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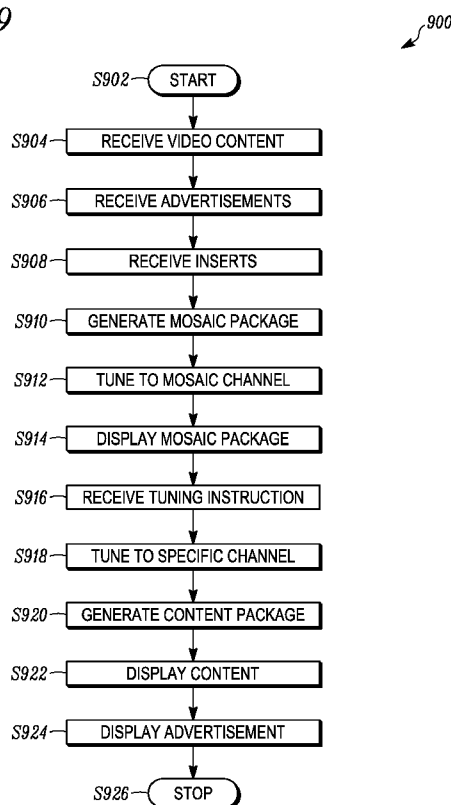
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[Continued on next page]

(54) Title: SYSTEM AND METHOD FOR VIDEO MOSAIC

FIG. 9



(57) Abstract: A system and method is provided that enables a viewer to view all the available content on a mosaic display, even when advertisements would otherwise prevent a viewer from doing so. Whenever a channel is displaying non-program content, the mosaic may instead display prerecorded content for the current program on that channel prior to the ad-period.



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SYSTEM AND METHOD FOR VIDEO MOSAIC

BACKGROUND

[0001] Embodiments of the invention relate to devices and methods to display a plurality of different contents at the same time.

[0002] Conventional mosaic displays provided by content providers give the viewer the opportunity to view multiple channels of content at the same time in order to determine which channel the viewer will ultimately choose to watch. A mosaic display may include different channels within the same category, i.e., one mosaic display may include popular news content, while a different mosaic display may include popular sports content. Mosaic displays may also include user defined channel choices to display content of various categories at the same time.

[0003] Such mosaic displays, while generally useful to a viewer, sometimes show non-program content (non-limiting examples of which include advertisements and promotional segments) instead of the content, making it difficult for the viewer to know what content is actually available to choose.

[0004] **FIG. 1A** illustrates a conventional content mosaic.

[0005] As shown in the figure, system **100** includes a content provider group **102**, an advertisement provider group **104**, and a residence **106**.

[0006] Content provider group **102** includes content providers **108**, **110**, **112** and **114**. Content providers **108**, **110**, **112** and **114** may include any content provider, non-limiting examples of which include cable providers, satellite providers, and broad castors, and they serve to provide content the viewer desires to watch, like a sitcom or a sporting event. Here, content providers **108**, **110**, **112** and **114** are illustrated as distinct elements. For example, each may be a distinct television network broadcast station. However, two or more of content providers **108**, **110**, **112** and **114** may be combined as a unitary element, for example a cable television provider that multiple distinct television network content.

[0007] Advertisement provider group **104** includes advertisement providers **116, 118, 120, 122, 124** and **126**. Advertisement providers **116, 118, 120, 122, 124** and **126** may include any advertisement provider that creates advertisements, and advertisement providers **116, 118, 120, 122, 124** and **126** serve to provide the advertisements that fill in predetermined gaps in the desired content. Here, advertisement providers **116, 118, 120, 122, 124** and **126** are illustrated as distinct elements. For example, each may be a distinct television network advertisement provider that provides specific commercials. However, two or more of advertisement providers **116, 118, 120, 122, 124** and **126** may be combined as a unitary element.

[0008] It should also be noted that it is conceivable for a content provider group to be combined with an advertisement group, wherein a single group provides both the content and the advertisements.

[0009] Residence **106** includes receiver **128** and video display **130**.

[0010] Content provider group **102** is in communication with receiver **128** via a communication channel **101**. In some cases, where advertisement provider group **104** and content provider group **102** are not a single element, advertisement provider group **104** is in communication with content provider group **102** via a communication channel **103**. In some cases, where advertisement provider group **104** and content provider group **102** are not a single element, advertisement provider group **104** is in communication with receiver **128** via a communication channel **105**.

[0011] Communication channel **101**, communication channel **103** and communication channel **105** may be any known type of wired or wireless communication channel that is able to transfer data.

[0012] Receiver **128** is operable to receive content from content providers **108, 110, 112** and **114** via communication channel **101** and to receive advertisements from advertisement providers **116, 118, 120, 122, 124** and **126** via communication channel **105**. In the case where content providers **108, 110, 112** and **114** are distinct elements, receiver **128** receives content from a single provider from content providers **102**. In the case where content providers **108, 110, 112** and **114** are a unitary element, receiver **128** is able to receive content from a plurality of providers from content provider group **102**.

[0013] Similarly, receiver 128 may receive advertisements from a single provider from advertisement provider group 104 or from a plurality of providers from advertisement provider group 104.

[0014] In some cases, receiver 128 packages the content and advertisements together such that transitions between them are seamless, and then relays the packaged content and advertisements to the viewer via video display 130. In other cases, content provider group 102 may receive the advertisements from advertisement provider group 104 via communication channel 103 and package them with the content before the content reaches receiver 128 via communication channel 101. In still other cases, advertisement provider group 104 may receive the content from content provider group 102 via communication channel 103 and package them with the advertisements before reaching receiver 128 via communication channel 105. In yet still other cases, any one of content providers 108, 110, 112 and 114 and advertisement providers 116, 118, 120, 122, 124 and 126 may a single provider such that a single provider provides both content and advertisements to receiver 128.

[0015] To simplify the discussion, in an example situation, content provider group 102 provides content to receiver 128 and advertisement provider group 104 provides advertisements to receiver 128.

[0016] FIG. 1B illustrates a conventional mosaic display.

[0017] As shown in the figure, video display 130 includes a mosaic display 132 and images 134, 136, 138 and 140. Images 134, 136, 138 and 140 are each video images of content associated with a particular communication channel. When a viewer wants to see the content available on different channels at the same time, he issues an instruction to receiver 128 (for example, via a remote control, not shown) to tune to the desired mosaic display. The receiver then displays mosaic display 132 on video display 130, which shows the viewer the available content associated with particular channels via video images 134, 136, 138 and 140.

[0018] For purposes of discussion, presume that after the viewer sees all the available content on mosaic display 132, he decides to watch the content associated with video image 134. In such a case, uses the remote control (not shown) to select the content associated with video image 134. The receiver then switches from mosaic display 132 to a channel providing the content associated with video image 134. This will be described with reference to FIG. 1C.

[0019] FIG. 1C illustrates a video display after an image is selected from a mosaic display.

[0020] As shown in the figure, video display 116 includes image 142. In this example, receiver 128 has switched from mosaic display 132 to image 142, which is the content associate with the viewer's selection of video image 134 on mosaic display 132.

[0021] A problem with this type of mosaic is best described with reference to the streams of video data associated with the video images of the mosaic. This will be described with reference to FIG. 2.

[0022] FIG. 2 illustrates streams of video data.

[0023] The figure includes a video data stream 202 corresponding to first content (e.g., a television program), a video data stream 204 corresponding to second content, a video data stream 206 corresponding to third content and a video data stream 208 corresponding to fourth content.

[0024] Video data stream 202 includes an initial portion of content 210, a middle portion of content 212, a later portion of content 214, a non-program content indicator 216 and a non-program content indicator 218. Video data stream 204 includes an initial portion of content 220, a middle portion of content 222, a later portion of content 224, a non-program content indicator 226, and a non-program content indicator 228. Video data stream 206 includes an initial portion of content 230, a middle portion of content 232, a later portion of content 234, a non-program content indicator 236, and a non-program content indicator 238. Video data stream 208 includes an initial portion of content 240, a middle portion of content 244, a later portion of content 234, a non-program content indicator 248 and a non-program content indicator 260.

[0025] In this example, each video data stream includes two non-program content indicators separating three portions of content. It should be noted that this provided merely for purposes of discussion and that more or less non-program content indicators may be provided in a single video data stream. It should further be noted that, as known to those of skill in the art, the non-program content indicators include a "begin" indicator and an "end" indicator, wherein the begin indicator instructs a receiver as to where the non-program content insert will begin and the end indicator instructs a receiver as to where the non-program content insert will end.

[0026] Video data stream 202, video data stream 204, video data stream 206, and video data stream 208 are each associated with respective video content provided. For example, video

data stream **202** may be associated with the content provided by a first television network provider, and video data stream **204** may be associated with the content provided by a second television network provider.

[0027] All initial, middle, and later portions of the content in video data stream **202**, video data stream **204**, video data stream **206**, and video data stream **208** include the substantive content the user desires to see in order to choose which channel to watch.

[0028] Non-program content indicators **216**, **218**, **226**, **228**, **236**, **238**, **248**, and **250** serve to notify receiver **128** that advertisements should be inserted and displayed on the video display. For example, when receiver **128** is notified that initial portion of content **210** reaches non-program content indicator **216**, receiver **128** displays advertisements provided by the advertisement providers. In some cases, when receiver **128** is notified that initial portion of content **210** reaches non-program content indicator **216**, receiver **128** inserts advertisements provided by the content provider.

[0029] Whether the content providers insert the advertisements into the content prior to sending the packaged content and advertisements to receiver **128**, whether the advertisement providers insert the advertisements into the content prior to sending the packaged content and advertisements to receiver **128**, or whether receiver **128** inserts the received advertisements into the received content, once the advertisements are packaged with the content, a new data stream is created. This will be described with reference to **FIG. 3**.

[0030] **FIG. 3** illustrates video data streams with advertisements.

[0031] The figure includes a video data stream **302** corresponding to first content (e.g., a television program) with advertisements therein (e.g., commercials), a video data stream **304** corresponding to second content with advertisements therein, a video data stream **306** corresponding to third content with advertisements therein and a video data stream **308** corresponding to fourth content with advertisements therein.

[0032] As shown in the figure, video data stream **302** includes an advertisement **310** at non-program content indicator **216** and an advertisement **312** at non-program content indicator **218**. Video data stream **304** includes an advertisement **314** at non-program content indicator **226** and an advertisement **316** at non-program content indicator **228**. Video data stream **306** includes an advertisement **318** at non-program content indicator **236** and an advertisement **320** at non-program content indicator **238**. Video data stream **308** includes an advertisement

322 at non-program content indicator 248 and an advertisement 324 at non-program content indicator 260.

[0033] As described with additional reference to FIG. 2, and using video data stream 302 as a non-limiting example, a viewer may be watching initial portion of content 210. When the end of initial portion of content 210 is reached, non-program content indicator 216 notifies receiver 128 that it is time to insert an advertisement in between initial portion of content 210 and middle portion of content 212. Receiver 128 proceeds to insert advertisement 310 in between initial portion of content 210 and middle portion of content 212. When advertisement 310 is complete, receiver 128 plays middle portion of content 212. When the end of middle portion of content 212 is reached, non-program content indicator 218 notifies receiver 128 that it is time to insert an advertisement in between middle portion of content 212 and later portion of content 214. Receiver 128 proceeds to insert advertisement 312 in between middle portion of content 212 and later portion of content 214. When advertisement 312 is complete, receiver 128 plays later portion of content 214.

[0034] Problems arise in conventional mosaic displays, however, when the user desires to see all the available content simultaneously, but instead sees the advertisements. This issue will be discussed with reference to FIG. 4.

[0035] FIG. 4 illustrates channels of video data stream displayed on a mosaic display.

[0036] In operation, at time t_1 a viewer may tune to a mosaic display that displays video data stream 302, video data stream 304, video data stream 306, and video data stream 308. Time t_1 corresponds to the end of the initial portion of content 210 and the beginning of advertisement 310 on video data stream 202. At time t_1 , initial portion of content 220, initial portion of content 230, and initial portion of content 240 will be shown on the mosaic display. Therefore, when the viewer tunes to the mosaic display at time t_1 , he will only see the desired content associated with three of the four channels, and will not have enough information to make a decision regarding which channel to select.

[0037] Time t_2 corresponds to the end of advertisement 310, so from time t_2 to t_3 the viewer would see middle portion of content 212, initial portion of content 220, initial portion of content 230, and initial portion of content 240. At time t_3 , however, advertisement 314 begins, and the viewer again will only see the desired content associated with three of the four channels. At time t_4 , advertisement 318 begins while advertisement 314 is ongoing, so

the viewer would only see the desired content associated with two of the four channels (the middle portion of content **212** the initial portion of content **240**).

[0038] At time t_5 , advertisement **314** ends while advertisement **318** is still ongoing, so the viewer again would only see the desired content associated with three of the four channels. At time t_6 , advertisement **318** ends, and the viewer would be able to see content associated with all four channels. The time during which content associated with all four channels is viewable on the mosaic display is short lived, though, because at time t_7 , advertisement **312** and advertisement **322** are underway, and the viewer can only view the desired content associated with two of the four channels.

[0039] At time t_8 , advertisement **312** ends while advertisement **322** is still ongoing, leaving the viewer to see content associated with three of the four channels. At time t_9 , advertisement **322** ends, and from t_9 to t_{10} the viewer can see content associated with all four channels. At time t_{10} , advertisement **320** begins, and at t_{11} , advertisement **316** begins, so from t_{11} to t_{12} (when advertisement **320** ends) the viewer can only see content associated with two of the four channels. At t_{13} , advertisement **316** ends, and from t_{13} to t_{14} the viewer can see content associated with all four channels. However, at t_{14} advertisement **324** starts, and from t_{14} to t_{15} (when advertisement **324** ends) the viewer can only see content associated with three of the four channels. This will be further described with reference to **FIGs. 5A-C**.

[0040] **FIGs. 5A-C** illustrate conventional mosaic displays at three different time, respectively, wherein **FIG. 5A** illustrates mosaic display **132** prior to time t_1 as illustrated in **FIG. 4**, **FIG. 5B** illustrates mosaic display **132** between times t_1 and t_2 as illustrated in **FIG. 4** and **FIG. 5C** illustrates mosaic display **132** between times t_4 and t_5 as illustrated in **FIG. 4**.

[0041] As shown in **FIG. 5A**, video display **130** is currently showing mosaic display **132** for a time prior to time t_1 . During this period, mosaic display **132** includes a video image **502**, a video image **504**, a video image **506** and a video image **508**. In this example, with additional reference to **FIG. 4**, video image **502** corresponds to initial portion of content **210** of video data stream **302**, video image **504** corresponds to initial portion of content **220** of video data stream **304**, video image **506** corresponds to initial portion of content **230** of video data stream **306** and video image **508** corresponds to initial portion of content **240** of video data stream **308**.

[0042] In other words, mosaic display **132**, prior to time t_1 , displays the actual content of the show on each of the channels. In this way, the viewer can easily see what is currently playing on each channel. However, this may change if an advertisement starts to play on one of the channels. This will be described with reference to **FIGs. 5B-C**.

[0043] As shown in **FIG. 5B**, video display **130** is currently showing mosaic display **132** for a time between times t_1 and t_2 . During this period, mosaic display **132** includes a video image **510**, video image **504**, video image **506** and video image **508**. In this example, with additional reference to **FIG. 4**, video image **510** corresponds to advertisement **310** of video data stream **302**.

[0044] In other words, mosaic display **132**, between times t_1 and t_2 , displays the actual content of the show on three of the four of the channels, but additionally displays an advertisement on one of the channels. Accordingly, the viewer can only see what is currently playing on three of the four channels and might not know what is playing on the fourth channel, which is currently showing an advertisement.

[0045] As shown in **FIG. 5C**, video display **130** is currently showing mosaic display **132** for a time between times t_4 and t_5 . During this period, mosaic display **132** includes video image **502**, a video image **512**, a video image **514** and video image **508**. In this example, with additional reference to **FIG. 4**, video image **512** corresponds to advertisement **314** of video data stream **304** and video image **514** corresponds to advertisement **318** of video data stream **306**.

[0046] In other words, mosaic display **132**, between times t_4 and t_5 , displays the actual content of the show on two of the four of the channels, but additionally displays advertisements on the remaining two channels. Accordingly, the viewer can only see what is currently playing on two of the four channels and might not know what is playing on the other two channels, which are each currently showing an advertisement.

[0047] In this example situation discussed above with reference to **FIGs. 1A-5C**, content provider group **102** provides content to receiver **128** and advertisement provider group **104** provides advertisements to receiver **128**. It should be noted, that this is a non-limiting example, wherein in other examples, advertisement provider group **104** provides the advertisements to content provider group **102**, which in turn then provides both the content and advertisements to receiver **128**. In particular, in such cases, advertisement provider

group **104** provides the advertisements to content provider group **102** via communication channel **103**. Content provider group **102** then provides the content and advertisements to receiver **128** via communication channel **101**. The remaining operations are then similarly described as discussed above with reference to **FIGs. 2-5C**.

[0048] It is apparent that the majority of the time a viewer watches a mosaic display, it is possible to view the desired content associated with each channel simultaneously for only very short time periods. It is therefore likely that when the viewer tunes to the mosaic display, he will not see the desired content associated with at least one of the video data stream streams displayed.

[0049] There exists a need for a system and method to provide a viewer with a way to view all the available content on a mosaic display, even when advertisements would otherwise prevent a viewer from doing so.

SUMMARY

[0050] The present invention is drawn to a system and method that enables a viewer to view all the available content on a mosaic display, even when advertisements would otherwise prevent a viewer from doing so.

[0051] Various embodiments described herein are drawn to a device for use with a video display operable to display a video. The device includes a receiver, a memory, a packaging component, an image processing component and an instruction receiver. The receiver receives first video data on a first channel and second video data on a second channel. The first video data includes an initial portion of first content, an initial first non-program content indicator, a middle portion of the first content, a later first non-program content indicator and a later portion of the first content. The second video data includes an initial portion of second content, an initial second non-program content indicator, a middle portion of the second content, a later second non-program content indicator and a later portion of the second content. The memory stores a first content insert associated with the first content and a second content insert associated with the second content. The packaging component generates a first content package and a second content package. The first content package includes the initial portion of first content, the first content insert and the middle portion of the first content. The second content package includes the initial portion of second content, the second content insert and the middle portion of the second content. The image processing

component outputs a mosaic signal to enable the video display to display a mosaic including a first image section having video associated with the first content package and a second image section having video associated with the second content package. The instruction receiver receives a tuning instruction. The packaging component further generates a primary first content package including the middle portion of the first content, an advertisement at the later first non-program content indicator and the later portion of the first content. The image processing component further outputs a primary first content signal in response to the tuning instruction to enable the video display to display a video associated with the middle portion of the first content, the advertisement and the later portion of the first content.

BRIEF SUMMARY OF THE DRAWINGS

[0052] The accompanying drawings, which are incorporated in and form a part of the specification, illustrate example embodiments and, together with the description, serve to explain the principles of the invention. In the drawings:

[0053] **FIG. 1A** illustrates a conventional content mosaic;

[0054] **FIG. 1B** illustrates a conventional mosaic display;

[0055] **FIG. 1C** illustrates a video display after an image is selected from a mosaic display;

[0056] **FIG. 2** illustrates streams of video data;

[0057] **FIG. 3** illustrates streams of video data with advertisements;

[0058] **FIG. 4** illustrates streams of video data displayed on a mosaic display;

[0059] **FIGs. 5A-C** illustrate conventional mosaic displays at three different time, respectively, wherein **FIG. 5A** illustrates the conventional mosaic display prior to time t_1 as illustrated in **FIG. 4**, **FIG. 5B** illustrates the conventional mosaic display between times t_1 and t_2 as illustrated in **FIG. 4** and **FIG. 5C** illustrates the conventional mosaic display between times t_4 and t_5 as illustrated in **FIG. 4**;

[0060] **FIG. 6** illustrates a system for providing content to a viewer in accordance with aspects of the present invention;

[0061] **FIG. 7** illustrates a receiver in accordance with aspects of the present invention;

[0062] **FIG. 8** illustrates video data streams for display on a mosaic in accordance with aspects of the present invention;

[0063] **FIG. 9** illustrates a method of displaying content in accordance with aspects of the present invention; and

[0064] **FIGs. 10A-C** illustrate mosaic displays in accordance with aspects of the present invention at three different time, respectively, wherein **FIG. 9A** illustrates the conventional mosaic display prior to time t_1 as illustrated in **FIG. 8**, **FIG. 9B** illustrates the conventional mosaic display between times t_1 and t_2 as illustrated in **FIG. 8** and **FIG. 9C** illustrates the conventional mosaic display between times t_4 and t_5 as illustrated in **FIG. 8**.

DETAILED DESCRIPTION

[0065] The present invention provides a system and method to allow a viewer to see relevant content on a mosaic display so the viewer can make a decision as to what channel he ultimately wants to watch. While watching the mosaic display, at the time any channel is supposed to show an advertisement, the mosaic display may show alternate content that notifies the user of the content currently being broadcast on that channel. When the user tunes to a specific channel from the mosaic display, the user will then see advertisements at the appropriate times.

[0066] The invention provides an improved content selection experience because, unlike a conventional mosaic display, the viewer is able to see all of the available content simultaneously instead of seeing some combination of content and advertisements. This provides the viewer with more information to make an informed viewing decision in less time than it would take while viewing a conventional mosaic display. Further, when the viewer chooses a particular channel to view from the choices in the mosaic display, and the display displays the chosen channel, the viewed content will now include the advertisements. In this manner, the advertisers will be able to have their advertisements viewed by the viewer when the content is watched outside of the mosaic display.

[0067] Aspects of the present invention will not be described with reference to **FIGs. 5 – 8**.

[0068] **FIG. 6** illustrates a system **600** for providing content to a viewer in accordance with aspects of the present invention.

[0069] As shown in the figure, system **600** includes content provider group **102**, advertisement provider group **104**, a residence **602** and an insert provider group **604**.

[0070] Insert provider group **604** includes insert providers **606**, **608**, **610**, **612**, **614** and **616**. Insert providers **606**, **608**, **610**, **612**, **614** and **616** may include any insert provider that creates inserts, and insert providers **606**, **608**, **610**, **612**, **614** and **616** serve to provide the inserts that fill in predetermined gaps in the desired content. In this embodiment, insert providers **606**, **608**, **610**, **612**, **614** and **616** are illustrated as distinct elements. However, in other embodiments two or more of insert providers **606**, **608**, **610**, **612**, **614** and **616** may be combined as a unitary element.

[0071] An insert is a form of content that is designed to show the viewer what content is playing on one channel that is shown as part of a mosaic display, even when an advertisement is supposed to be shown on that channel. As a non-limiting example, an insert may include previously broadcast content that corresponds to the content currently on the channel, recorded content from the current broadcast, or a promotional video for the content. If the channel is broadcasting an episode of a particular show, the insert may include a clip from the previous episode, or it may include a clip from an earlier time of the current episode. An insert enables a viewer to immediately recognize the content in a particular channel, without necessarily being the actual content.

[0072] Residence **106** includes receiver **618** and video display **130**.

[0073] Content provider group **102** is in communication with receiver **618** via communication channel **101**. In some cases, where advertisement provider group **104** and content provider group **102** are not a single element, advertisement provider group **104** is in communication with content provider group **102** via communication channel **103**. In some cases, where advertisement provider group **104** and content provider group **102** are not a single element, advertisement provider group **104** is in communication with receiver **618** via communication channel **105**. Insert provider group **604** is in communication with receiver **618** via a communication channel **601**. In some cases, where insert provider group **604** and content provider group **102** are not a single element, insert provider group **604** is in communication with content provider group **102** via communication channel **601**.

[0074] Communication channel **601** and communication channel **603** may be any known type of wired or wireless communication channel that is able to transfer data.

[0075] Receiver **618** is operable to receive content from content providers **108**, **110**, **112** and **114** via communication channel **101**, to receive advertisements from advertisement providers **116**, **118**, **120**, **122**, **124** and **126** via communication channel **105** and to receive inserts from insert providers **606**, **608**, **610**, **612**, **614** and **616** via communication channel **601**.

[0076] In some embodiments, receiver **618** packages the content, advertisements, and inserts together such that transitions between them are seamless, and then it relays the packaged content received to the viewer via video display **130**. In alternate embodiments, content provider group **102** may receive the advertisements from advertisement group **104** via communication channel **103** and may receive inserts from insert provider group via communication channel **603**, and then package them with the content before the content reaches receiver **128** via communication channel **101**.

[0077] To simplify the discussion, in an example situation, content provider group **102** provides content to receiver **128** via communication channel **101**, advertisement provider group **104** provides advertisements to receiver **128** via communication channel **105** and insert provider group **604** provides content to receiver **128** via communication channel **601**.

[0078] The function and operation of inserts will be described in more detail with reference to **FIGs. 6 – 8**.

[0079] **FIG. 7** illustrates an example of receiver **618** in accordance with aspects of the present invention.

[0080] As shown in the figure, receiver **618** includes a memory **702**, a packaging component **704**, an image processing component **706**, an instruction receiver **708** and a communication component **710**.

[0081] In this example, memory **702**, packaging component **704**, image processing component **706**, instruction receiver **708** and communication component **710** are illustrated as individual devices. However, in some embodiments, at least two of memory **702**, packaging component **704**, image processing component **706**, instruction receiver **708** and communication component **710** may be combined as a unitary device. Further, in some embodiments, at least one of memory **702**, packaging component **704**, image processing component **706**, instruction receiver **708** and communication component **710** may be

implemented as a computer having tangible computer-readable media for carrying or having computer-executable instructions or data structures stored thereon. Such tangible computer-readable media can be any available media that can be accessed by a general purpose or special purpose computer. Non-limiting examples of tangible computer-readable media include physical storage and/or memory media such as RAM, ROM, EEPROM, CD-ROM or other optical disk storage, SD cards, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to carry or store desired program code means in the form of computer-executable instructions or data structures and which can be accessed by a general purpose or special purpose computer. For information transferred or provided over a network or another communications connection (either hardwired, wireless, or a combination of hardwired or wireless) to a computer, the computer may properly view the connection as a computer-readable medium. Thus, any such connection may be properly termed a computer-readable medium. Combinations of the above should also be included within the scope of computer-readable media.

[0082] Communication component **610** is operable to receive content from content providers **102**, advertisements from advertisement providers **104**, and inserts from insert providers **604**. Communication component **610** communicates with memory **702** and provides memory **702** with the content, advertisements, and inserts received from the respective providers. Communication component **610** may communicate with memory **702** by any known method, non-limiting examples of which include wired and wireless forms of communication.

[0083] Memory **702** is operable to receive and store content, advertisements, and inserts from communication component **610**. Memory **702** communicates with packaging component **704** and provides packaging component **704** the stored content, advertisements, and inserts. Memory **702** may communicate with packaging component **704** by any known method, non-limiting examples of which include wired and wireless forms of communication. Memory **702** may be any device or system that is able to receive, store, retrieve and manage data, non-limiting examples of which include random access memory (RAM), static RAM (SRAM), dynamic RAM (DRAM), flash, disk, etc.

[0084] Packaging component **704** is operable to receive stored content and inserts from memory **702** and is further operable to create a content package that includes different combinations of the stored content, advertisements, and inserts. Packaging component **704**

communicates with image processing component 706 to provide image processing component 706 with content packages. Packaging component 704 also communicates with instruction receiver 708 so that packaging component 704 can provide the correct package to image processing component 706. Packaging component 704 may communicate with image processing component 706 and with instruction receiver 708 by any known method, non-limiting examples of which include wired and wireless forms of communication. Packaging component 704 may be any system or device that is able to package bits into a data package that may be used by image processing component 706, a non-limiting example of which includes an encoder.

[0085] Image processing component 706 is operable to receive content packages from packaging component 704 and output the content packages to video display 130. Image processing component 706 is also operable to receive tuning instructions from instruction receiver 708 and output different content packages based on the tuning instructions received. Image processing component 706 may communicate with video display 130 and instruction receiver 708 by any known method, non-limiting examples of which include wired and wireless forms of communication.

[0086] Instruction receiver 708 is operable to receive tuning instructions from a viewer in any known manner, a non-limiting example of which includes via a remote control (not shown). Instruction receiver 708 communicates with image processing component 706 and provides image processing component 706 with the tuning instructions received from the viewer. Instruction receiver 708 also provides packaging component 704 information regarding the instructions from the viewer so that packaging component 704 can provide the correct package to image processing component 706.

[0087] The operation of receiver 618 will be further discussed with reference to FIGs. 8-10.

[0088] FIG. 8 illustrates video data streams for display on a mosaic in accordance with aspects of the present invention.

[0089] The figure includes a video data stream 802 corresponding to first content with an insert therein, a video data stream 804 corresponding to second content with advertisements therein, a video data stream 806 corresponding to third content with advertisements therein and a video data stream 808 corresponding to fourth content with advertisements therein.

[0090] Video data stream **802** includes a content package **818** and a content package **820**. Content package **818** includes initial portion of content **210**, an insert **810**, and middle portion of content **212**. Content package **812** includes middle portion of content **212**, advertisement **312** and later portion of content **214**.

[0091] Video data stream **804** includes a content package **822** and a content package **824**. Content package **822** includes initial portion of content **220**, an insert **812**, and middle portion of content **222**. Content package **824** includes middle portion of content **222**, advertisement **316** and later portion of content **224**.

[0092] Video data stream **806** includes a content package **826** and a content package **828**. Content package **826** includes initial portion of content **230**, an insert **814**, and middle portion of content **232**. Content package **828** includes middle portion of content **232**, advertisement **320** and later portion of content **248**.

[0093] Video data stream **808** includes a content package **830** and a content package **832**. Content package **830** includes initial portion of content **240**, an insert **816**, and middle portion of content **244**. Content package **832** includes middle portion of content **244**, advertisement **324**, and later portion of content **246**.

[0094] The types of content packages described with respect to **FIG. 8** are shown as non-limiting examples. Content packages may include more, or fewer, content segments than described above. For example, another content package for video data stream **808** may include initial portion of content **240**, insert **816**, middle portion of content **244**, and an additional insert to replace advertisement **324**. Yet another content package for video data stream on channel **808** may include only initial portion of content **240** and insert **816**. In addition, content packages may include smaller segments of each portion. As another example, a content package for video data stream may include half of initial portion of content **230**, insert **814**, and half of middle portion of content **232**.

[0095] A viewer's experience with a mosaic display in accordance with aspects of the present invention will be further described with reference to **FIG. 9**.

[0096] **FIG. 9** illustrates a method **900** of displaying content in accordance with aspects of the present invention.

[0097] As shown in the figure, method 900 starts (S902) and system 600 receives and stores video content (S904). Referring to FIG. 7, content providers 102 send video data streams to communications component 610, and communications component 610 sends the video data stream to memory 702. Memory 702 then stores the video data stream. Referring to FIG. 8, video content may include the initial, middle, and later portions of content for video data streams 802, 804, 806, and 808.

[0098] Returning to FIG. 9, system 600 then receives and stores advertisements (S906). Referring to FIG. 7, advertisement providers 104 provide advertisements to communication component 610, and communication component 610 sends the advertisements to memory 702. Memory 702 then stores the advertisement data. Referring to FIG. 3, advertisements may include all advertisements associated with video data stream 202, 204, 206, and 208.

[0099] Returning to FIG. 9, it should be noted that in some embodiments, the advertisements are received and stored (S906) prior to the video content being received and stored (S904). Still further, in some embodiments, the video content (S904) and the advertisements (S906) are received and stored at the same time.

[00100] System 600 then receives and stores inserts (S908). Referring to FIG. 7, insert providers 604 provide inserts to communication component 610, and communication component 610 sends the insert data to memory 702. Memory 702 then stores the insert data. Referring to FIG. 3, inserts may include all inserts that correspond to all advertisements associated with video data stream 202, 204, 206, and 208.

[00101] In should be noted that in some embodiments, the inserts are received and stored (S908) prior to the video content or advertisements being received and stored (S904 or S906). Still further, in some embodiments, the inserts (S908) video content (S904) and the advertisements (S906) are received and stored at the same time.

[00102] Returning to FIG. 9, system 600 then generates a mosaic package (S910). Referring to FIG. 7, memory 702 provides packaging component 704 the stored content received from content providers 102, the stored advertisements received from advertisement providers 104, and the stored inserts from insert providers 604.

[00103] Referring to **FIG. 8**, packaging component **704** then creates different content packages for a mosaic display. Using video data stream **802** as an example, packaging component **704** may create package **818** that includes initial portion of content **210**, insert **810**, and middle portion of content **212**. Packaging component may also create package **812** that includes middle portion of content **212**, advertisement **312**, and later portion of content **214**. Packaging component **704** is not limited to creating packages that contain only complete segments of content, advertisements, or inserts. Packaging component **704** may also create packages that start and/or end at any point in the various segments of content, advertisements, or inserts. Creating packages in such a manner may be desired because the viewer may tune to a mosaic display at any time, so packages may be created to correspond with any time a viewer may choose to tune to a mosaic display.

[00104] Returning to **FIG. 9**, the viewer then tunes to a mosaic display (**S912**). Referring to **FIG. 7**, the viewer provides an instruction to instruction receiver **708** that he desires to watch a mosaic display. The instruction may be provided to instruction receiver **708** by any conventional method, including using a remote control, or selecting the channel from the set top box. Instruction receiver **708** provides the viewer instructions to packaging component **704** and image processing component **706**. Packaging component receives the tuning instruction from instruction receiver **708** and chooses the package that corresponds to the tuning instruction at the time the instruction is received.

[00105] Referring to **FIG. 8**, the viewer may provide the tuning instruction at time t_1 to tune to a mosaic display. At time t_1 , portion of content **210**, portion of content **220**, portion of content **230**, and portion of content **240** are currently being displayed by video data streams **802**, **804**, **806**, and **808**, respectively. However, because the viewer may choose to watch mosaic display for some time before making a final decision as to the channel he ultimately chooses to watch, packaging component **704** may choose to provide packages **818**, **822**, **826**, and **830** to image processing component **706**. This would serve to prevent the viewer from seeing advertisements **310**, **314**, **318**, and **322** from **FIG. 3** and replace them with inserts **810**, **812**, **814**, and **816**, respectively.

[00106] Referring back to **FIG. 9**, the viewer is able to view the mosaic display selected (**S914**). Referring to **FIG. 7**, image processing component **706** sends content

packages **818**, **822**, **826**, and **830** to video display **130** and a mosaic display is shown to the viewer. This will be described with additional reference to **FIGs. 10A-10C**.

[00107] **FIGs. 10A-C** illustrate mosaic displays in accordance with aspects of the present invention at three different time, respectively, wherein **FIG. 10A** illustrates a mosaic display **1000** prior to time t_1 as illustrated in **FIG. 8**, **FIG. 10B** illustrates mosaic display **1000** between times t_1 and t_2 as illustrated in **FIG. 8** and **FIG. 10C** illustrates mosaic display **1000** between times t_4 and t_5 as illustrated in **FIG. 8**.

[00108] As shown in **FIG. 10A**, video display **130** is currently showing mosaic display **1000** for a time prior to time t_1 . During this period, mosaic display **1000** includes a video image **502**, a video image **504**, a video image **506** and a video image **508**. In this example, with additional reference to **FIG. 8**, video image **502** corresponds to initial portion of content **210** of video data stream **802**, video image **504** corresponds to initial portion of content **220** of video data stream **804**, video image **506** corresponds to initial portion of content **230** of video data stream **806** and video image **508** corresponds to initial portion of content **240** of video data stream **808**.

[00109] In other words, mosaic display **1000**, prior to time t_1 , displays the actual content of the show on each of the channels. In this way, the viewer can easily see what is currently playing on each channel. However, this may change if an advertisement starts to play on one of the channels. Contrary to the conventional system and method discussed above with reference to **FIGs. 4-5C**, in accordance with aspects of the present invention, a viewer will see content related inserts as opposed to advertisements. In this manner, a viewer will know shows are playing on each channel for each respective video image of the mosaic. This will be described with reference to **FIGs. 10B-C**.

[00110] As shown in **FIG. 10B**, video display **130** is currently showing mosaic display **1000** for a time between times t_1 and t_2 . During this period, mosaic display **1000** includes a video image **1002**, video image **504**, video image **506** and video image **508**. In this example, with additional reference to **FIG. 8**, video image **1002** corresponds to insert **810** of video data stream **802**.

[00111] In other words, mosaic display **1000**, between times t_1 and t_2 , displays the actual content of the show on three of the four of the channels, but additionally displays an insert on one of the channels that would otherwise have been displaying an advertisement.

Accordingly, the viewer can see what is currently playing on three of the four channels and will additionally know what is playing on the fourth channel, which is currently showing the content-related insert.

[00112] As shown in **FIG. 10C**, video display **130** is currently showing mosaic display **1000** for a time between times t_4 and t_5 . During this period, mosaic display **1000** includes video image **502**, a video image **1004**, a video image **1006** and video image **508**. In this example, with additional reference to **FIG. 8**, video image **1004** corresponds to insert **814** of video data stream **804** and video image **1006** corresponds to insert **814** of video data stream **806**.

[00113] In other words, mosaic display **1000**, between times t_4 and t_5 , displays the actual content of the show on two of the four of the channels, but additionally displays inserts on the remaining two channels. Accordingly, the viewer can see what is currently playing on two of the four channels and will additionally know what is playing on the other two channels, which are each currently showing an advertisement, which are currently showing the content-related insert.

[00114] Referring to **FIG. 9**, the system then receives a tuning instruction from the viewer to tune to one of the channels displayed on a mosaic display (**S916**). Referring back to **FIG. 8**, the user may view mosaic display **800** until t_2 , when he makes a final decision as to what channel he ultimately wants to watch. At t_2 , the viewer sees middle portion of content **212**, insert **812**, insert **814**, and portion of fourth content **240**. The viewer may decide to tune to the channel associated with video data stream **802**, so he selects the corresponding channel on a mosaic display.

[00115] Referring now to **FIG. 7**, instruction receiver **708** receives the tuning instruction from the viewer and provides the instruction to packaging component **704** and image processing component **706**. Packaging component receives the tuning instruction from instruction receiver **708** and generates the package that corresponds to the tuning instruction at the time the instruction is received.

[00116] Referring to **FIG. 9**, the receiver tunes to the channel selected (**S918**). Referring to **FIG. 7**, image processing component **706** waits to receive the appropriate content package from packaging component **704** before displaying the channel to the viewer.

[00117] Referring to **FIG. 9**, system **600** then generates a content package (**S920**). Referring back to **FIG. 8**, packaging component **704** may choose to generate package **812**, which includes middle portion of content **212**, advertisement **312**, and later portion of content **214**. Packaging component **704** may choose to generate package **812** because packages **818** and **812** both include middle portion of content **212**, so at the exact time the viewer selects channel **802**, the package can be switched from package **818** to package **812** with no disruption to the viewer.

[00118] Referring back to **FIG. 9**, the viewer is able to view the channel selected (**S922**). Referring to **FIG. 7**, image processing component **706** sends content package **812** to video display **130** and the desired channel is shown to the viewer, starting at t_2 .

[00119] Referring to **FIG. 9**, after viewing the middle portion of content **212**, the viewer sees an advertisement (**S924**). Referring to **FIG. 8**, when the viewer is watching video data stream **802** from content package **812**, after viewing the middle portion of content **212**, the viewer will see advertisement **312** before viewing the later portion of content **214**.

[00120] Referring back to **FIG. 9**, method **900** stops (**S926**).

[00121] In the non-limiting example embodiment discussed above with reference to **FIGs. 6-10C**, content provider group **102** provides content to receiver **618**, advertisement provider group **104** provides advertisements to receiver **128** and insert provider group **604** provides inserts to receiver **128**. It should be noted that in other examples, advertisement provider group **104** provides the advertisements to content provider group **102** and insert provider group **604** provides the inserts to content provider group **102**, which in turn then provides the content, the advertisements and the inserts to receiver **618**. In particular, in such cases, advertisement provider group **104** provides the advertisements to content provider group **102** via a communication channel and insert provider group **604** provides the inserts to content provider group **102** via communication channel **603**. Content provider group **102** then provides the content, advertisements and inserts to receiver **618** via communication channel **101**. The remaining operations are then similarly described as discussed above with reference to **FIGs. 7-10C**.

[00122] In summary, the present invention provides a system and method to allow a viewer to see relevant content on a mosaic display so the viewer can make a decision as to what

channel he ultimately wants to watch. While watching the mosaic display, at the time any channel is supposed to show an advertisement, the mosaic display will show alternate content that notifies the user of the content currently being broadcast on that channel. When the user tunes to a specific channel from the mosaic display, the user will then see advertisements at the appropriate times.

[00123] The foregoing description of various preferred embodiments have been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed, and obviously many modifications and variations are possible in light of the above teaching. The example embodiments, as described above, were chosen and described in order to best explain the principles of the invention and its practical application to thereby enable others skilled in the art to best utilize the invention in various embodiments and with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the claims appended hereto.

CLAIMS

What is claimed is:

1. A device for use with a video display operable to display a video, said device comprising:

a receiver operable to receive first video data on a first channel and to receive second video data on a second channel, the first video data including an initial portion of first content, an initial first non-program content indicator, a middle portion of the first content, a later first non-program content indicator and a later portion of the first content, the second video data including an initial portion of second content, an initial second non-program content indicator, a middle portion of the second content, a later second non-program content indicator and a later portion of the second content;

a memory operable to store a first content insert associated with the first content and to store a second content insert associated with the second content;

a packaging component operable to generate a first content package and a second content package, the first content package including the initial portion of first content, the first content insert and the middle portion of the first content, the second content package including the initial portion of second content, the second content insert and the middle portion of the second content;

an image processing component operable to output a mosaic signal to enable the video display to display a mosaic including a first image section having video associated with the first content package and a second image section having video associated with the second content package; and

an instruction receiver operable to receive a tuning instruction,

wherein said packaging component is further operable to generate a primary first content package including the middle portion of the first content, an advertisement at the later first non-program content indicator and the later portion of the first content,

wherein said image processing component is further operable to output a primary first content signal in response to the tuning instruction to enable the video display to display a video associated with the middle portion of the first content, the advertisement and the later portion of the first content.

2. The device of claim 1, wherein said receiver is further operable to receive the first content insert on the first channel and to receive the second content insert on the second channel.
3. The device of claim 2, wherein said receiver is further operable to receive the first content insert at a first time and is able to receive the first video data at second time.
4. The device of claim 3, wherein the first time is before the second time.
5. The device of claim 2,
wherein the first content insert includes a portion of one of the initial portion of first content, the middle portion of the first content and the later portion of the first content, and
wherein the second content insert includes a portion of one of the initial portion of second content, the middle portion of the second content and the later portion of the second content.
6. The device of claim 1, wherein said receiver is further operable to receive the first content insert at a first time and is able to receive the first video data at second time.
7. The device of claim 6, wherein the first time is before the second time.
8. The device of claim 1,
wherein the first content insert includes a portion of one of the initial portion of first content, the middle portion of the first content and the later portion of the first content, and
wherein the second content insert includes a portion of one of the initial portion of second content, the middle portion of the second content and the later portion of the second content.
9. A method of using a video display operable to display a video, said device comprising:
receiving, via a receiver, first video data on a first channel, the first video data including an initial portion of first content, an initial first non-program content indicator, a

middle portion of the first content, a later first non-program content indicator and a later portion of the first content;

receiving, via the receiver, second video data on a second channel, the second video data including an initial portion of second content, an initial second non-program content indicator, a middle portion of the second content, a later second non-program content indicator and a later portion of the second content;

storing, via a memory, store a first content insert associated with the first content;

storing, via the memory, a second content insert associated with the second content;

generating, via a packaging component, a first content package, the first content package including initial portion of first content, the first content insert and the middle portion of the first content;

generating, via the packaging component, a second content package, the second content package including the initial portion of second content, the second content insert and the middle portion of the second content;

outputting, via an image processing component, a mosaic signal to enable the video display to display a mosaic including a first image section having video associated with the first content package and a second image section having video associated with the second content package;

receiving, via an instruction receiver, a tuning instruction;

generating, via the packaging component, a primary first content package including the middle portion of the first content, an advertisement at the later first non-program content indicator and the later portion of the first content; and

outputting, via the image processing component, a primary first content signal in response to the tuning instruction to enable the video display to display a video associated with the middle portion of the first content, the advertisement and the later portion of the first content.

10. The method of claim 9, further comprising

receiving, via the receiver, the first content insert on the first channel; and

receiving, via the receiver, the second content insert on the second channel.

11. The method of claim 10,

wherein said receiving, via the receiver, the first content insert on the first channel comprises receiving the first content insert at a first time, and

wherein said receiving, via a receiver, first video data on a first channel comprises receiving the first video data at second time.

12. The method of claim 11, wherein the first time is before the second time.

13. The method of claim 10,

wherein the first content insert includes a portion of one of the initial portion of first content, the middle portion of the first content and the later portion of the first content, and

wherein the second content insert includes a portion of one of the initial portion of second content, the middle portion of the second content and the later portion of the second content.

14. The method of claim 9,

wherein said receiving, via the receiver, the first content insert on the first channel comprises receiving the first content insert at a first time, and

wherein said receiving, via a receiver, first video data on a first channel comprises receiving the first video data at second time.

15. The method of claim 14, wherein the first time is before the second time.

16. The method of claim 9,

wherein the first content insert includes a portion of one of the initial portion of first content, the middle portion of the first content and the later portion of the first content, and

wherein the second content insert includes a portion of one of the initial portion of second content, the middle portion of the second content and the later portion of the second content.

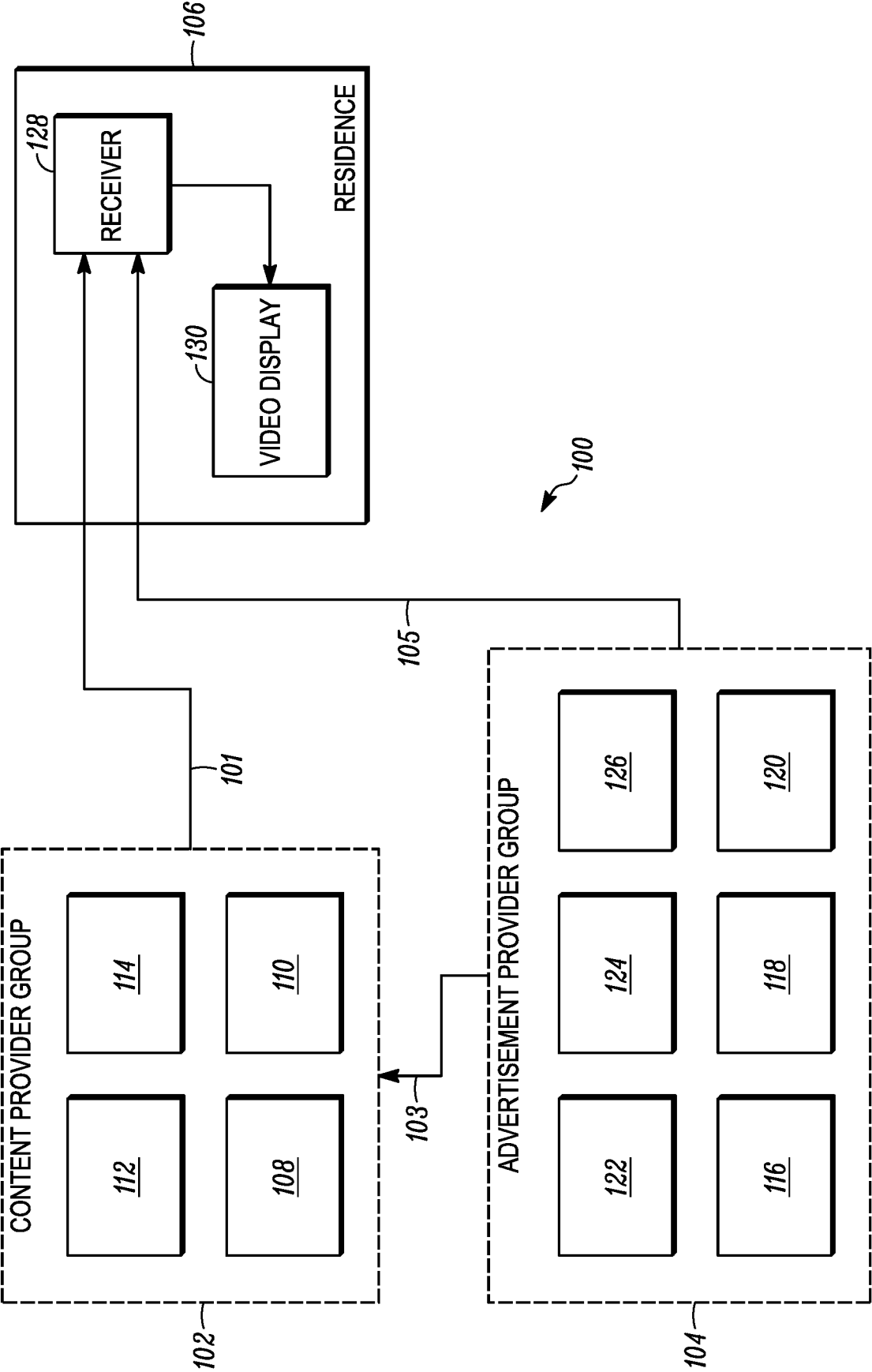


FIG. 1A

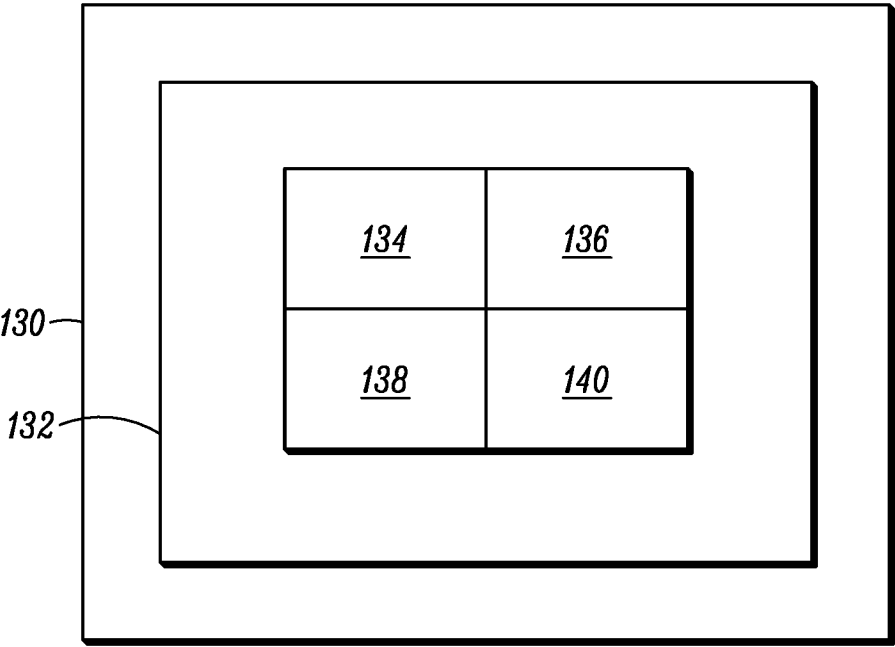


FIG. 1B

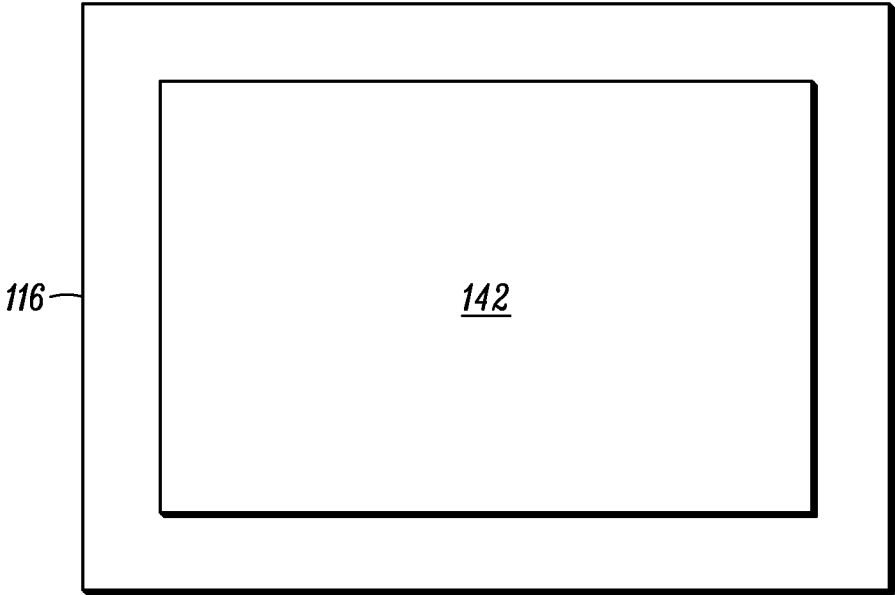


FIG. 1C

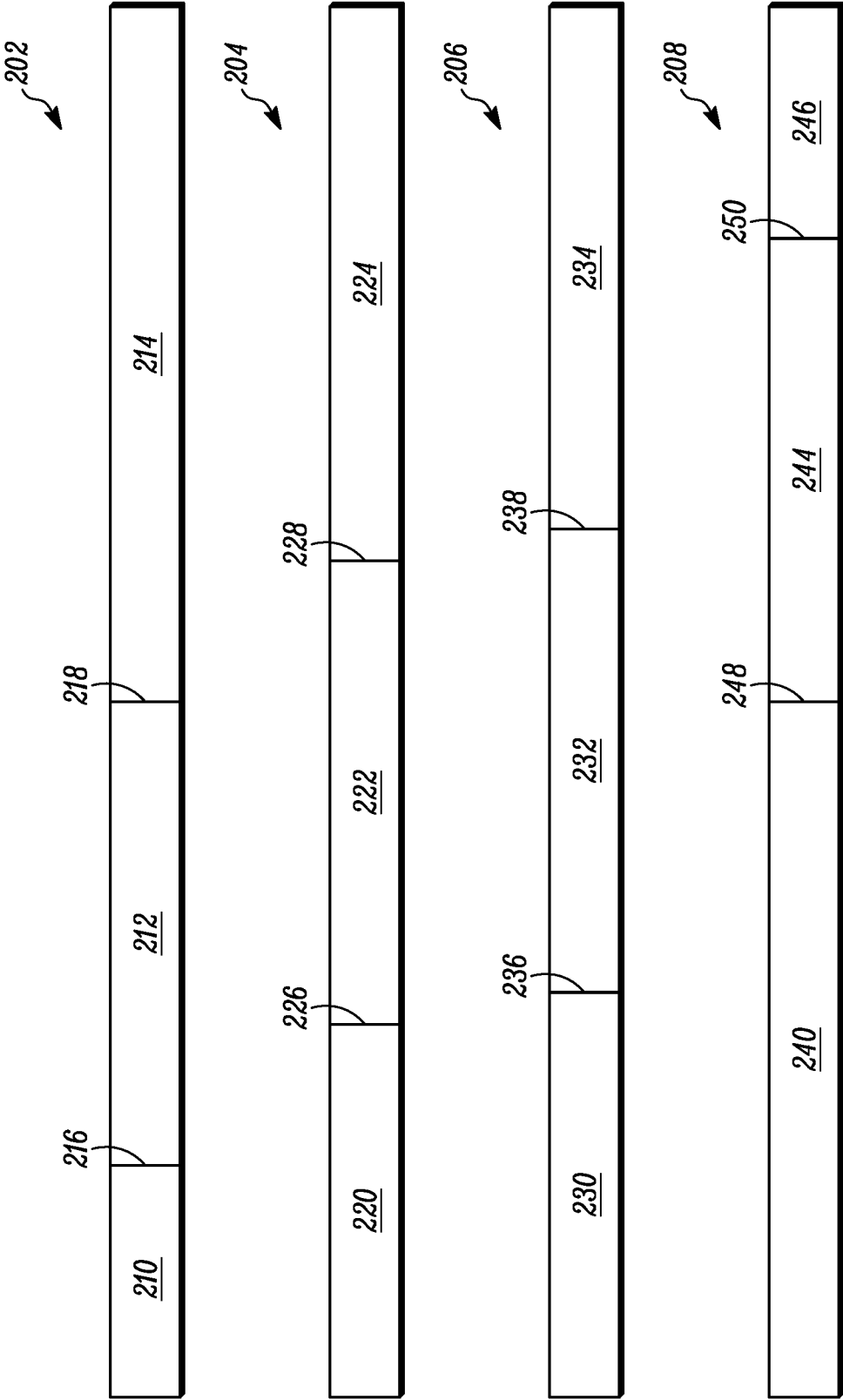


FIG. 2

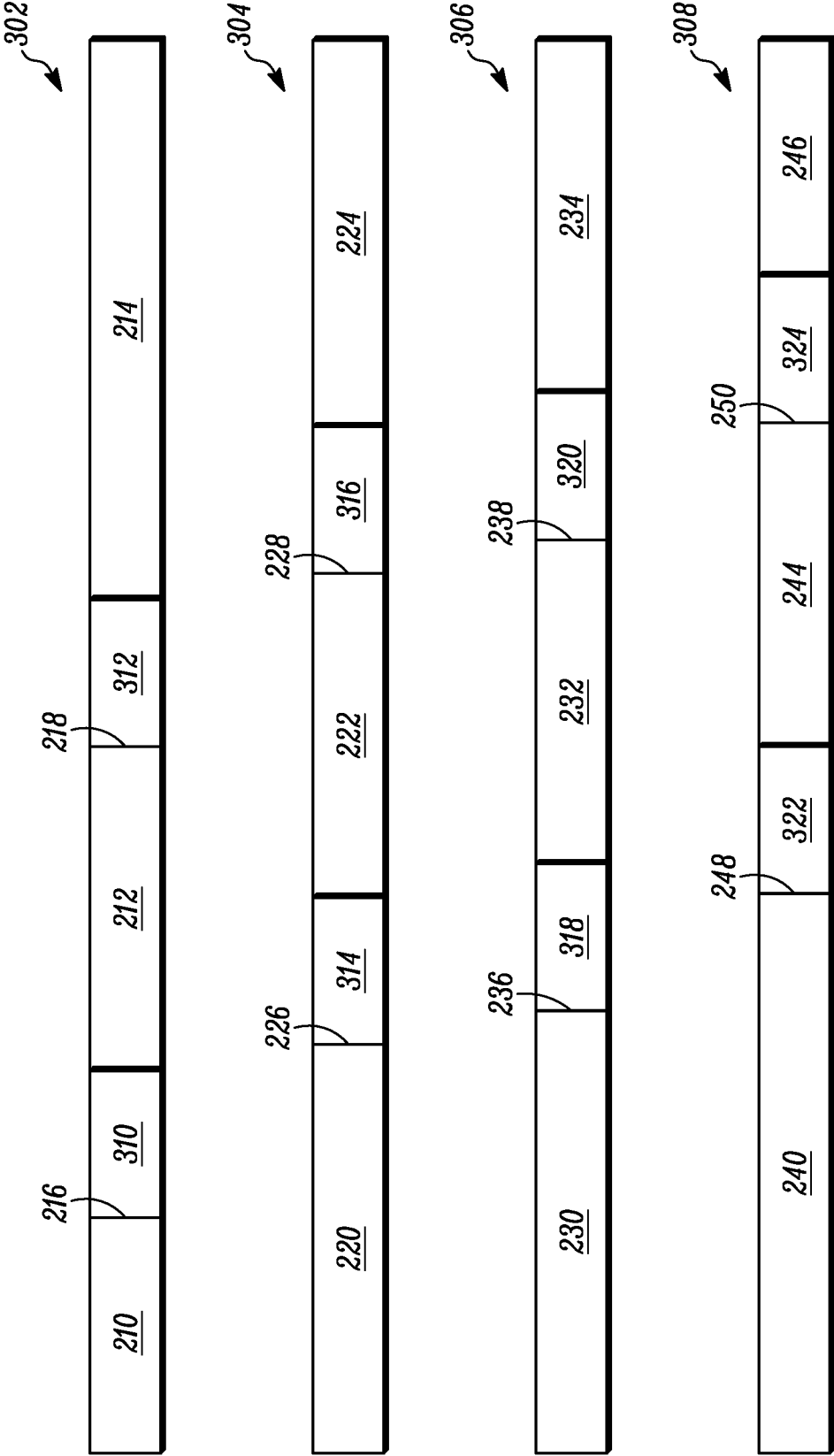


FIG. 3

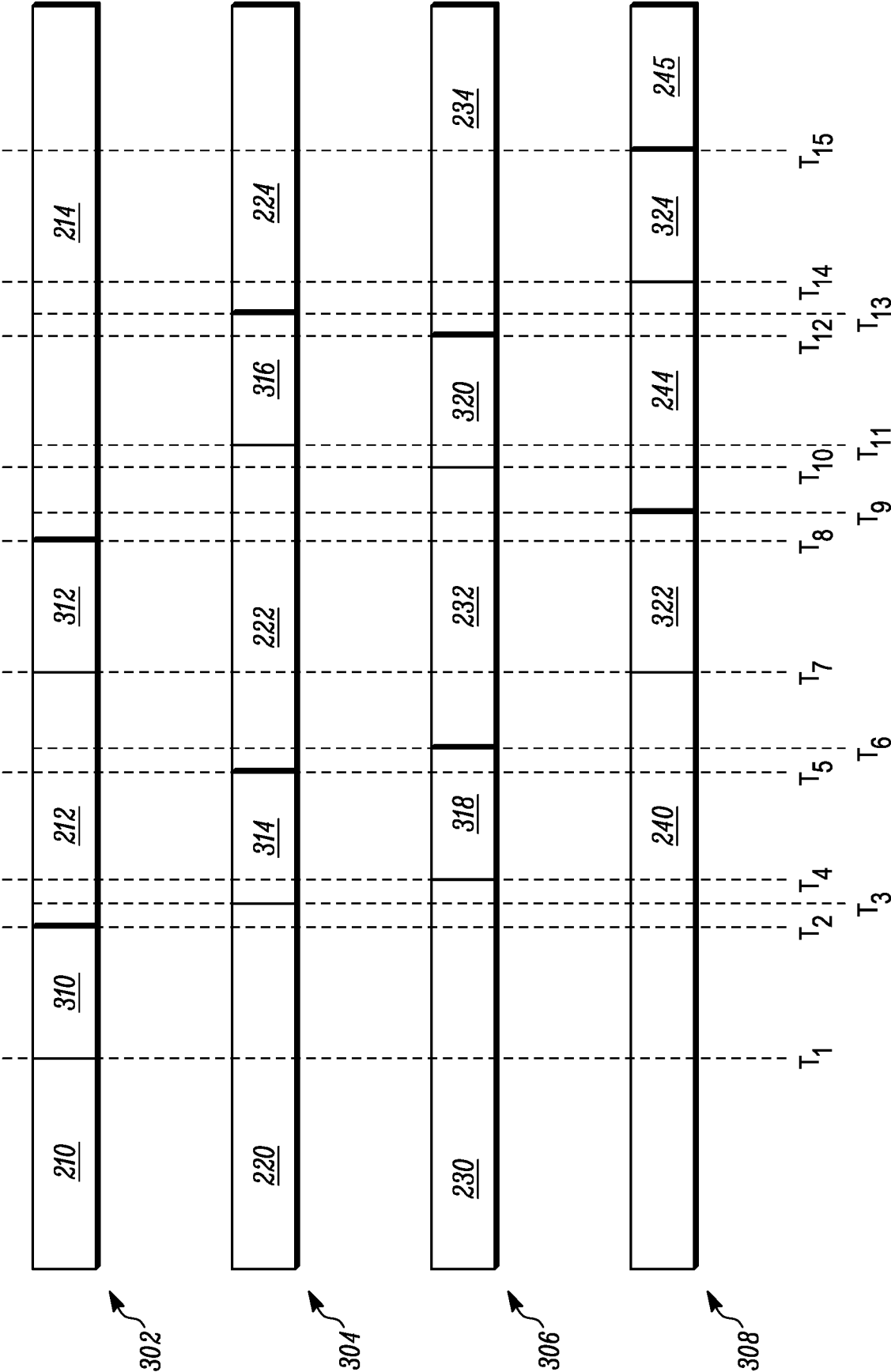
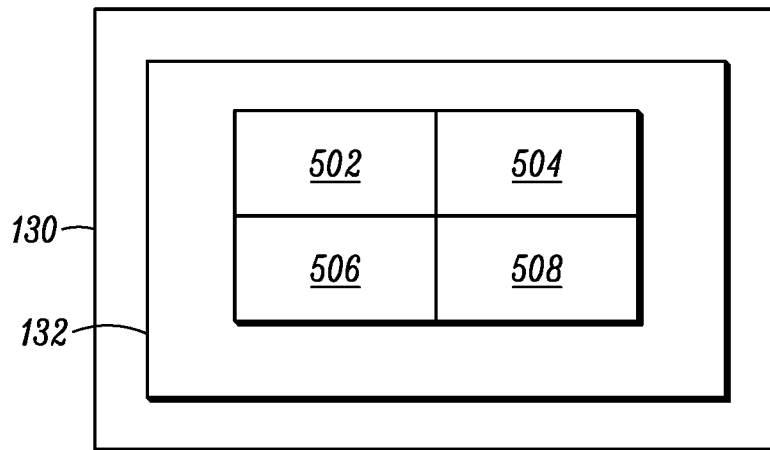
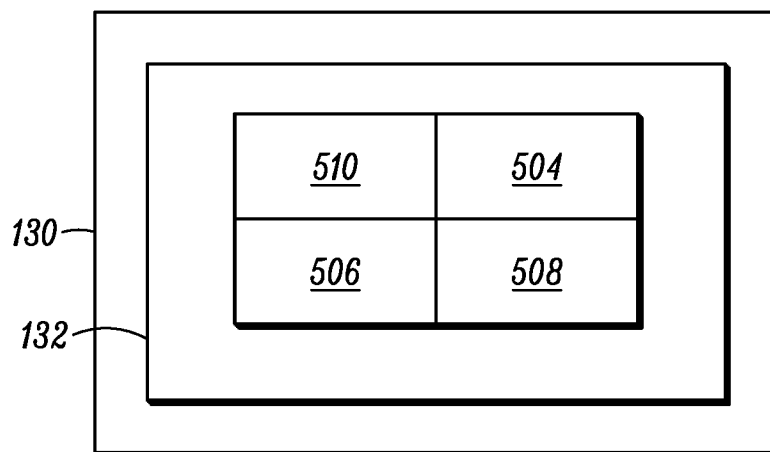
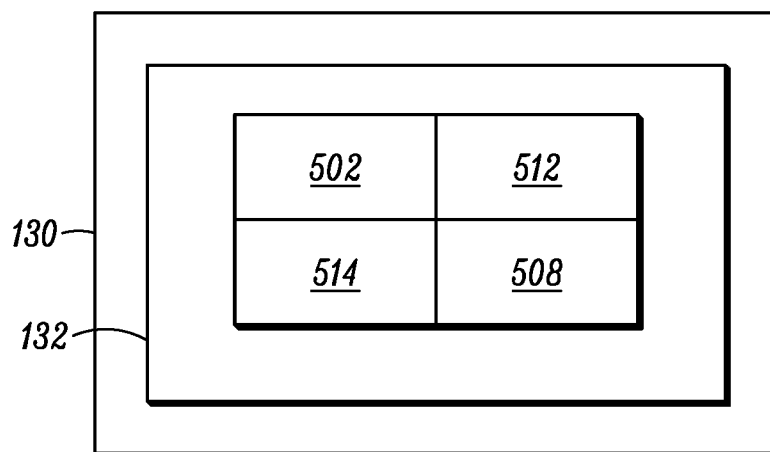


FIG. 4

6/11*FIG. 5A**FIG. 5B**FIG. 5C*

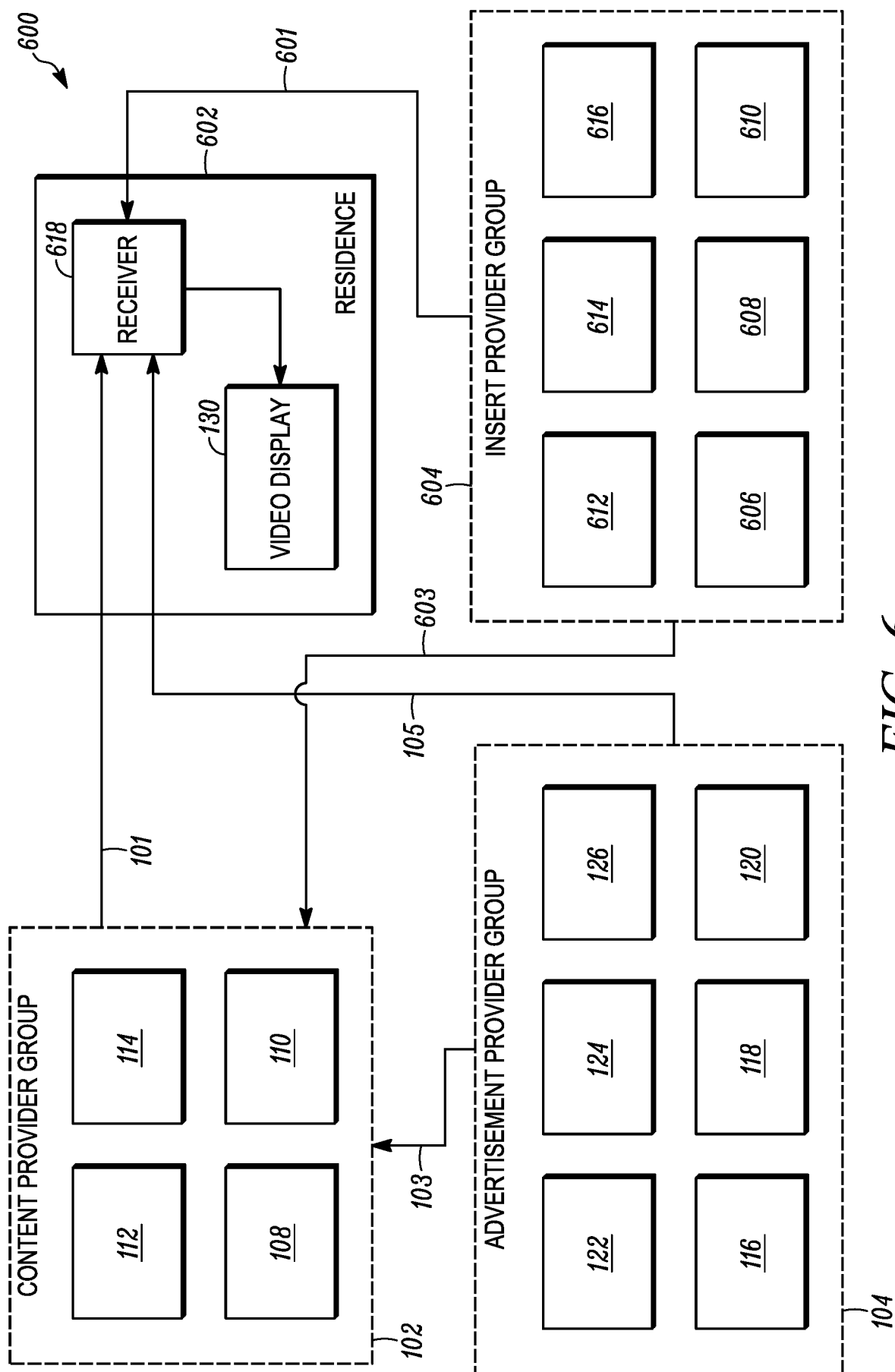


FIG. 6

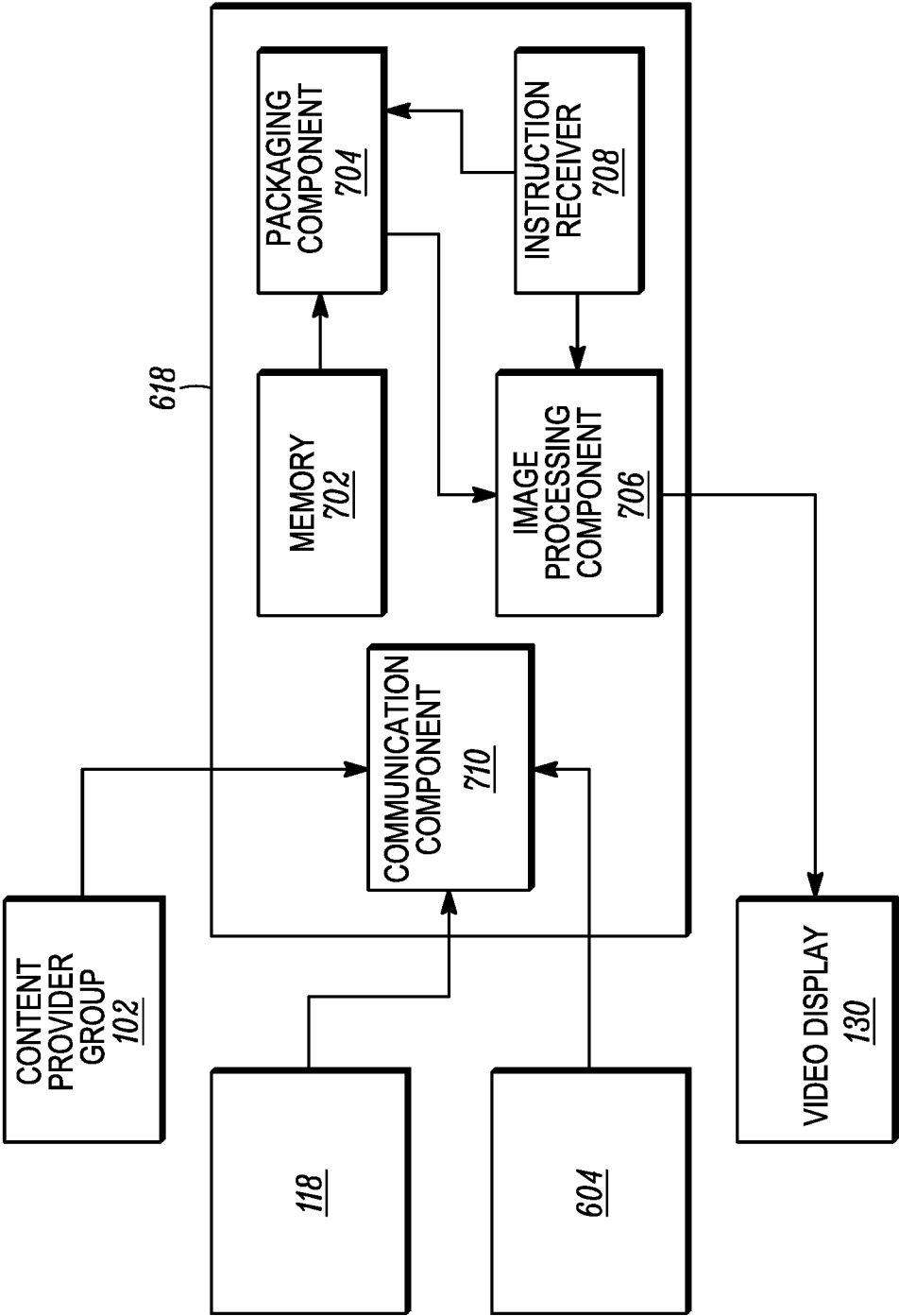


FIG. 7

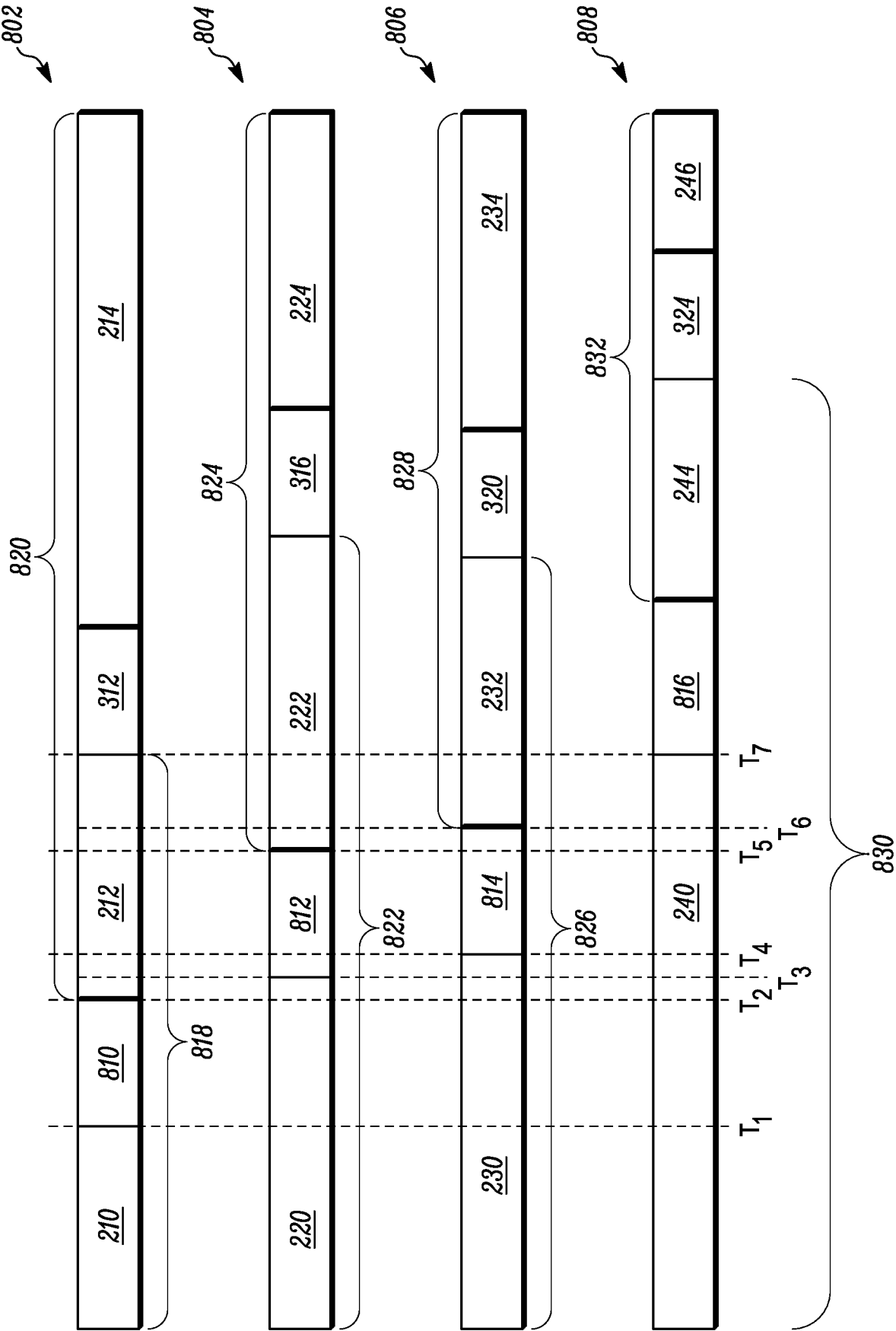


FIG. 8

10/11

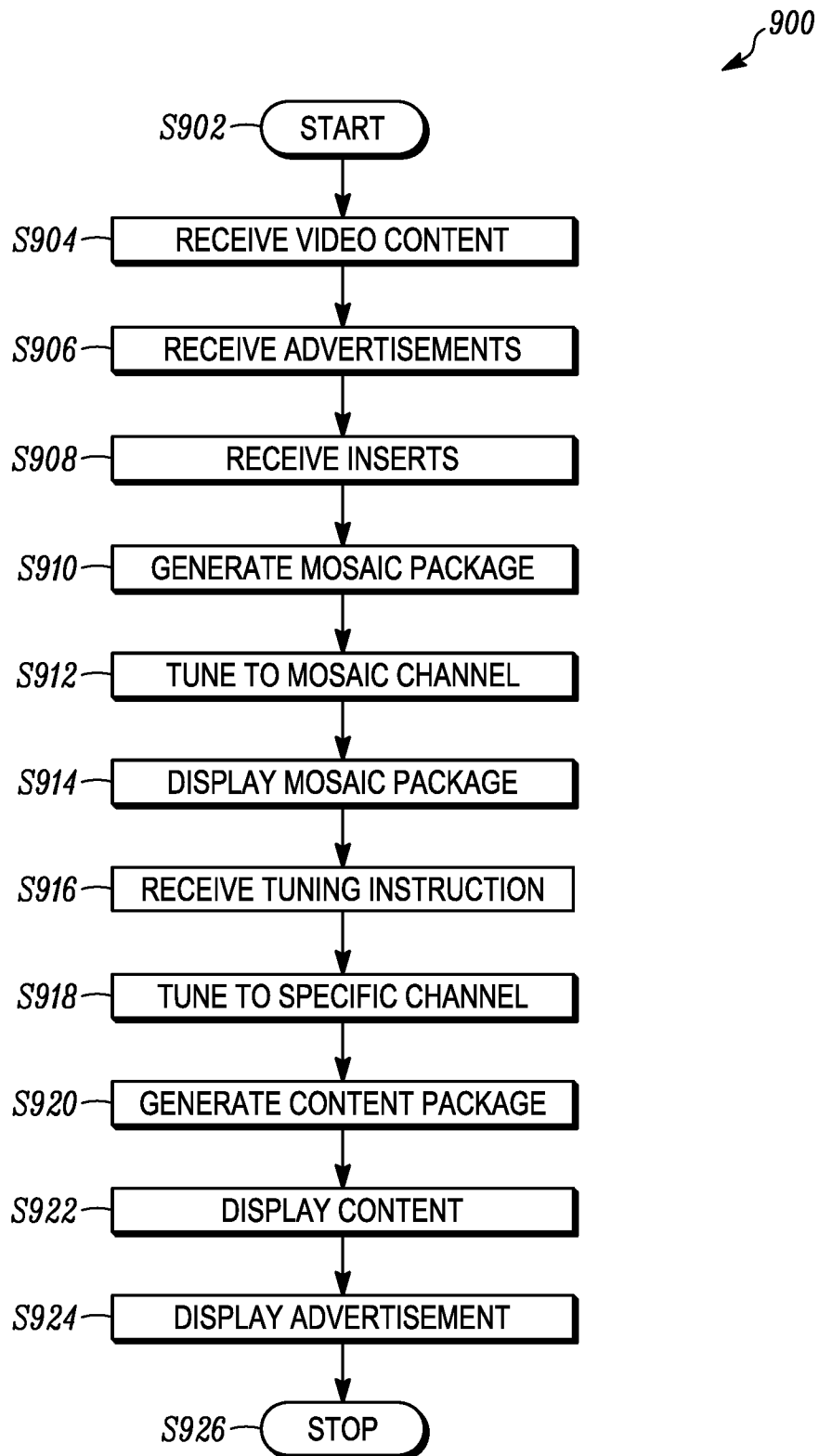


FIG. 9

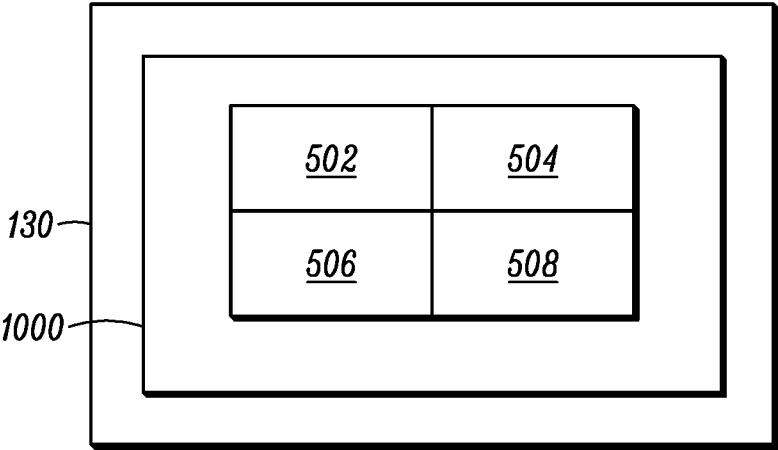


FIG. 10A

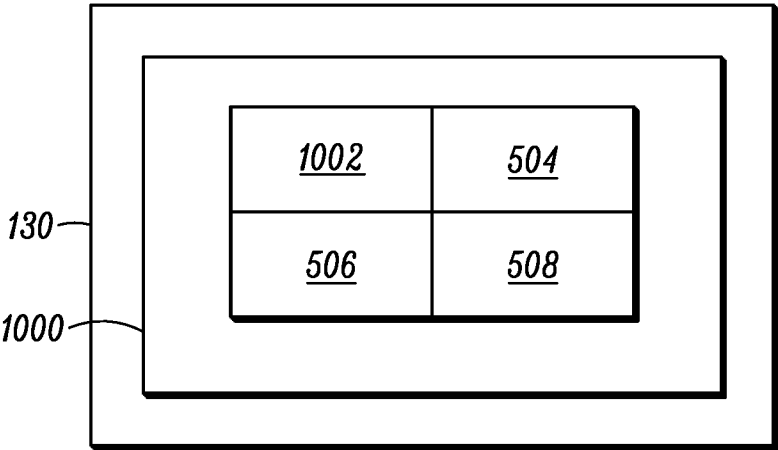


FIG. 10B

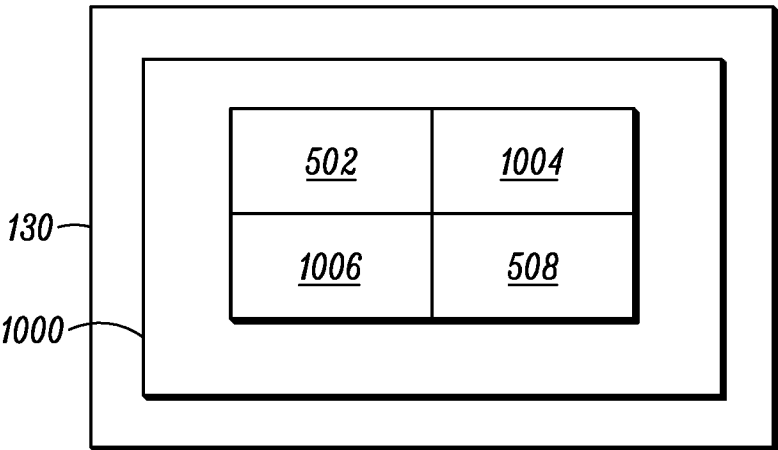


FIG. 10C

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/046247

A. CLASSIFICATION OF SUBJECT MATTER

INV. H04N21/431 H04N21/433 H04N21/44 H04N21/4545 H04N21/482
H04N21/81 H04N21/462

ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2003/121037 A1 (SWIX SCOTT R [US] ET AL) 26 June 2003 (2003-06-26) paragraph [0007] - paragraph [0010] paragraph [0021] - paragraph [0034] figures 2, 3, 4 -----	1-16
Y	WO 2008/024420 A2 (UNITED VIDEO PROPERTIES INC [US]) 28 February 2008 (2008-02-28) paragraph [0009] - paragraph [0017] paragraph [0031] - paragraph [0050] paragraph [0057] - paragraph [0065] paragraph [0079] - paragraph [0091] figures 1, 5, 10, 11 -----	1-16
A	EP 2 629 546 A1 (ALCATEL LUCENT [FR]) 21 August 2013 (2013-08-21) paragraph [0053] - paragraph [0063] ----- -/-	1-16



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/046247

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