions further comprise:***

242. *See* claim 11.

[13.1] ***identifying a user associated with the received indication;***

243. *See* [3.1].

[13.2] ***retrieving, from memory, one or more settings associated with the identified user;***

244. *See* [3.2].

[13.3] ***retrieving, from memory, content information associated with the identified user and the one or more settings associated with the user; and***

245. *See* [3.3].

[13.4] ***displaying, via the television, the retrieved content information in the global panel.***

246. *See* [3.4].

14. Claim 14

[14.0] ***The non-transitory computer-readable medium of claim 11, wherein the instructions further comprise:***

247. *See* claim 11.

[14.1] ***receiving a second indication associated with a selection by a user;***

248. *See* [4.1].

[14.2] ***determining, based on the second indication, a source of content information to be displayed in the global panel based;***

249. *See* [4.2].

[14.3] ***retrieving at least a portion of content information from the determined source; and***

250. *See* [4.3].

[14.4] ***displaying, via the television, the content information associated with the determined source.***

251. *See* [4.4].

15. Claim 15

[15.0] ***The non-transitory computer-readable medium of claim 11, further comprising***

252. *See* claim 11.

[15.1] ***retrieving from memory a second content information for display in the global panel; and***

253. As discussed in connection with element [1.3], the prior art discloses that the controller 170 retrieves from memory 140 thumbnails and descriptive text (associated with the APP STORE card object 1330, the RESERVATION/REC

card object 1360, and the MY MEDIA card object 1370) for display in the home screen. In the present example, any combination of the thumbnails and descriptive text associated with the MY MEDIA card object 1370 corresponds to the "*second content information*."

254. Thus, Kim in combination with Lee-1 renders obvious "*retrieving from memory a second content information for display in the global panel,*" as claimed.

[15.2] *displaying, via the television, the retrieved first content information and the retrieved second content information in the global panel.*

255. As discussed in connection with element [1.3]-[1.4], the prior art discloses that the thumbnails and descriptive text in the card objects (e.g., 1330, 1360, and 1370) on the home screen are either initially displayed via the smart TV 100 or are moved (e.g., shifted or scrolled) so that they are displayed via the smart TV 100. In the instance where adjacent card objects 1360 and 1370 are both (at the same time) displayed in the home screen via the smart TV 100, the prior art renders obvious "*displaying, via the television, the retrieved first content information and the retrieved second content information in the global panel,*" as claimed.

16. Claim 21

256. Claim 21 is substantially similar to claim 1 except for limitations

[21.0]-[21.3], which are addressed below. For limitations [21.4]-[21.10] see analysis at [1.1]-[1.7].

[21.0] ***A system for displaying content on a television, comprising:***

257. To the extent limiting, the prior art renders obvious the preamble.

258. **First**, Kim discloses a system that includes a display apparatus, such as a smart TV.

> FIG. 1 is a diagram of a configuration of a broadcasting **system** that includes **an image display apparatus** according to an embodiment of the present disclosure. Referring to FIG. 1, the broadcasting system may include a Content Provider (CP) 10, a Service Provider (SP) 20, a Network Provider (NP) 30, and a Home Network End Device (HNED) 40. The HNED 40 corresponds to, for example, a client 100 which is an image display apparatus according to an embodiment. The image display apparatus may be a network TV, **a smart TV**, an Internet Protocol TV (IPTV), etc.

Ex. 1005, [0031].

> FIG. 2 shows a broadcasting **system including an image display apparatus** according to another embodiment of the present disclosure. Referring to FIG. 2, the image display apparatus 100 may be connected to a broadcast network and the Internet. 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 real-time broadcast content may be referred to as a linear Audio/Video (A/V) content.

Ex. 1005, [0038]

259. **Second**, as discussed in connection with element [1.0], Kim discloses the display apparatus, such as a smart TV, is operable to display content, e.g., multimedia, broadcast, still or video images, and other various types of content on its display.

260. Thus, Kim discloses a system for displaying content (e.g., multimedia content, broadcast content, still or video images, and other various types of content) on a smart TV, which renders obvious "*a system for displaying content on a television*" as recited in the preamble.

[21.1] ***an input device associated with the television;***

261. As discussed in connection with element [1.1], the prior art discloses a remote controller 200 and a user input interface 150, which separately and together render obvious "*an input device associated with the television*."

[21.2] ***a memory; and***

262. As discussed in connection with element [1.1] and element [1.3], the

prior art discloses a memory 140, which renders obvious "*a memory*."

[21.3] ***a microprocessor that is programmed to:***

263. As discussed in connection with element [1.1], the prior art discloses a controller 170 (or "any other processor") that stores a software platform with operating system ("OS") that enables the controller 170 (or "other processor") to implement display apparatus operations. Ex.1005, [0147], [0166], [0282]-[00283]. It would have been obvious to a POSITA for Kim's "any other processor" to correspond to a "*microprocessor*," consistent with Kim's disclosure of utilizing a "microcomputer." Ex.1005, [0140]; *see also* Ex.1009, 1 ("A central processing unit (CPU) on a single chip (integrated circuit). The microprocessor term originated in the 1970s, but today, all CPUs are microprocessors, whether in desktops, laptops, servers."); Ex.1012, 3 ("[A] microcomputer is a small, relatively inexpensive computer with a microprocessor as its central processing unit (CPU)."); Ex.1013, 1-3 ("A microprocessor is an integrated circuit designed to function as the CPU of a microcomputer…The microprocessor or CPU reads each instruction from the memory, decodes it and executes it."); Therefore, Kim renders obvious "*a microprocessor that is programmed to*" perform the recited steps.

[21.4] ***receive an indication associated with a selection by a user;***

264. *See* [1.1].

[21.5] ***determine, based on the received indication, a global panel to display via the television;***

265. *See* [1.2].

[21.6] ***retrieve from the memory, a first content information for display in the global panel; and***

266. *See* [1.3].

[21.7] ***display, via the television, the retrieved content information in the global panel,***

267. *See* [1.4].

[21.8] ***wherein the global panel includes a list of sources of content for the intelligent television,***

268. *See* [1.5].

[21.9] ***wherein at least one of the sources is highlighted as being associated with the first content information,***

269. *See* [1.6].

[21.10] ***and wherein the sources include a live television source, a video on demand source, a media center source, an applications source, and an electrical input associated with the television.***

270. *See* [1.7].

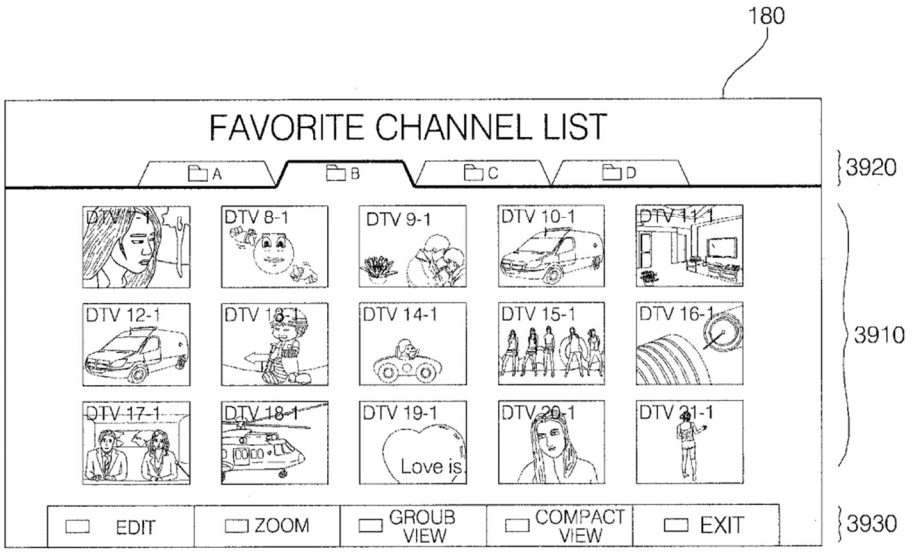
B. Ground 2: Claims 2-3, 6, 12-13, 16, and 22 are obvious over Kim in view of Lee-1, Choi, and Lee-2.

1. Summary of Lee-2

271. U.S. Patent No. 9,398,339 to Lee et al. (Ex.1010, "Lee-2") was filed on December 16, 2010, claims priority to Provisional application Nos. 61/379,363, 61/379,367, and 61/379,372, filed on September 1, and issued on July 19, 2016.

272. Lee-2 discloses that a user (e.g., "B user") has a specific favorite channel list (Ex.1010, 41:47-55) as shown below at Figure 39B.

FIG. 39B



Ex.1010, Fig. 39B (annotated).

273. Lee-2 also discloses that the favorite channel list settings are configured by the user using a setup menu 3930, shown above at Figure 39B. Ex.1010, 41:61-67.

274. Additionally, Lee-2 discloses that upon a user input of a local key or favorite channel key on the remote controller a FAVORITE CH card object 2060 is displayed to the user to be instantly aware of favorite channels:

> Referring to FIG. 32A, an image 3210 is displayed full screen on the display 180. **<u>Upon input of a local key (not shown) or a favorite channel key (not shown) of the remote controller, the FAVORITE CH card object 2060 may be displayed on the display 180 as</u>**

> **illustrated in FIG. 32B**. The FAVORITE CH card object 2060 may be displayed together with the image 3210 on the same screen. Therefore, the user can instantly be aware of the FAVORITE CH card object 2060 including the favorite channel list 2065.

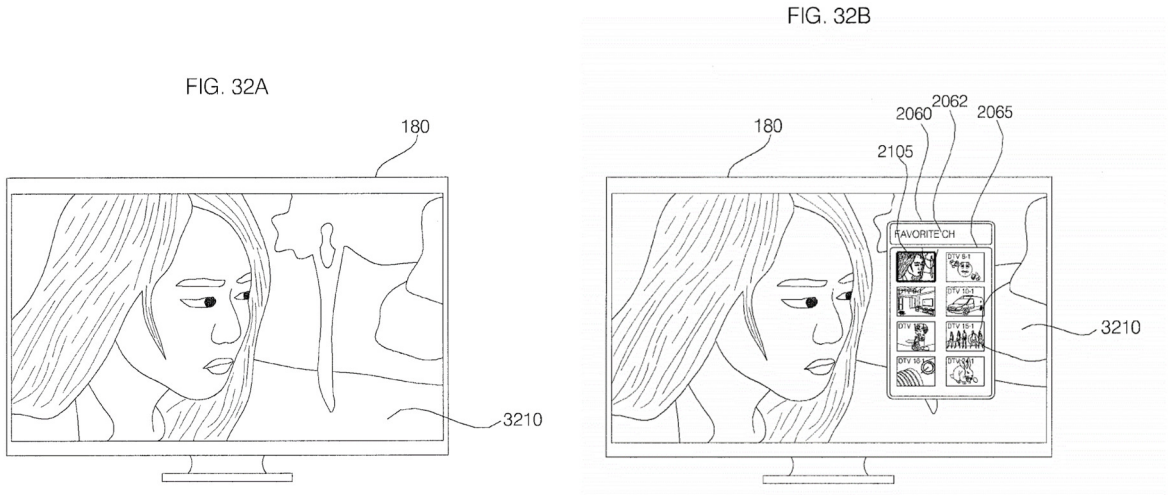
Ex.1010, 37:61-38:2, Figs. 32A, 32B.

275. The FAVORITE CH card object 2060 includes the currently watched channel:

> As described before, the card object generator 345 may generate the FAVORITE CH card object using a list of favorite channels pre-stored in the memory 140. **A channel that the user is watching may be included in the FAVORITE CH card object**.

Ex.1010, 33:63-67.

276. As shown below, the television (Fig. 32A) changes to display a FAVORITE CH card object 2060 (Fig. 32B) with a highlighted thumbnail of the currently watched channel.



Ex.1010, Figs. 32A and 32B.

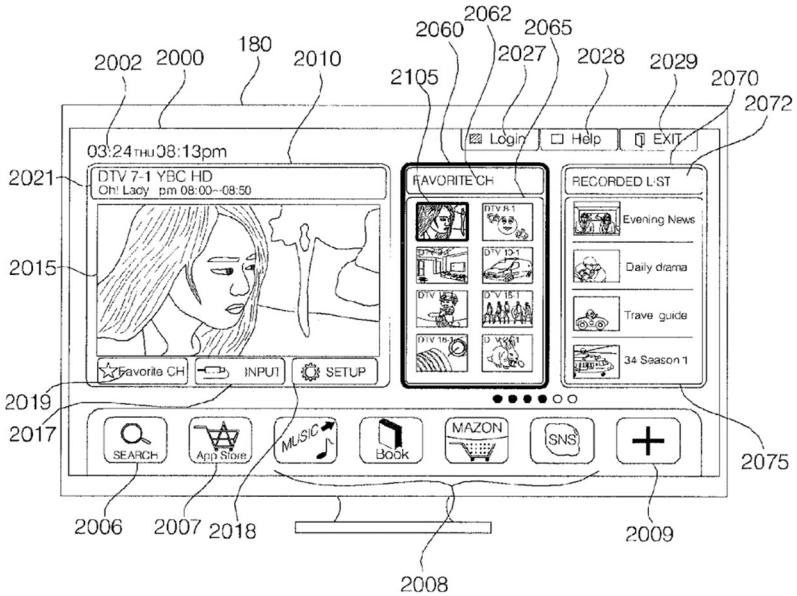
277. Lee-2 further discloses the FAVORITE CH card object may be displayed in the home screen:

> Upon input of a local key (not shown) or a favorite channel key (not shown) of the remote controller, the home screen 2000 may be displayed as illustrated in FIG. 33B. **<u>The home screen 2000 may include the FAVORITE CH card object 2060. Particularly, the FAVORITE CH card object 2060 may be highlighted</u>**. Therefore, the user can readily view the FAVORITE CH card object 2060 including the favorite channel list 2065.

Ex.1010, 38:4-11; *see also infra* [6.4].

278. As shown below at Figure 33B, Lee-2 displays, via the television, the retrieved favorite channel list thumbnails 2065 in the FAVORITE CH card object 2060 in the global panel:

FIG. 33B



Ex.1010, Figs. 33B.

2. Reasons to Combine Kim and Lee-2

279. A POSITA when considering the teachings of Kim (as modified by Lee-1 and Choi) would have also considered the teachings of Lee-2. Kim, although disclosing that its thumbnails may correspond to pre-stored user favorite channel list, provides limited details pertaining to how it sets up or presents the favorite channel list to the user. Ex.1005, [0206]. In that regard, Lee-2 provides implementation details regarding a user's favorite channel list. For example, Lee-2 provides details of how a user's favorite channel list that may be edited and how the user may define the number of corresponding thumbnails for display. Ex.1010, 41:61-67, Fig. 39B. Additionally, Lee-2 discloses how the user's favorite channel list is displayed in the home screen. Ex.1010, 38:4-11, Fig. 33B.

280. It would have been obvious to a POSITA, when implementing Kim's display device 100 and method, to apply the user favorite channel list teachings of Lee-2 because they provide implementation details directly applicable to successfully implementing Kim's display device 100 and method, which contemplates providing the user a favorite channel list. This reason is sufficient to explain why a POSITA would have sought and combined the identified disclosures of Lee-2 and Kim (as modified by Lee-1 and Choi). Nevertheless, additional reasons for combining the relevant teachings are provided in the claim analysis below.

281. The results of Lee-2 and Kim (as modified in in view of Lee-1 and Choi) would have been predictable and there would have been a reasonable expectation of success in the combination given that Kim and Lee-2 are very similar, and both implement user favorite channel lists.

282. Lastly, I note that the proposed combination relies on the teachings of the references, and I do not suggest that physical incorporation of Lee-2's elements into Kim's display device is required; however, it is permitted in the proposed combination.

3. Claim 2

[2.0] ***The method of claim 1, further comprising:***

283. *See* claim 1, Ground 1.

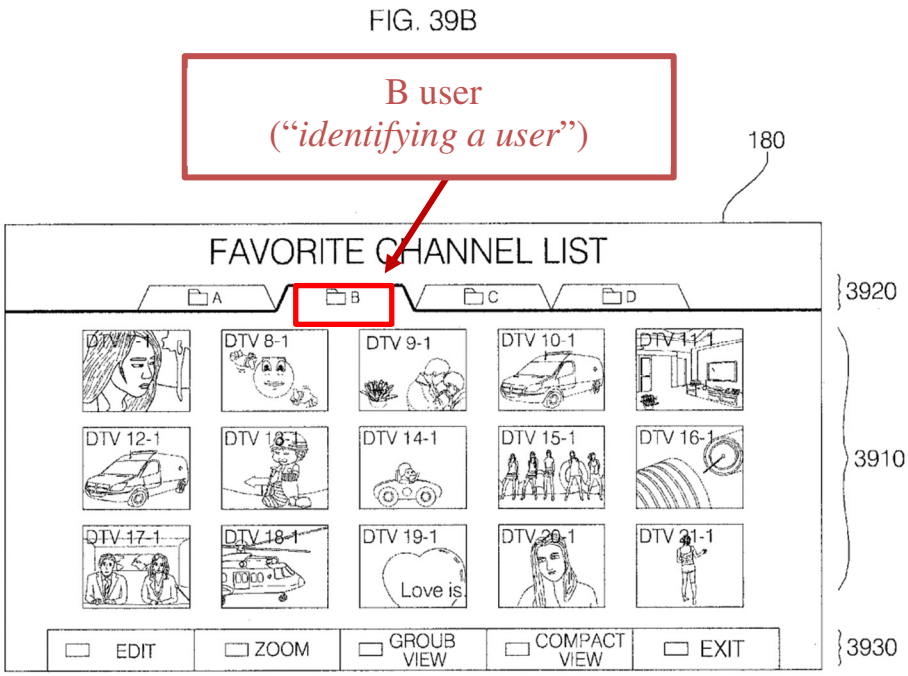
[2.1] ***identifying a user associated with the received indication;***

284. Kim discloses a pre-stored user favorite channel list:

> **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].

285. Lee-2 supplements by teaching that the user, for a given favorite channel list, is identified (e.g., B user):



Ex.1010, Fig. 39B (annotated).

> In FIG. 39B, a group area 3920 includes tabbed menus including the plurality of groups, for example. A group, B group, C group, and D group. Each group favorite channel list may correspond to the favorite channel list of each user.
>
> Since the channel list screen is displayed upon selection of the favorite channel object 2019 in the BROADCAST card object 2010 by a **B user, the B group tabbed menu may be selected by default**. The selected B group tabbed menu may be focused on or highlighted, as illustrated in FIG. 39B.

Ex.1010, 41:47-55.

286. It would have been obvious to a POSITA that there are instances where B user made the initial home screen selection (see [1.1]) and therefore is "*associated with the received indication*" and is currently browsing the

FAVORITE CHANNEL LIST illustrated at Figure 39B.

287. It would have been obvious to a POSITA to implement Kim (which discloses a user favorite channel list, see Ex.1005, [0206]) to identify the user that made the home screen selection so that a corresponding tab may be selected by default when presenting the favorite channel list to the user. Ex.1010, 41:47-55 ("B user, the B group tabbed menu may be selected by default."). Because the user's specific favorite channel list is also displayed on the home screen (see, *infra*, [2.4]), the user convenience is increased. Ex.1010, 42:2-4 ("[S]ince a favorite channel list is displayed on a home screen, **a user can easily identify favorite channels and thus user convenience is increased**."); analysis *infra*, [2.1]; *see also* Reasons to Combine Kim and Lee-2.

288. Thus, Kim in combination with Lee-2 discloses identifying a user that made the home screen selection so that the user's favorite channel list may be presented by default and on the home screen, which renders obvious "*identifying a user associated with the received indication*," as claimed.

[2.2] ***retrieving one or more settings associated with the identified user;***

289. As already noted, Kim contemplates providing a pre-stored user favorite channel list:

> **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].

290. Lee-2 supplements and discloses that the favorite channel list settings are configured by the user using a setup menu 3930:

> **The favorite channel list screen may further include a channel setup menu 3930. For example, the channel setup menu 3930 may include menu items, EDIT for editing channels, ZOOM for changing the number of displayed thumbnail images,** GROUP VIEW for viewing thumbnail images by group, COMPACTVIEW for displaying a broadcast image in a part and a channel list in another part, and EXIT.

Ex.1010, 41:61-67.

291. It would have been obvious to a POSITA to store favorite channel list setup data (i.e., data input by the user using setup menu 3930, such as which channels to include in the favorite list and the number of displayed thumbnails) in view of Lee-2's disclosure that "**memory 140 may store user-specific information**" and also "**may store setup data for the system**." Ex.1010, 8:29, 11:3; *see also* Ex.1005, [0206] ("…**pre-stored user channels (e.g., favorite**

list)…"). Because the setup data would be stored in memory 140, when the user selects to view the FAVORITE CHANNEL LIST (see Ex.1010, 41:36-44), the setup data would be retrieved from memory 140 and used to determine the user's specific favorite channel list and the number of thumbnail images to be displayed. *See also infra*, [1.3].

292. It would have been obvious to a POSITA to implement Kim such that it stores and retrieves, from memory 140, setup data (e.g., the user's favorite channel list and the number of displayed thumbnails), as Lee-2 teaches, so that the user would "easily identify favorite channels and thus user convenience is increased." Ex.1010, 42:3-4; *see also* Reasons to Combine Kim and Lee-2.

293. Thus, Kim in combination with Lee-2 discloses retrieving from memory 140 user setup data (e.g., the user's favorite channel list and the number of displayed thumbnails), which renders obvious "*retrieving one or more settings associated with the identified user*," as claimed.

[2.3] *retrieving, from memory, content information associated with the identified user; and*

294. As discussed in connection with element [2.2], Ground 2, the favorite channel list is represented as thumbnail images. *See* Ex.1005, [0206]; Ex.1010, 41:61-67, Figs. 26C, 39B. Consistent with the analysis at element [1.3], Ground 1, the favorite channel thumbnails, which convey information regarding a given channel, correspond to "*content information*." *See also* Ex.1010, 39:57-63 ("The

favorite channel list 2065 may provide channel information. **Channel information about a favorite channel may include** at least one of the channel number of the favorite channel, or the airing time, rating or viewed rank of a program airing on the favorite channel."). Because the user sets the favorite channels and corresponding number of thumbnails, the thumbnails are "*associated with the identified user*." Further, consistent with the analysis at element [1.3], Ground 1, and element [2.2], Ground 2, it would have been obvious for stored thumbnails to be retrieved from memory 140 so that they may be displayed. *See also infra*, [2.4]; Reasons to Combine Kim and Lee-2.

295. Thus, Kim in combination with Lee-1 and Lee-2 discloses retrieving, from memory 140, favorite channel thumbnails associated with the identified user, which renders obvious "*retrieving, from memory, content information associated with the identified user*."

[2.4] *displaying, via the television, the retrieved content information in the global panel.*

296. Lee-2 discloses that the "**favorite channel list is displayed on a home screen**." Ex.1010, 42:2-3. For example, Lee-2 discloses that the user may select a favorite channel object to view the favorite channel list (including corresponding thumbnail images) on the home screen:

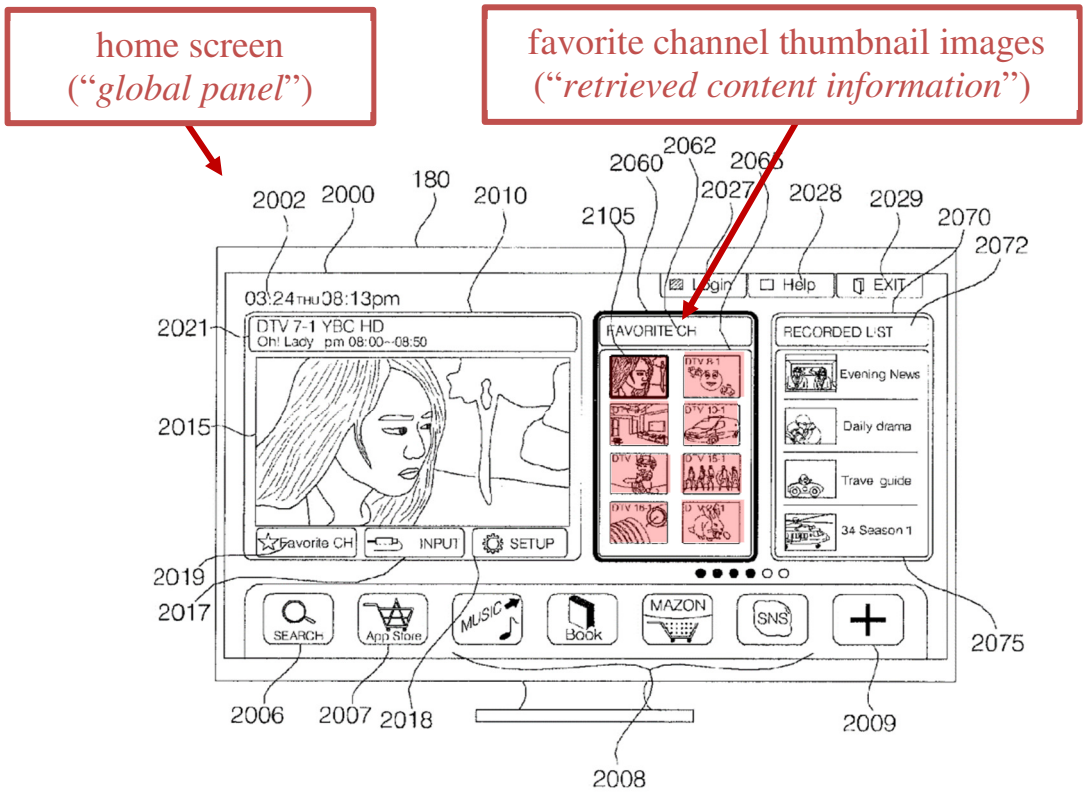
> Upon selection of a **favorite channel object on the home screen**, this favorite channel list is displayed. Therefore, the user can easily access

> the favorite channel list.

Ex.1010, 42:5-7.

> Upon input of a local key (not shown) or a favorite channel key (not shown) of the remote controller, the home screen 2000 may be displayed as illustrated in FIG. 33B. **The home screen 2000 may include the FAVORITE CH card object 2060.** Particularly, the FAVORITE CH card object 2060 may be highlighted. Therefore, **the user can readily view the FAVORITE CH card object 2060 including the favorite channel list 2065**.

Ex.1010, 38:4-11. As shown below at Figure 33B, Lee-2 displays, via the smart TV 100, the retrieved favorite channel list thumbnails in the FAVORITE CH card object in the home screen:



Ex.1010, Fig. 33B (annotated).

297. Consistent with the discussion in connection with elements [2.2]-[2.3], Ground 2, it would have been obvious to a POSITA that to apply Lee-2's teachings to Kim, because it would make the user "instantly [] aware of the FAVORITE CH card object [] including the favorite channel list" and also because displaying a thumbnail of the currently watched channel would allow the "the user [to] easily identify the channel that he or she is watching." Ex.1010, 31:14-21, 37:67-38:2; *see also* Reasons to Combine Kim and Lee-2.

298. Thus, Kim in combination with Lee-1 and Lee-2 discloses displaying, via the television, the retrieved favorite channel list thumbnails in the FAVORITE CH card object in the global panel, which renders obvious "*displaying, via the television, the retrieved content information in the global panel*," as claimed.

4. Claim 3

[3.0] ***The method of claim 1, further comprising:***

299. *See* claim 1, Ground 1.

[3.1] ***identifying a user associated with the received indication;***

300. *See* [2.1], Ground 2.

[3.2] ***retrieving, from memory, one or more settings associated with the identified user;***

301. *See* [2.2], Ground 2.

[3.3] ***retrieving, from memory, content information associated with the identified user and the one or more settings associated with the user; and***

302. As discussed in connection with element [2.3], Ground 2, the prior art discloses retrieving, from memory 140, favorite channel thumbnails associated with the identified user. Additionally, consistent with the discussion at element [2.3], Ground 2, the retrieved thumbnails are also associated to the one or more settings associated with the user because the user setup the number of thumbnails and which channels to include in the pre-stored favorite channel list. Thus, Kim in combination with Lee-1 and Lee-2 renders obvious "*retrieving, from memory, content information associated with the identified user and the one or more settings associated with the user*."

[3.4] ***displaying, via the television, the retrieved content information in the global panel.***

303. *See* [2.4], Ground 2.

5. Claim 6

[6.0] ***The method of claim 1, further comprising:***

304. *See* claim 1, Ground 1.

[6.1] ***identifying at least one of a content source and a content information currently being displayed via a television;***

305. As discussed in the Claim Construction section, the recitation of "*at least one of*" requires only one of the sources to be highlighted. *See* Ex.1001, 4:60-67 ("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.").

306. Lee-2 discloses that upon a user input of a local key or favorite channel key on the remote controller a FAVORITE CH card object 2060 is displayed:

> Referring to FIG. 32A, an image 3210 is displayed full screen on the display 180. **Upon input of a local key (not shown) or a favorite channel key (not shown) of the remote controller, the FAVORITE CH card object 2060 may be displayed on the display 180 as illustrated in FIG. 32B**. The FAVORITE CH card object 2060 may be displayed together with the image 3210 on the same screen. Therefore, the user can instantly be aware of the FAVORITE CH card object 2060 including the favorite channel list 2065.

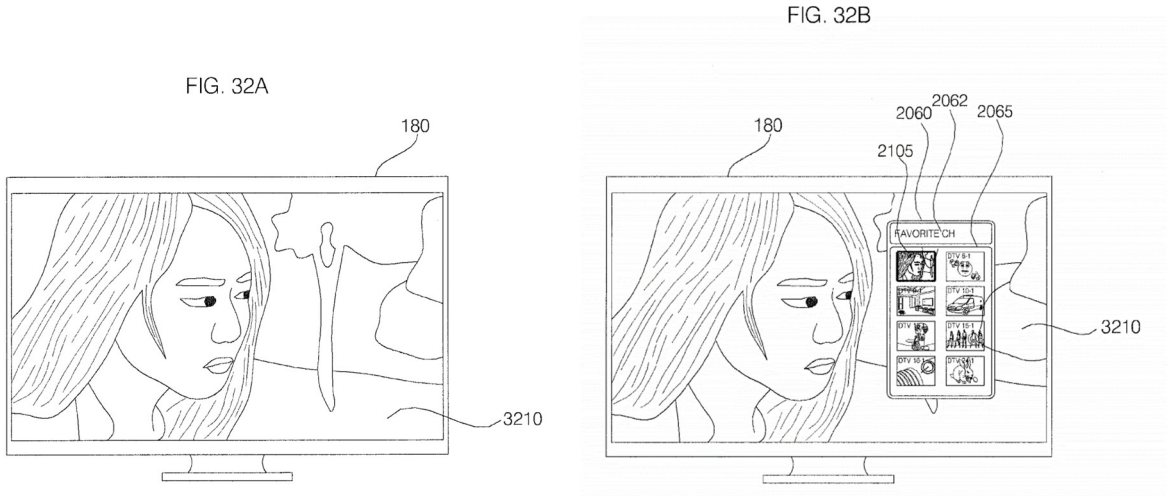
Ex.1010, 37:61-38:2, Figs. 32A, 32B.

307. The FAVORITE CH card object 2060 includes the currently watched channel:

> As described before, the card object generator 345 may generate the FAVORITE CH card object using a list of favorite channels pre-stored in the memory 140. **A channel that the user is watching may be included in the FAVORITE CH card object**.

Ex.1010, 33:63-67.

308. As shown below, the television (Fig. 32A) changes to display a FAVORITE CH card object 2060 (Fig. 32B) with a highlighted thumbnail corresponding to the currently watched channel:



Ex.1010, Figs. 32A and 32B.

309. It would have been obvious to a POSITA that the currently watched channel (e.g., DTV 7-1) is "*identif[ied]*" so that it may be included in the FAVORITE CH card object 2060 as a corresponding highlighted thumbnail.

310. It would have been obvious to a POSITA to apply Lee-2's teachings to Kim. Specifically, a POSITA would have been motivated to apply Lee-2's teachings of receiving an input of a local key or a favorite channel of the remote controller (when watching a channel) to display a corresponding FAVORITE CH card object that includes the channel that the user is watching, because this would make the user "instantly [] aware of the FAVORITE CH card object [] including

the favorite channel list." Ex.1010, 37:67-38:2. In such an implementation, the channel that the user is watching (when receiving an input) would be identified so that it may be included as a thumbnail and highlighted within the FAVORITE CH card object, so that "the user can easily identify the channel that he or she is watching." *See* Ex.1010, 31:14-21; Reasons to Combine Kim and Lee-2.

311. Thus, Kim in combination with Lee-2 discloses identifying a currently watched channel (e.g., DTV 7-1) via the television, which renders obvious "*identifying at least one of a content source…currently being displayed via a television*," as claimed.

[6.2] *selecting a panel type based on the identified at least one of content source and content information currently being displayed via the television;*

312. **First**, as discussed in connection with element [6.1], the prior art discloses identifying the currently watched channel (e.g., DTV 7-1) via the television ("*identified…content source…currently being displayed via the television*.")

313. **Second**, Lee-2 discloses selecting a FAVORITE CH card object 2060 that includes a thumbnail image corresponding to the identified currently watched channel (e.g., DTV 7-1):

> Referring to FIG. 32A, an image 3210 is displayed full screen on the display 180. Upon input of a local key (not shown) or a favorite channel key (not shown) of the remote controller, **the FAVORITE CH card**

> **object 2060 may be displayed on the display 180 as illustrated in FIG. 32B. The FAVORITE CH card object 2060 may be displayed together with the image 3210 on the same screen**. Therefore, the user can instantly be aware of the FAVORITE CH card object 2060 including the favorite channel list 2065.

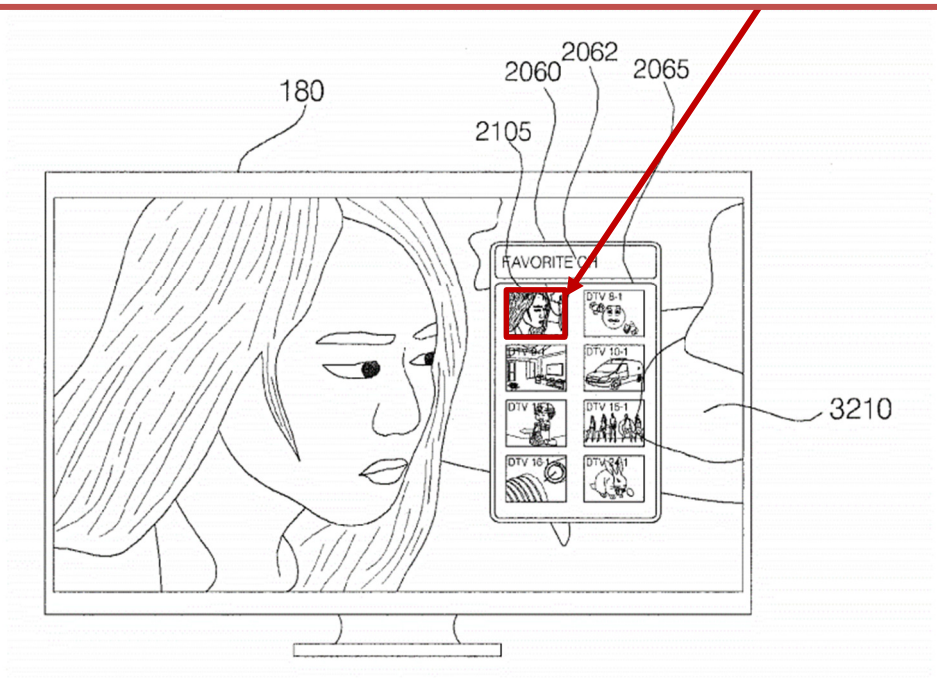
Ex.1010, 37:61-38:2, Figs. 32A, 32B.

> As described before, the card object generator 345 may generate the FAVORITE CH card object using a list of favorite channels pre-stored in the memory 140. **A channel that the user is watching may be included in the FAVORITE CH card object**.

Ex.1010, 33:63-67.

314. As shown below, the FAVORITE CH card object 2060 is selected to include a highlighted thumbnail of the currently watched channel (e.g., DTV 7-1):

FAVORITE CH card object 2060 is selected to include a highlighted thumbnail of the currently watched favorite channel (e.g., DTV 7-1)



Ex.1010, Figs. 32B (annotated).

315. Lee-2's disclosure is consistent with Kim's disclosure that "the thumbnail images may correspond to pre-stored user channels (e.g., favorite list)." Ex.1005, [0206].

316. Accordingly, because the FAVORITE CH card object is selected so that it includes a thumbnail image corresponding to the currently watched channel (e.g., DTV 7-1), Lee-2 discloses "*selecting a panel type*" that is "*based on*" the content source.

317. Consistent with the discussion in connection with element [6.1], it would have been obvious to a POSITA that to apply Lee-2's teachings to Kim, because it would make the user "instantly [] aware of the FAVORITE CH card

object [] including the favorite channel list" and also because including a highlighted thumbnail of the currently watched channel would allow the "the user [to] easily identify the channel that he or she is watching." Ex.1010, 31:14-21, 37:67-38:2; *see also* Reasons to Combine Kim and Lee-2.

318. Thus, Kim in combination with Lee-2 discloses selecting a FAVORITE CH card object, based on the identified channel currently being displayed via the television 180, which renders obvious "*selecting a panel type based on the identified at least one of content source and content information currently being displayed via the television*," as claimed.

[6.3] *retrieving, from memory, content information based on the selected panel type; and*

319. **First**, as discussed in connection with element [6.2], the prior art discloses selecting to display a FAVORITE CH card object ("*the selected panel type*.")

320. **Second**, Lee-2 discloses that the FAVORITE CH card object is generated using a favorite channel list pre-stored in memory:

> In accordance with another aspect of the present invention, there is provided a method for operating an image display apparatus that receives and processes a broadcast signal, including displaying a favorite channel object representing favorite channels on a display, **generating a favorite channel card object using a pre-stored favorite channel list by a card object generator**, upon selection of

> the favorite channel object, and displaying the favorite channel card object on a home screen including a plurality of card objects.

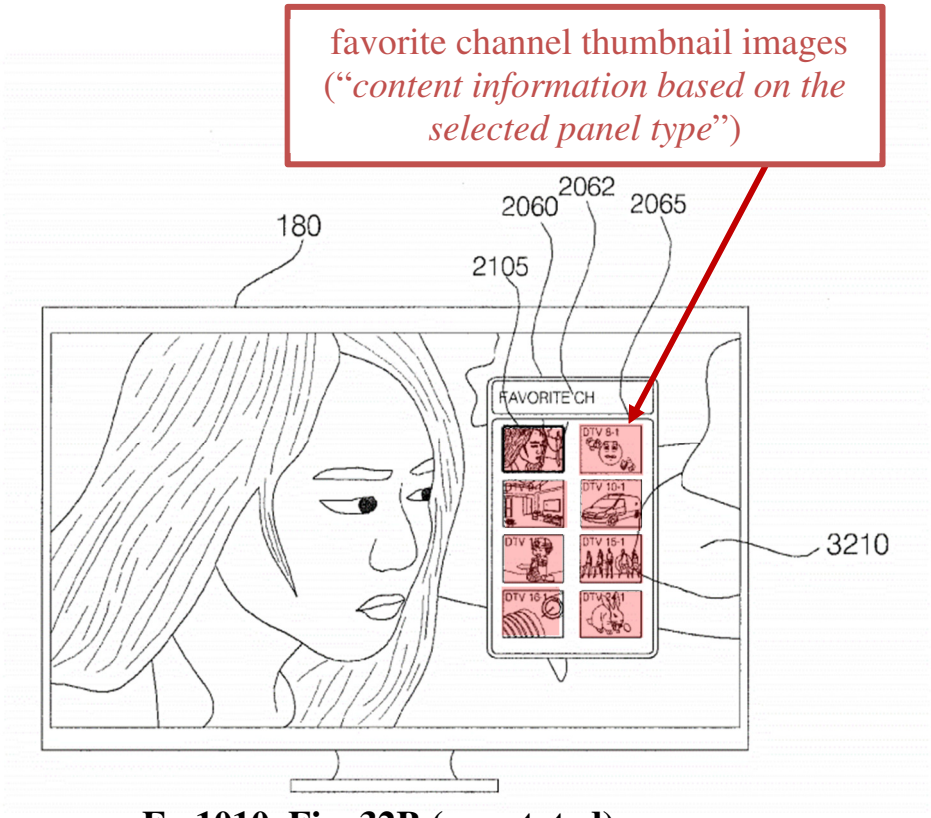
Ex.1010, 38:4-11.

> As described before, the card object generator 345 may **generate the FAVORITE CH card object using a list of favorite channels pre-stored in the memory 140**. A channel that the user is watching may be included in the FAVORITE CH card object.

Ex.1010, 33:63-67.

321. Consistent with the discussion in connection with element [1.3], it would have been obvious to a POSITA, in view of Kim and Lee-1, for the thumbnail images to be stored in memory 140 so that they may be retrieved and readily displayed to the user. This is consistent with Kim's disclosure that "the **thumbnail images may correspond to pre-stored user channels (e.g., favorite list)**." Ex.1005, [0206].

322. As shown at Figure 32B, the generated FAVORITE CH card object includes favorite channel list thumbnails 2065 that with images of available content:



Ex.1010, Fig. 32B (annotated).

323. Because the favorite channel thumbnail images are retrieved from memory 140 to generate the selected FAVORITE CH card object, Kim in combination with Lee-1 and Lee-2 renders obvious that the retrieved "*content information*" is "*based on*" the selected panel type.

324. Consistent with the discussion in connection with elements [6.1]-[6.2], it would have been obvious to a POSITA when applying Lee-2's teachings to Kim to retrieve from memory 140 favorite channel list thumbnails so that the FAVORITE CH card object may be generated and displayed to the user, thereby making the user "instantly [] aware of the FAVORITE CH card object [] including

the favorite channel list" and also because retrieving and displaying a thumbnail of the currently watched channel would allow the "the user [to] easily identify the channel that he or she is watching." Ex.1010, 31:14-21, 37:67-38:2; *see also* Reasons to Combine Kim and Lee-2.

325. Thus, Kim in combination with Lee-1 and Lee-2 discloses retrieving from memory 140 favorite channel list thumbnails, based on the selected FAVORITE CH card object, which renders obvious "*retrieving, from memory, content information based on the selected panel type*," as claimed.

[6.4] *displaying, via the television, the retrieved content information in the global panel based on the selected panel type.*

326. **First**, as discussed in connection with element [6.3], the prior art discloses retrieving favorite channel list thumbnails ("*the retrieved content information*.")

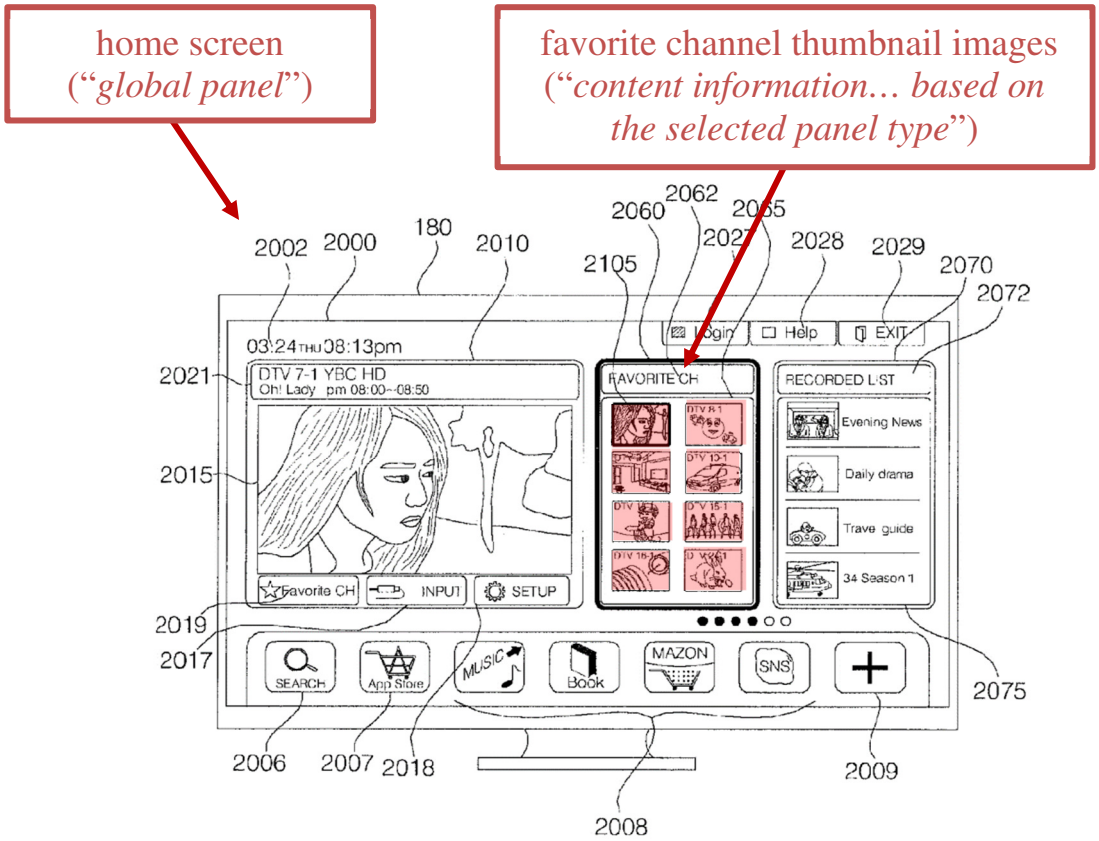
327. **Second**, Lee-2 displays, via the television, the retrieved favorite channel list thumbnails in the selected FAVORITE CH card object in the home screen:

> Upon input of a local key (not shown) or a favorite channel key (not shown) of the remote controller, the home screen 2000 may be displayed as illustrated in FIG. 33B. **<u>The home screen 2000 may include the FAVORITE CH card object 2060. Particularly, the FAVORITE CH card object 2060 may be highlighted</u>**. Therefore,

> the user can readily view the FAVORITE CH card object 2060 including the favorite channel list 2065.

Ex.1010, 38:4-11; *see also infra* [6.4].

328. As shown below at Figure 33B, Lee-2 displays, via the television, the retrieved favorite channel list thumbnails 2065 in the FAVORITE CH card object 2060 in the home screen:



Ex.1010, Fig. 33B (annotated).

329. Consistent with the discussion in connection with elements [6.1]-[6.3], it would have been obvious to a POSITA that to apply Lee-2's teachings to Kim, because it would make the user "instantly [] aware of the FAVORITE CH

card object [] including the favorite channel list" and also because displaying a thumbnail of the currently watched channel would allow the "the user [to] easily identify the channel that he or she is watching." Ex.1010, 31:14-21, 37:67-38:2; *see also* Reasons to Combine Kim and Lee-2.

330. Thus, Kim in combination with Lee-1 and Lee-2 discloses displaying, via the television 180, the retrieved favorite channel list thumbnails in the FAVORITE CH card object in the global panel, which renders obvious "*displaying, via the television, the retrieved content information in the global panel based on the selected panel type*," as claimed.

6. Claim 12

[12.0] ***The non-transitory computer-readable medium of claim 11, wherein the instructions further comprise:***

331. *See* claim 11, Ground 1.

[12.1] ***identifying a user associated with the received indication;***

332. *See* [2.1], Ground 2.

[12.2] ***retrieving one or more settings associated with the identified user;***

333. *See* [2.2], Ground 2.

[12.3] ***retrieving, from memory, content information associated with the identified user; and***

334. *See* [2.3], Ground 2.

[12.4] ***displaying, via the television, the retrieved content information in the global panel.***

335. *See* [2.4], Ground 2.

7. Claim 13

[13.0] ***The non-transitory computer-readable medium of claim 11, wherein the instructions further comprise:***

336. *See* claim 11, Ground 1.

[13.1] ***identifying a user associated with the received indication;***

337. *See* [3.1], Ground 2.

[13.2] ***retrieving, from memory, one or more settings associated with the identified user;***

338. *See* [3.2], Ground 2.

[13.3] ***retrieving, from memory, content information associated with the identified user and the one or more settings associated with the user; and***

339. *See* [3.3], Ground 2.

[13.4] ***displaying, via the television, the retrieved content information in the global panel.***

340. *See* [3.4], Ground 2.

8. Claim 16

[16.0] ***The non-transitory computer-readable medium of claim 11, further comprising:***

341. *See* claim 11, Ground 1.

[16.1] ***identifying at least one of a content source and a content information currently being displayed via a television;***

342. *See* [6.1], Ground 2.

[16.2] ***selecting a panel type based on the identified at least one of content source***

and content information currently being displayed via the television;

343. *See* [6.2], Ground 2.

[16.3] ***retrieving, from memory, content information based on the selected panel type; and***

344. *See* [6.3], Ground 2.

[16.4] ***displaying, via the television, the retrieved content information in the global panel based on the selected panel type.***

345. *See* [6.4], Ground 2.

9. Claim 22

[22.0] ***The system of claim 21, wherein the microprocessor is further operable to:***

346. *See* claim 21, Ground 1.

[22.1] ***identify at least one of a content source and a content information currently being displayed via a television;***

347. *See* [6.1], Ground 2.

[22.2] ***select a panel type based on the identified at least one of content source and content information currently being displayed via the television;***

348. *See* [6.2], Ground 2.

[22.3] ***retrieve, from the memory, content information based on the selected panel type; and***

349. *See* [6.3], Ground 2.

[22.4] ***display, via the television, the retrieved content information in the global panel based on the selected panel type.***

350. *See* [6.4], Ground 2.

VIII. CONCLUSION

351. 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: 18 December, 2023