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(54) Title: METHODS AND SYSTEMS FOR CUSTOMIZING FUNCTIONS OF MEDIA GUIDANCE APPLICATIONS

(57) Abstract: Methods and systems are described herein for a media guidance application that customizes icons on an interface based on the frequency of use of the icon and provides the user with feedback related to the frequency of use for each icon. For example, the interface may include a plurality of icons, in which each of the plurality of icons is associated with individual visual properties. For each icon, feedback related to its frequency of use is provided by the media, guidance application, by modifying the individual visual properties associated with each icon.

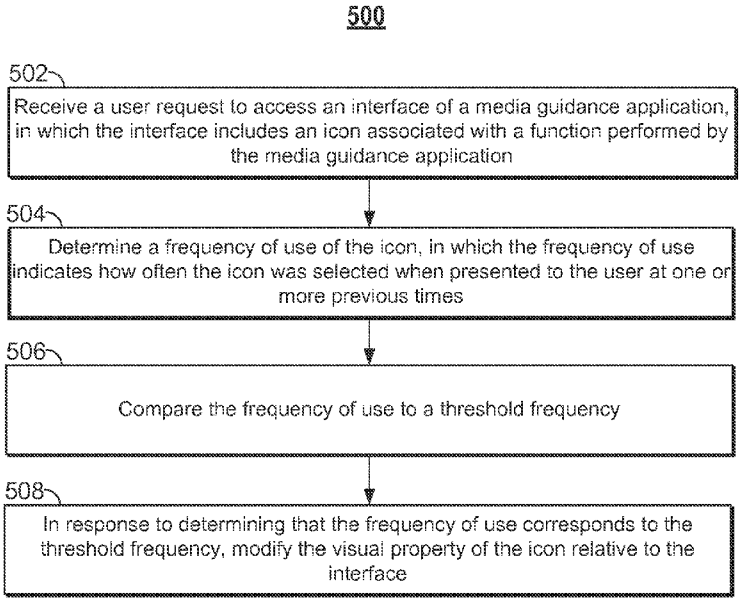


FIG. 5

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METHODS AND SYSTEMS FOR CUSTOMIZING FUNCTIONS OF MEDIA GUIDANCE APPLICATIONS

Background

[0001] Traditional video systems often present an interface through which a user may access one or more features associated with the video systems. For example, a typical interface may include playback options (e.g., play, pause, fast-forward, rewind, etc.) for presenting a video. In many user devices, interfaces composed of physical buttons have substantially given way to on-screen guides and menus. On-screen guides and menus provide increased flexibility for how and when features may be presented as the interfaces are no longer confined to the physical inputs of the user device. However, even with this flexibility, conventional systems still struggle with selecting what features should be presented in various interfaces.

Summary

[0002] Accordingly, methods and systems are described herein for a media guidance application that customizes icons on an interface based on the frequency

of use of the icon. In addition, the media guidance application provides the user with feedback related to the frequency of use for each icon so that a user is not surprised when an icon is removed due to a low frequency of use. For example, the interface may include a plurality of icons, in which each of the plurality of icons is associated with individual visual properties. For each icon, feedback related to its frequency of use is provided by the media guidance application by modifying the individual visual properties associated with each icon. Based on the varying visual properties, the media guidance application intuitively and non-intrusively indicates the frequency of use (and/or impending removal from the interface) of the icon to the user.

[0003] For example, a media guidance application may generate for display an interface, in which the icons (e.g., corresponding to different functions provided by the media guidance application) available through the interface (or a particular menu/screen of the interface) are added/removed based on the frequency of use of the particular icon. The media guidance application may incrementally decrease the visual properties (e.g., brightness, opaqueness, size, etc.) of an icon suffering from a low frequency of use each time an interface featuring the icon is accessed. After presenting the interface (and the icon with the incrementally decreasing visual properties) a particular number of times without receiving a user selection of the icon, the media guidance may remove the icon from the interface entirely. Alternatively, in response to receiving an increased frequency of use of the icon (e.g., one or more user selections), the

media guidance application may incrementally increase the visual properties of the icon (e.g., indicating to the user that the icon is not facing imminent removal from the interface).

[0004] In some aspects, the media guidance application may receive a user request to access an interface of a media guidance application, in which the interface includes an icon associated with a function performed by the media guidance application. The media guidance application may determine a frequency of use of the icon, in which the frequency of use indicates how often the icon was selected when presented to the user at one or more previous times. The media guidance application may then compare the frequency of use to a threshold frequency, and in response to determining that the frequency of use corresponds to the threshold frequency, the media guidance application may modify a visual property of the icon relative to the interface.

[0005] Additionally, the media guidance application may remove the icon from the interface in response to determining that the frequency of use corresponds to a particular threshold frequency. After removal, the media guidance application may rearrange the remaining icons, if any, on the interface or may add an additional icon (e.g., associated with a different function of the media guidance application). In some cases, the media guidance application may also prompt the user for confirmation before removing the icon.

[0006] In some aspects, the frequency of use may be based on a number of times the icon was selected relative to a number of times the interface was previously accessed. For example, each time an interface or a particular menu on the interface is

accessed, the media guidance application may record whether or not a particular icon was also selected by a user. The number of times the icon was selected relative to a number of times the interface was previously accessed (e.g., represented as a ratio, percentage, etc.) may then be used to determine a frequency of use of the icon relative to the number of times the interface was previously accessed.

[0007] Additionally or alternatively, the frequency of use may be based on a length of time that the icon was not selected while presented to the user at one or more previous times. For example, each time an interface or a particular menu on the interface is accessed, the media guidance application may clock how long the icon was presented without receiving a selection by a user. Additionally, the media guidance application may toll the running of the clock when the interface featuring the icon is not displayed and resume the clock the next time the interface is accessed. After the media guidance application presents the icon for a particular amount of time (e.g., thirty minutes) without receiving a user selection, the media guidance application may adjust the visual properties of the icon relative to the interface and/or other icons on the interface.

[0008] It should be noted, the systems, methods, apparatuses, and/or aspects described above may be applied to, or used in accordance with, other systems, methods, apparatuses, and/or aspects.

Brief Description of the Drawings

[0009] The above and other objects and advantages of the disclosure will be apparent upon consideration of

the following detailed description, taken in conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in which:

[0010] FIG. 1A shows an illustrative media guidance application for selecting media assets in accordance with some embodiments of the disclosure;

[0011] FIG. 1B shows an illustrative media guidance application for selecting media assets featuring on-screen icons associated with functions performed by the media guidance application in accordance with some embodiments of the disclosure;

[0012] FIG. 1C shows an illustrative media guidance application in which a visual property of an on-screen icon associated with a function performed by the media guidance has been adjusted based on the frequency of use of the icon in accordance with some embodiments of the disclosure;

[0013] FIG. 1D shows an illustrative media guidance application in which an on-screen icon associated with a function performed by the media guidance has been removed based on the frequency of use of the icon in accordance with some embodiments of the disclosure;

[0014] FIG. 2A shows an illustrative media guidance application featuring on-screen icons, in which each icon is associated with an individual visual property based on the frequency of use of each icon, in accordance with some embodiments of the disclosure;

[0015] FIG. 2B shows an illustrative media guidance application featuring on-screen icons, in which the icons presented are determined based on the frequency of use of each icon in accordance with some embodiments of the disclosure;

[0016] FIG. 3 is a block diagram of an illustrative user equipment device in accordance with some embodiments of the disclosure;

[0017] FIG. 4 is a block diagram of an illustrative media system in accordance with some embodiments of the disclosure;

[0018] FIG. 5 is a flow-chart of illustrative steps involved in modifying the visual properties of an icon relative to an interface in accordance with some embodiments of the disclosure; and

[0019] FIG. 6 is a flow-chart of illustrative steps involved in determining a visual property of an icon in accordance with some embodiments of the disclosure.

Detailed Description of Drawings

[0020] Methods and systems are described herein for a media guidance application that customizes icons on an interface based on the frequency of use of the icon and provides the user with feedback related to the frequency of use for each icon. As used herein, an "interactive media guidance application," "media guidance application," or "guidance application" is an application that provides an interface that allows users to efficiently navigate, identify, and view content that they may desire.

[0021] Interactive media guidance applications may take various forms depending on the content for which they provide guidance. One typical type of media guidance application is an interactive television program guide. Interactive television program guides (sometimes referred to as electronic program guides) are well-known guidance applications that, among other things, allow users to navigate among and locate many

types of content or media assets. Interactive media guidance applications may generate graphical user interface screens that enable a user to navigate among, locate, and select content.

[0022] As referred to herein, the terms "media asset" and "content" should be understood to mean an electronically consumable user asset, such as television programming, as well as pay-per-view programs, on-demand programs (as in video-on-demand (VOD) systems), Internet content (e.g., streaming content, downloadable content, Webcasts, etc.), video clips, audio, content information, pictures, rotating images, documents, playlists, websites, articles, books, electronic books, blogs, advertisements, chat sessions, social media, applications, games, and/or any other media or multimedia and/or combination of the same. Guidance applications also allow users to navigate among and locate content. As referred to herein, the term "multimedia" should be understood to mean content that utilizes at least two different content forms described above, for example, text, audio, images, video, or interactivity content forms. Content may be recorded, played, displayed or accessed by user equipment devices, but can also be part of a live performance.

[0023] In some embodiments, a media guidance application may generate for display an interface that includes a plurality of icons related to viewing and/or other functions related to media assets. As used herein, an "icon" refers to an image or on-screen object that represents a specific function of the media guidance application. For example, the icon may represent a file, directory, window, and/or program.

For example, selecting an icon (e.g., via an on-screen "click") will cause the media guidance application to perform the associated function (e.g., start the associated program and/or open the associated file, directory, or window). For example, selection of an icon associated with accessing a sub-menu will cause the media guidance application to access the sub-menu. Selection of an icon associated with performing a channel browse will cause the media guidance application to perform a channel browse. Selection of an icon associated with viewing a media asset (e.g., a media listing) will cause the media guidance application to generate for display the media asset. For example, interfaces may include one or more menus, each menu may include icons corresponding to navigational menu items (or simply menu items), navigational links, etc. which may direct a user to a different menu, a sub-menu, a media asset, etc.

[0024] In some embodiments, each icon may correspond to one or more different functions (e.g., navigating to a different menu, performing an operation, etc.) provided by the media guidance application. Furthermore, the media guidance application may generate for display interfaces that groups multiple icons (i.e., functions) together. Initially, groups of icons may be determined based on default interface layouts or maps, user profiles, and/or any other source. Additionally or alternatively, the media guidance application may customize these groups and/or the arrangement, position, and/or visual properties associated with the icons.

[0025] As used herein, a "visual property" refers to any characteristic of an icon used to indicate to a

user the frequency of use of an icon (or a function associated with an icon). For example, a visual property may relate to the size, shape, coloring, opaqueness, brightness, hue, resolution, font, and/or any other stylistic or graphical characteristic of the icon. The media guidance application may modify one or more visual properties of the icon (e.g., increasing or decreasing the opaqueness) in order to reflect the frequency of use of the icon. For example, in response to determining that an icon has a low frequency of use, the media guidance application may reduce the brightness, size, or opaqueness of the icon. In contrast, in response to determining that an icon has a high frequency of use, the media guidance application may increase the brightness, size, or opaqueness of the icon.

[0026] In some embodiments, the modification of a visual property of an icon may be a static process. For example, each time an interface featuring a particular icon is presented, the media guidance application may determine the visual properties associated with the particular icon (e.g., based on a previous frequency of use). The determined visual properties may then be maintained while the interface is accessed. In some embodiments, even if the frequency of use associated with the particular icon is changed (e.g., in response to a user selection) while the interface is accessed, the media guidance application maintains the determined visual properties. After the interface is no longer accessed (e.g., the interface is closed out by the user, the user device upon which the media guidance application is implemented is powered off, etc.), the media guidance

application may then update the visual properties of the particular icon to reflect the change. Accordingly, the next time the interface is accessed, the media guidance application will present the particular icon with the updated visual properties.

[0027] In some embodiments, the modification of a visual property of an icon may be a dynamic process. For example, each time an interface featuring a particular icon is presented, the media guidance application may determine the visual properties associated with the particular icon (e.g., based on a previous frequency of use). The determined visual properties may then be changed while the interface is accessed. For example, if the frequency of use associated with the particular icon is changed (e.g., in response to a user selection) while the interface is accessed, the media guidance application modifies the determined visual properties accordingly. The modified visual properties are then presented while the user accesses the interface.

[0028] In some embodiments, the modification of a visual property of an icon may be incremental. For example, the range of values associated with a particular visual property may be divided into multiple increments. Furthermore, the media guidance application may restrict any modification in the current value associated with an icon based on an updated frequency of use to a value adjacent to the current value in the range each time the interface featuring the icon is accessed. For example, if the media guidance application has ten values associated with opaqueness (e.g., with ten equal to entirely opaque and one equal to completely transparent) and the

previous value associated with an icon is five (e.g., associated with semi-transparence), the media guidance application may restrict the change in value during the current presentation to either four or six. By requiring any changes to the visual properties associated with an icon to be incremental, a user may access an interface multiple times before the media guidance application makes an icon entirely transparent (and/or removed) all while the declining value of the visual property indicates to the user that the icon may eventually be removed from the interface. Therefore, when the media guidance application eventually removes the icon (e.g., due to a low frequency of use) a user is not surprised by its absence from the interface.

[0029] In some embodiments, the media guidance application may have additional rules for determining how many values a single modification may traverse. For example, if during a single instance (e.g., the time when an interface was opened to the time when an interface was closed) a user selected a particular icon multiple times, the media guidance application may modify the value of the visual property more than if during a single instance a user selected a particular icon only once. In such cases, while the media guidance application may modify the visual properties of the icon based on the frequency of use of the icon, the modification may not be incremental.

[0030] It should also be noted that the embodiments discussed herein with regard to modifying the visual properties of a single icon may also be applied to modifying the visual properties of a group of icons. Groupings of icons may be automatically selected by the media guidance application, manually selected by a

user, or by any other suitable means. For example, one or more icons may be included in a group or subset of icons if they are functionally related. For example, icons related to playback operations (e.g., "play," "pause," "re-wind," etc.), although individual icons, may share the same visual properties. Accordingly, if the media guidance application determines to modify the visual properties associated with one icon of the group, the media guidance application may modify the visual properties of all icons in the group. In such cases, the same frequency of use, threshold frequency, etc. associated with one icon would also be associated with all the icons in the group.

[0031] In some embodiments, although an icon associated with a particular function is removed (e.g., due to lack of use) from one menu, the icon may also appear on a different menu (e.g., a sub-menu of the menu from which it was removed). For example, unused icons and/or groups of unused icons may be relocated to different sections of an interface (e.g., a section dedicated specifically to unused icons) or a sub-menu located lower in the menu hierarchy.

[0032] As used herein, a "frequency of use" of an icon refers to an objective measurement of how often a particular icon is used. For example, the frequency of use may refer to the number of times that an icon is selected (or not selected) while an interface presenting the icon is generated for display, the number of times that an icon is selected (or not selected) within a given period of time, the length of time that an icon is presented on an interface before the icon is selected, etc. In some embodiments, the frequency of use of an icon may be relative to a

frequency of use of an interface in which the icon is presented. For example, the frequency of use of an icon may be a ratio, percentage, etc., comparing the amount of times that the media guidance application presented an interface that included the icon, but did not receive a user selection of the icon while the interface was generated for display. For example, each time an interface or a particular menu on the interface is accessed, the media guidance application may record whether or not a particular icon was also selected by a user. The selection history (e.g., represented as a ratio, percentage, etc.) may then be used to determine a frequency of use of the icon relative to the number of time the interface was previously accessed.

[0033] Additionally or alternatively, the frequency of use of an icon may be relative to an amount of time that the icon was presented. For example, the frequency of use may indicate an amount of time that the media guidance application presented the icon (e.g., thirty minutes), but did not receive a user selection of the icon. For example, each time an interface or a particular menu on the interface is accessed, the media guidance application may clock how long the icon was presented without receiving a selection by a user. Additionally, the media guidance application may toll the running of the clock when the interface featuring the icon is not displayed and resume the clock the next time the interface is accessed.

[0034] Additionally or alternatively, the frequency of use of an icon may be relative to the frequency of use of another icon (e.g., presented on the same interface). For example, the media guidance

application may compare how often a particular icon is selected versus how often a different icon (on the same or different interface, menu, etc.) is selected. For example, the media guidance application may automatically remove, replace, etc. an icon associated with the lowest frequency of use on any one interface. It should also be noted that a frequency of use associated with an icon may be measured in any suitable way and that the techniques above are illustrative and not meant to be limiting.

[0035] In some embodiments, the media guidance application may compare one or more frequencies of use of the icon (e.g., associated with one or more of the various measurement techniques discussed above) with one or more threshold frequencies. As used herein, a "threshold frequency" refers to a particular frequency of use that causes the media guidance application to perform an action related to an icon with a corresponding frequency of use. A threshold frequency may be measured in any of the techniques described above and/or any technique used to determine a frequency of use of an icon.

[0036] Furthermore, the media guidance application may have multiple threshold frequency, each associated with a different action. For example, a first threshold frequency (e.g., associated with a high frequency of use) may trigger the media guidance application to present an icon with a frequency of use corresponding to the first threshold frequency in a large size. A second threshold frequency (e.g., associated with a normal frequency of use) may trigger the media guidance application to present an icon with a frequency of use corresponding to the second

threshold frequency in a normal size. A third threshold frequency (e.g., associated with a low frequency of use) may trigger the media guidance application to present an icon with a frequency of use corresponding to the third threshold frequency in a small size, and a fourth threshold frequency (e.g., associated with a very low frequency of use) may trigger the media guidance application to remove an icon with a frequency of use corresponding to the fourth threshold frequency from the interface.

[0037] It should also be noted that different icons (e.g., associated with different functions) may also have different threshold frequencies. In some embodiments, the media guidance application may automatically, or manually (e.g., via prompting the user) assign priorities to different icons and/or groups of icons. The priority of the icon or group of icon may affect the threshold frequency selected by the media guidance application. For example, the media guidance application may determine that particular functions are more important and therefore have threshold frequencies that require less frequent use as opposed to other functions that are less important and therefore have threshold frequencies that require more frequent use to be maintained on the interface. In another example, an icon may be associated with a function that is only used sporadically; therefore, the media guidance application may consider the sporadic nature of the function when determining a threshold frequency.

[0038] In some embodiments, the media guidance application may automatically, or manually (e.g., via

prompting the user) assign priorities to different icons and/or groups of icons.

[0039] The icons and interfaces generated for display by the media guidance application may come in many forms. For example, an interface may appear as a single screen or may appear as a series of menus and sub-menus, in which various icons and/or groups of icons are generated for display in response to previous user selections on the same or different screen, menu, sub-menu, etc.

[0040] With the advent of the Internet, mobile computing, and high-speed wireless networks, users are accessing interfaces on user equipment devices on which they traditionally did not. As referred to herein, the phrase "user equipment device," "user equipment," "user device," "electronic device," "electronic equipment," "media equipment device," or "media device" should be understood to mean any device for accessing the content described above, such as a television, a Smart TV, a set-top box, an integrated receiver decoder (IRD) for handling satellite television, a digital storage device, a digital media receiver (DMR), a digital media adapter (DMA), a streaming media device, a DVD player, a DVD recorder, a connected DVD, a local media server, a BLU-RAY player, a BLU-RAY recorder, a personal computer (PC), a laptop computer, a tablet computer, a WebTV box, a personal computer television (PC/TV), a PC media server, a PC media center, a hand-held computer, a stationary telephone, a personal digital assistant (PDA), a mobile telephone, a portable video player, a portable music player, a portable gaming machine, a smart phone, or any other television equipment, computing equipment, or wireless device, and/or

combination of the same. In some embodiments, the user equipment device may have a front facing screen and a rear facing screen, multiple front screens, or multiple angled screens. In some embodiments, the user equipment device may have a front facing camera and/or a rear facing camera. On these user equipment devices, users may be able to navigate among and locate the same content available through a television. Consequently, media guidance may be available on these devices, as well. The guidance provided may be for content available only through a television, for content available only through one or more of other types of user equipment devices, or for content available through both a television and one or more of the other types of user equipment devices. The media guidance applications may be provided as on-line applications (i.e., provided on a web-site), or as stand-alone applications or clients on user equipment devices. Various devices and platforms that may implement media guidance applications are described in more detail below.

[0041] One of the functions of the media guidance application is to provide media guidance data to users. In some embodiments, media guidance data may be represented by an icon or may be accessed via a selection of an icon. As referred to herein, the phrase, "media guidance data" or "guidance data" should be understood to mean any data related to content, such as media listings, media-related information (e.g., broadcast times, broadcast channels, titles, descriptions, ratings information (e.g., parental control ratings, critic's ratings, etc.), genre or category information, actor information, logo data for

broadcasters' or providers' logos, etc.), media format (e.g., standard definition, high definition, 3D, etc.), advertisement information (e.g., text, images, media clips, etc.), on-demand information, blogs, websites, and any other type of guidance data that is helpful for a user to navigate among and locate desired content selections. For example, icons may correspond to media guidance data that corresponds to navigational links, menu items, etc.

[0042] FIGS. 1A-D and 2A-B show illustrative display screens that may include the interfaces and icons discussed herein. The display screens shown in FIGS. 1A-D and 2A-B may be implemented on any suitable user equipment device or platform (e.g., as discussed below). While the interfaces of FIGS. 1A-D and 2A-B are illustrated as full screen displays, they may also be fully or partially overlaid over content being displayed. A user may indicate a desire to access content information by selecting a selectable option provided in an interface (e.g., a menu option, a listings option, an icon, a hyperlink, etc.) or pressing a dedicated button (e.g., a GUIDE button) on a remote control or other user input interface or device. In response to the user's indication, the media guidance application may provide a display screen with media guidance data organized in one of several ways, such as by time and channel in a grid, by time, by channel, by source, by content type, by category (e.g., movies, sports, news, children, or other categories of programming), or other predefined, user-defined, or other organization criteria. The organization of the media guidance data is determined by guidance application data. As referred to herein, the phrase,

"guidance application data" should be understood to mean data used in operating the guidance application, such as program information, guidance application settings, user preferences, or user profile information.

[0043] FIG. 1A shows an illustrative media guidance application for selecting media assets. FIG. 1A shows illustrative grid program listings interface 100 arranged by time and channel that also enables access to different types of content in a single display. Interface 100 may include grid 102 with: (1) a column of channel/content type identifiers 104, where each channel/content type identifier (which is a cell in the column) identifies a different channel or content type available; and (2) a row of time identifiers 106, where each time identifier (which is a cell in the row) identifies a time block of programming. Grid 102 also includes cells of program listings, such as program listing 108, where each listing provides the title of the program provided on the listing's associated channel and time. With a user input device, a user can select program listings by moving highlight region 110. Information relating to the program listing selected by highlight region 110 may be provided in program information region 112. Region 112 may include, for example, the program title, the program description, the time the program is provided (if applicable), the channel the program is on (if applicable), the program's rating, and other desired information.

[0044] In addition to providing access to linear programming (e.g., content that is scheduled to be transmitted to a plurality of user equipment devices at a predetermined time and is provided according to a

schedule), the media guidance application also provides access to non-linear programming (e.g., content accessible to a user equipment device at any time and not provided according to a schedule). Non-linear programming may include content from different content sources including on-demand content (e.g., VOD), Internet content (e.g., streaming media, downloadable media, etc.), locally stored content (e.g., content stored on any user equipment device described above or other storage device), or other time-independent content. On-demand content may include movies or any other content provided by a particular content provider (e.g., HBO On Demand providing "The Sopranos" and "Curb Your Enthusiasm"). HBO ON DEMAND is a service mark owned by Time Warner Company L.P. et al. and THE SOPRANOS and CURB YOUR ENTHUSIASM are trademarks owned by the Home Box Office, Inc. Internet content may include web events, such as a chat session or Webcast, or content available on demand as streaming content or downloadable content through an Internet web-site or other Internet access (e.g. FTP).

[0045] Grid 102 may provide media guidance data for non-linear programming including on-demand listing 114, recorded content listing 116, and Internet content listing 118. A display combining media guidance data for content from different types of content sources is sometimes referred to as a "mixed-media" display. Various permutations of the types of media guidance data that may be displayed that are different from interface 100 may be based on user selection or guidance application definition (e.g., a display of only recorded and broadcast listings, only on-demand and broadcast listings, etc.). As illustrated,

listings 114, 116, and 118 are shown as spanning the entire time block displayed in grid 102 to indicate that selection of these listings may provide access to a display dedicated to on-demand listings, recorded listings, or Internet listings, respectively. In some embodiments, listings for these content types may be included directly in grid 102. Additional media guidance data may be displayed in response to the user selecting one of the navigational icons 120. (Pressing an arrow key on a user input device may affect the display in a similar manner as selecting navigational icons 120.)

[0046] Interface 100 may also include video region 122 and advertisement 124. Video region 122 may allow the user to view and/or preview programs that are currently available, will be available, or were available to the user. The content of video region 122 may correspond to, or be independent from, one of the listings displayed in grid 102. Grid displays including a video region are sometimes referred to as picture-in-guide (PIG) displays. PIG displays and their functionalities are described in greater detail in Satterfield et al. U.S. Patent No. 6,564,378, issued May 13, 2003 and Yuen et al. U.S. Patent No. 6,239,794, issued May 29, 2001, which are hereby incorporated by reference herein in their entireties. PIG displays may be included in other media guidance application display screens of the embodiments described herein.

[0047] Advertisement 124 may provide an advertisement for content that, depending on a viewer's access rights (e.g., for subscription programming), is currently available for viewing, will be available for viewing in the future, or may never become available

for viewing, and may correspond to or be unrelated to one or more of the content listings in grid 102. Advertisement 124 may also be for products or services related or unrelated to the content displayed in grid 102. Advertisement 124 may be selectable and provide further information about content, provide information about a product or a service, enable purchasing of content, a product, or a service, provide content relating to the advertisement, etc. Advertisement 124 may be targeted based on a user's profile/preferences, monitored user activity, the type of display provided, or on other suitable targeted advertisement bases.

[0048] While advertisement 124 is shown as rectangular or banner shaped, advertisements may be provided in any suitable size, shape, and location in a guidance application display. For example, advertisement 124 may be provided as a rectangular shape that is horizontally adjacent to grid 102. This is sometimes referred to as a panel advertisement. In addition, advertisements may be overlaid over content or a guidance application display or embedded within a display. Advertisements may also include text, images, rotating images, video clips, or other types of content described above. Advertisements may be stored in a user equipment device having a guidance application, in a database connected to the user equipment, in a remote location (including streaming media servers), or on other storage means, or a combination of these locations. Providing advertisements in a media guidance application is discussed in greater detail in, for example, Knudson et al., U.S. Patent Application Publication No. 2003/0110499, filed January 17, 2003; Ward, III et al. U.S. Patent No. 6,756,997, issued June

29, 2004; and Schein et al. U.S. Patent No. 6,388,714, issued May 14, 2002, which are hereby incorporated by reference herein in their entireties. It will be appreciated that advertisements may be included in other media guidance application display screens of the embodiments described herein.

[0049] FIG. 1B shows an illustrative media guidance application for selecting media assets featuring on-screen icons associated with functions performed by the media guidance application. For example, interface 130 includes a menu 126. In some embodiments, interface 130 may correspond to interface 100 (FIG. 1A) after the media guidance application generated for display menu 126.

[0050] Menu 126 may allow the user to access different types of content, media guidance application displays, and/or media guidance application features. Menu 126 may be part of interface 130 (and other display screens/interfaces described herein), or may be invoked by a user by selecting an on-screen icon or pressing a dedicated or assignable button on a user input device. The selectable icons (e.g., icon 128) within menu 126 may concern features related to program listings in grid 102 (FIG. 1A)) or may include options available from a main menu display. Features related to program listings may include searching for other air times or ways of receiving a program, recording a program, enabling series recording of a program, setting program and/or channel as a favorite, purchasing a program, or other features. Icons available from a main menu display may include icons related to search options, VOD options, parental control options, Internet options, cloud-based options,

device synchronization options, second screen device options, options to access various types of media guidance data displays, options to subscribe to a premium service, options to edit a user's profile, options to access a browse overlay, or other options.

[0051] FIG. 1C shows an illustrative media guidance application in which a visual property of an on-screen icon associated with a function performed by the media guidance has been adjusted based on the frequency of use of the icon. For example, FIG. 1C shows interface 150. In some embodiments, interface 150 may correspond to interface 130 (FIG. 1B).

[0052] Interface 150 includes menu 126 and icon 128. In interface 150, the media guidance application has modified the visual properties of icon 128 based on the frequency of use associated with icon 128. For example, in response to determining that icon 128 has a low frequency of use, the media guidance application has reduced the opaqueness of icon 128. The increased transparency of icon 128 notifies a user that icon 128 has a low frequency of use. Additionally, the higher opaqueness of the remaining icons in menu 126 (e.g., indicative of a greater frequency of use) help draw a user's eye to these icons (e.g., increasing the ease of in locating frequently used icons).

[0053] For example, the interface may include a plurality of icons, in which each of the plurality of icons is associated with individual visual properties. For each icon, feedback related to its frequency of use is provided by the media guidance application by modifying the individual visual properties associated with each icon. Based on the varying visual properties, the media guidance application intuitively and non-

intrusively indicates the frequency of use (and/or impending removal from the interface) of the icon to the user.

[0054] For example, the media guidance application has generated for display interface 150 with a plurality of icons (e.g., corresponding to different functions provided by the media guidance application) available through interface 150. The media guidance application has modified the visual properties (e.g., brightness, opaqueness, size, etc.) of icon 128 in response to determining that icon 128 has a low frequency of use each time an interface featuring the icon is accessed.

[0055] In some embodiments, the modification of the visual properties of icon 128 may reflect multiple instances in which interface 150 was generated by the media guidance application without icon 128 being selecting by a user. For example, after presenting interface 150 (and icon 128) a particular number of times without receiving a user selection of icon 128, the media guidance application may have modified the visual properties of icon 128 as shown.

[0056] In some embodiments, the frequency of use of icon 128 (as well as the frequency of use of the remaining icons in menu 126) may be stored in a user profile or other location (e.g., memory of a user device upon which the media guidance application is implemented). Each time or instance that the media guidance application generates a display of interface 150, the media guidance application may recall the visual properties associated with each of the icons in menu 126. For example, a user profile may indicate that icon 128 has a low frequency of use. Accordingly,

the media guidance application may associate icon 128 with a visual property of semi-transparency. When generating interface 150, the media guidance application may generate for display icon 128 with the semi-transparency shown in interface 150.

[0057] The user profile may also store other personalized rules and/or customization associated with the icons. For example, the user profile may store priorities and/or special assignments of threshold frequency (e.g., threshold frequency that differ from a default threshold frequency associated with an icon) that are related to an particular icon. For example, as stated above, the media guidance application may assign priorities that affect the threshold frequencies and visual properties associated with an icon. The priorities may be stored in the user profile. The user profile may also store custom visual properties associated with the icons. For example, a user may indicate that an icon should flash or blink immediately before it is removed from an interface. This customization may be stored in the user profile and applied to the visual properties generated for display by the media guidance application.

[0058] The customization of the interfaces, icons, and features of the media guidance application may additionally or alternatively be based on a user's preferences. A customized media guidance application allows a user to personalize interfaces, icons, and features to create a custom "experience" with the media guidance application. This custom experience may be created by allowing a user to input these customizations and/or by the media guidance application monitoring user activity to determine various user

preferences (e.g., interfaces and/or icons frequently used by the user). Users may access their customized media guidance application by logging in or otherwise identifying themselves to the guidance application. Customization of the media guidance application may be made in accordance with a user profile.

[0059] The customizations may include varying presentation schemes (e.g., visual properties, groupings, orderings, layouts, etc. associated with interfaces and/or icons), aspects of content listings displayed (e.g., only HDTV or only 3D programming, user-specified broadcast channels based on favorite channel selections, re-ordering the display of channels, recommended content, etc.), desired recording features (e.g., recording or series recordings for particular users, recording quality, etc.), parental control settings, customized presentation of Internet content (e.g., presentation of social media content, e-mail, electronically delivered articles, etc.) and other desired customizations.

[0060] The media guidance application may also allow a user to provide user profile information or may automatically compile user profile information. The media guidance application may, for example, monitor the content the user accesses and/or other interactions the user may have with the guidance application. Additionally, the media guidance application may obtain all or part of other user profiles that are related to a particular user (e.g., from other web sites on the Internet the user accesses, such as www.allrovi.com, from other media guidance applications the user accesses, from other interactive applications the user accesses, from another user equipment device of the

user, etc.), and/or obtain information about the user from other sources that the media guidance application may access. As a result, a user can be provided with a unified guidance application experience across the user's different user equipment devices. This type of user experience is described in greater detail below in connection with FIG. 4. Additional personalized media guidance application features are described in greater detail in Ellis et al., U.S. Patent Application Publication No. 2005/0251827, filed July 11, 2005, Boyer et al., U.S. Patent No. 7,165,098, issued January 16, 2007, and Ellis et al., U.S. Patent Application Publication No. 2002/0174430, filed February 21, 2002, which are hereby incorporated by reference herein in their entireties.

[0061] FIG. 1D shows an illustrative media guidance application in which an on-screen icon associated with a function performed by the media guidance has been removed based on the frequency of use of the icon. For example, in some embodiments, one or more of the plurality of icons may be added/removed based on the frequency of use of the particular icon.

[0062] For example, in some embodiments, interface 170 may correspond to interface 150 (FIG. 1C). In such cases, icon 128 (FIG. 1C) may have been removed from interface 170 in response to the media guidance application determining that the frequency of use of icon 128 (FIG. 1C) corresponds to a threshold frequency associated with removing an icon from the interface.

[0063] In some embodiments, the media guidance application may first prompt a use to confirm that an icon (e.g., icon 128 (FIG. 1C)) should be removed from an interface (e.g., interface 170). For example, upon

initiation of the media guidance application, or before an interface or menu page featuring the icon in question is generated for display, the media guidance application may ask the user to confirm removal of an icon with a low frequency of use. After removal, the media guidance application may rearrange the remaining icons, if any, on the interface or may add an additional icon (e.g., associated with a different function of the media guidance application).

[0064] For example, the media guidance application may store a list of possible icons/functions associated with a particular interface or screen, menu, etc. thereof. In response to determining to remove a particular icon (e.g., icon 128 (FIG. 1C)), the media guidance application may replace the icon with an icon for a different function. For example, the media guidance application may rank icons/functions stored in a queue. When an icon is removed, the media guidance application replaces the icon with the next icon/function in the queue.

[0065] Additionally or alternatively, the media guidance application may rearrange the remaining icons without replacing a removed icon (e.g., icon 129 (FIG. 1C)). For example, in interface 170, the icons in menu 126 have been rearranged compared to interface 150 (FIG. 1C)). In some embodiments, the removal of an icon may also cause the remaining icon to be generated for display by the media guidance application in a larger size.

[0066] Another display arrangement for providing media guidance is shown in FIGS. 2A-B. Video mosaic interface 200 includes selectable icons 202 for content

information organized based on content type, genre, and/or other organization criteria.

[0067] In interface 200, listings 206, 208, 210, and 212 are generated for display. Program listings may provide graphical images including cover art, still images from the content, video clip previews, live video from the content, or other types of content that indicate to a user the content being described by the media guidance data in the listing. Each of the graphical listings may also be accompanied by text to provide further information about the content associated with the listing. For example, listing 208 may include more than one portion, including media portion 214 and text portion 216. Media portion 214 and/or text portion 216 may be selectable to view content in full-screen or to view information related to the content displayed in media portion 214 (e.g., to view listings for the channel that the video is displayed on).

[0068] The listings in interface 200 are of different sizes (i.e., listing 206 is larger than listings 208, 210, and 212), but if desired, all the listings may be the same size. Listings may be of different sizes or graphically accentuated to indicate degrees of interest to the user or to emphasize certain content, as desired by the content provider or based on user preferences. Various systems and methods for graphically accentuating content listings are discussed in, for example, Yates, U.S. Patent Application Publication No. 2010/0153885, filed December 29, 2005, which is hereby incorporated by reference herein in its entirety.

[0069] Icons 202 are each associated with individual visual properties. For example, each of icons 202 is associated with a size, font, and opaqueness reflective of the frequency of use of the individual icon. For example, icon 204 is generated for display in a larger size, normal font, and full opaqueness indicating that icon 204 has a high frequency of use. In contrast, icon 218 is generated for display in a small size, in an italicized font, and with semi-transparency indicating that icon 218 has a low frequency of use.

[0070] In some embodiments, particular visual properties or values (e.g., in a range) of those visual properties may also indicate additional information besides a low frequency of use. For example, the use of a particular font may indicate that an icon is due to be removed unless the icon is selected during that instance of the interface. In another example, a particular level of opaqueness (e.g., completely opaque) may indicate that an icon is permanently fixed to an interface or menu of an interface (e.g., the icon is not subject to removal based on a low frequency of use). In another example, as shown in icon 220 of FIG. 2B, a capitalization of all letters in an icon may indicate that an icon was recently added to a particular interface and/or menu.

[0071] FIG. 2B shows an illustrative media guidance application featuring on-screen icons, in which the icons presented are determined based on the frequency of use of each icon. In some embodiments, interface 230 may correspond to interface 200 (FIG. 2A) after the frequency of use associated with each of icons 202 has changed due to a user either selecting or not selecting one or more of icons 202.

[0072] For example, in interface 230, icon 218 (FIG. 2A) has been replaced with icon 220. In addition, the opaqueness associated with icon 204 has changed (e.g., in response to a low frequency of use). In addition, the ordering of icons 202 in interface 230 has changed compared to the ordering of icons 202 in interface 200 (FIG. 2A). For example, each icon may include multiple visual properties and/or other characteristics (e.g., ordering, position in an interface, etc.) associated with the frequency of use of the particular icon. If the media guidance application determines a change to the frequency of use of any one of the icons, the media guidance application may modify the visual properties and/or other characteristics associated with the particular icon.

[0073] Users may access content and the media guidance application (and its interfaces described above and below) from one or more of their user equipment devices. FIG. 3 shows a generalized embodiment of illustrative user equipment device 300. More specific implementations of user equipment devices are discussed below in connection with FIG. 4. User equipment device 300 may receive content and data via input/output (hereinafter "I/O") path 302. I/O path 302 may provide content (e.g., broadcast programming, on-demand programming, Internet content, content available over a local area network (LAN) or wide area network (WAN), and/or other content) and data to control circuitry 304, which includes processing circuitry 306 and storage 308. Control circuitry 304 may be used to send and receive commands, requests, and other suitable data using I/O path 302. I/O path 302 may connect control circuitry 304 (and specifically

processing circuitry 306) to one or more communications paths (described below). I/O functions may be provided by one or more of these communications paths, but are shown as a single path in FIG. 3 to avoid overcomplicating the drawing.

[0074] Control circuitry 304 may be based on any suitable processing circuitry such as processing circuitry 306. As referred to herein, processing circuitry should be understood to mean circuitry based on one or more microprocessors, microcontrollers, digital signal processors, programmable logic devices, field-programmable gate arrays (FPGAs), application-specific integrated circuits (ASICs), etc., and may include a multi-core processor (e.g., dual-core, quad-core, hexa-core, or any suitable number of cores) or supercomputer. In some embodiments, processing circuitry may be distributed across multiple separate processors or processing units, for example, multiple of the same type of processing units (e.g., two Intel Core i7 processors) or multiple different processors (e.g., an Intel Core i5 processor and an Intel Core i7 processor). In some embodiments, control circuitry 304 executes instructions for a media guidance application stored in memory (i.e., storage 308). Specifically, control circuitry 304 may be instructed by the media guidance application to perform the functions discussed above and below. For example, the media guidance application may provide instructions to control circuitry 304 to generate the media guidance displays. In some implementations, any action performed by control circuitry 304 may be based on instructions received from the media guidance application.

[0075] In client-server based embodiments, control circuitry 304 may include communications circuitry suitable for communicating with a guidance application server or other networks or servers. The instructions for carrying out the above-mentioned functionality may be stored on the guidance application server. Communications circuitry may include a cable modem, an integrated services digital network (ISDN) modem, a digital subscriber line (DSL) modem, a telephone modem, Ethernet card, or a wireless modem for communications with other equipment, or any other suitable communications circuitry. Such communications may involve the Internet or any other suitable communications networks or paths (which is described in more detail in connection with FIG. 4). In addition, communications circuitry may include circuitry that enables peer-to-peer communication of user equipment devices, or communication of user equipment devices in locations remote from each other (described in more detail below).

[0076] Memory may be an electronic storage device provided as storage 308 that is part of control circuitry 304. As referred to herein, the phrase "electronic storage device" or "storage device" should be understood to mean any device for storing electronic data, computer software, or firmware, such as random-access memory, read-only memory, hard drives, optical drives, digital video disc (DVD) recorders, compact disc (CD) recorders, BLU-RAY disc (BD) recorders, BLU-RAY 3D disc recorders, digital video recorders (DVR, sometimes called a personal video recorder, or PVR), solid state devices, quantum storage devices, gaming consoles, gaming media, or any other suitable fixed or

removable storage devices, and/or any combination of the same. Storage 308 may be used to store various types of content described herein as well as media guidance information, described above, and guidance application data, described above. Nonvolatile memory may also be used (e.g., to launch a boot-up routine and other instructions). Cloud-based storage, described in relation to FIG. 4, may be used to supplement storage 308 or instead of storage 308.

[0077] Control circuitry 304 may include video generating circuitry and tuning circuitry, such as one or more analog tuners, one or more MPEG-2 decoders or other digital decoding circuitry, high-definition tuners, or any other suitable tuning or video circuits or combinations of such circuits. Encoding circuitry (e.g., for converting over-the-air, analog, or digital signals to MPEG signals for storage) may also be provided. Control circuitry 304 may also include scaler circuitry for upconverting and downconverting content into the preferred output format of the user equipment 300. Circuitry 304 may also include digital-to-analog converter circuitry and analog-to-digital converter circuitry for converting between digital and analog signals. The tuning and encoding circuitry may be used by the user equipment device to receive and to display, to play, or to record content. The tuning and encoding circuitry may also be used to receive guidance data. The circuitry described herein, including for example, the tuning, video generating, encoding, decoding, encrypting, decrypting, scaler, and analog/digital circuitry, may be implemented using software running on one or more general purpose or specialized processors. Multiple tuners may be

provided to handle simultaneous tuning functions (e.g., watch and record functions, picture-in-picture (PIP) functions, multiple-tuner recording, etc.). If storage 308 is provided as a separate device from user equipment 300, the tuning and encoding circuitry (including multiple tuners) may be associated with storage 308.

[0078] A user may send instructions to control circuitry 304 using user input interface 310. User input interface 310 may be any suitable user interface, such as a remote control, mouse, trackball, keypad, keyboard, touch screen, touchpad, stylus input, joystick, voice recognition interface, or other user input interfaces. Display 312 may be provided as a stand-alone device or integrated with other elements of user equipment device 300. Display 312 may be one or more of a monitor, a television, a liquid crystal display (LCD) for a mobile device, or any other suitable equipment for displaying visual images. In some embodiments, display 312 may be HDTV-capable. In some embodiments, display 312 may be a 3D display, and the interactive media guidance application and any suitable content may be displayed in 3D. A video card or graphics card may generate the output to the display 312. The video card may offer various functions such as accelerated rendering of 3D scenes and 2D graphics, MPEG-2/MPEG-4 decoding, TV output, or the ability to connect multiple monitors. The video card may be any processing circuitry described above in relation to control circuitry 304. The video card may be integrated with the control circuitry 304. Speakers 314 may be provided as integrated with other elements of user equipment device 300 or may be stand-alone

units. The audio component of videos and other content displayed on display 312 may be played through speakers 314. In some embodiments, the audio may be distributed to a receiver (not shown), which processes and outputs the audio via speakers 314.

[0079] The guidance application may be implemented using any suitable architecture. For example, it may be a stand-alone application wholly implemented on user equipment device 300. In such an approach, instructions of the application are stored locally, and data for use by the application is downloaded on a periodic basis (e.g., from an out-of-band feed, from an Internet resource, or using another suitable approach). In some embodiments, the media guidance application is a client-server based application. Data for use by a thick or thin client implemented on user equipment device 300 is retrieved on demand by issuing requests to a server remote from the user equipment device 300. In one example of a client-server based guidance application, control circuitry 304 runs a web browser that interprets web pages provided by a remote server.

[0080] In some embodiments, the media guidance application is downloaded and interpreted or otherwise run by an interpreter or virtual machine (run by control circuitry 304). In some embodiments, the guidance application may be encoded in the ETV Binary Interchange Format (EBIF), received by control circuitry 304 as part of a suitable feed, and interpreted by a user agent running on control circuitry 304. For example, the guidance application may be an EBIF application. In some embodiments, the guidance application may be defined by a series of JAVA-based files that are received and run by a local

virtual machine or other suitable middleware executed by control circuitry 304. In some of such embodiments (e.g., those employing MPEG-2 or other digital media encoding schemes), the guidance application may be, for example, encoded and transmitted in an MPEG-2 object carousel with the MPEG audio and video packets of a program.

[0081] User equipment device 300 of FIG. 3 can be implemented in system 400 of FIG. 4 as user television equipment 402, user computer equipment 404, wireless user communications device 406, or any other type of user equipment suitable for accessing content, such as a non-portable gaming machine. For simplicity, these devices may be referred to herein collectively as user equipment or user equipment devices, and may be substantially similar to user equipment devices described above. User equipment devices, on which a media guidance application may be implemented, may function as a standalone device or may be part of a network of devices. Various network configurations of devices may be implemented and are discussed in more detail below.

[0082] A user equipment device utilizing at least some of the system features described above in connection with FIG. 3 may not be classified solely as user television equipment 402, user computer equipment 404, or a wireless user communications device 406. For example, user television equipment 402 may, like some user computer equipment 404, be Internet-enabled allowing for access to Internet content, while user computer equipment 404 may, like some television equipment 402, include a tuner allowing for access to television programming. The media guidance application

may have the same layout on various different types of user equipment or may be tailored to the display capabilities of the user equipment. For example, on user computer equipment 404, the guidance application may be provided as a web site accessed by a web browser. In another example, the guidance application may be scaled down for wireless user communications devices 406.

[0083] In system 400, there is typically more than one of each type of user equipment device but only one of each is shown in FIG. 4 to avoid overcomplicating the drawing. In addition, each user may utilize more than one type of user equipment device and also more than one of each type of user equipment device.

[0084] In some embodiments, a user equipment device (e.g., user television equipment 402, user computer equipment 404, wireless user communications device 406) may be referred to as a "second screen device." For example, a second screen device may supplement content presented on a first user equipment device. The content presented on the second screen device may be any suitable content that supplements the content presented on the first device. In some embodiments, the second screen device provides an interface for adjusting settings and display preferences of the first device. In some embodiments, the second screen device is configured for interacting with other second screen devices or for interacting with a social network. The second screen device can be located in the same room as the first device, a different room from the first device but in the same house or building, or in a different building from the first device.

[0085] The user may also set various settings to maintain consistent media guidance application settings across in-home devices and remote devices. Settings include those described herein, as well as channel and program favorites, programming preferences that the guidance application utilizes to make programming recommendations, display preferences, and other desirable guidance settings. For example, if a user sets a channel as a favorite on, for example, the web site www.allrovi.com on their personal computer at their office, the same channel would appear as a favorite on the user's in-home devices (e.g., user television equipment and user computer equipment) as well as the user's mobile devices, if desired. Therefore, changes made on one user equipment device can change the guidance experience on another user equipment device, regardless of whether they are the same or a different type of user equipment device. In addition, the changes made may be based on settings input by a user, as well as user activity monitored by the guidance application.

[0086] The user equipment devices may be coupled to communications network 414. Namely, user television equipment 402, user computer equipment 404, and wireless user communications device 406 are coupled to communications network 414 via communications paths 408, 410, and 412, respectively. Communications network 414 may be one or more networks including the Internet, a mobile phone network, mobile voice or data network (e.g., a 4G or LTE network), cable network, public switched telephone network, or other types of communications network or combinations of communications networks. Paths 408, 410, and 412 may

separately or together include one or more communications paths, such as, a satellite path, a fiber-optic path, a cable path, a path that supports Internet communications (e.g., IPTV), free-space connections (e.g., for broadcast or other wireless signals), or any other suitable wired or wireless communications path or combination of such paths. Path 412 is drawn with dotted lines to indicate that in the exemplary embodiment shown in FIG. 4 it is a wireless path and paths 408 and 410 are drawn as solid lines to indicate they are wired paths (although these paths may be wireless paths, if desired). Communications with the user equipment devices may be provided by one or more of these communications paths, but are shown as a single path in FIG. 4 to avoid overcomplicating the drawing.

[0087] Although communications paths are not drawn between user equipment devices, these devices may communicate directly with each other via communication paths, such as those described above in connection with paths 408, 410, and 412, as well as other short-range point-to-point communication paths, such as USB cables, IEEE 1394 cables, wireless paths (e.g., Bluetooth, infrared, IEEE 802-11x, etc.), or other short-range communication via wired or wireless paths. BLUETOOTH is a certification mark owned by Bluetooth SIG, INC. The user equipment devices may also communicate with each other directly through an indirect path via communications network 414.

[0088] System 400 includes content source 416 and media guidance data source 418 coupled to communications network 414 via communication paths 420 and 422, respectively. Paths 420 and 422 may include

any of the communication paths described above in connection with paths 408, 410, and 412. Communications with the content source 416 and media guidance data source 418 may be exchanged over one or more communications paths, but are shown as a single path in FIG. 4 to avoid overcomplicating the drawing. In addition, there may be more than one of each of content source 416 and media guidance data source 418, but only one of each is shown in FIG. 4 to avoid overcomplicating the drawing. (The different types of each of these sources are discussed below.) If desired, content source 416 and media guidance data source 418 may be integrated as one source device. Although communications between sources 416 and 418 with user equipment devices 402, 404, and 406 are shown as through communications network 414, in some embodiments, sources 416 and 418 may communicate directly with user equipment devices 402, 404, and 406 via communication paths (not shown) such as those described above in connection with paths 408, 410, and 412.

[0089] Content source 416 may include one or more types of content distribution equipment including a television distribution facility, cable system headend, satellite distribution facility, programming sources (e.g., television broadcasters, such as NBC, ABC, HBO, etc.), intermediate distribution facilities and/or servers, Internet providers, on-demand media servers, and other content providers. NBC is a trademark owned by the National Broadcasting Company, Inc., ABC is a trademark owned by the American Broadcasting Company, Inc., and HBO is a trademark owned by the Home Box Office, Inc. Content source 416 may be the originator

of content (e.g., a television broadcaster, a Webcast provider, etc.) or may not be the originator of content (e.g., an on-demand content provider, an Internet provider of content of broadcast programs for downloading, etc.). Content source 416 may include cable sources, satellite providers, on-demand providers, Internet providers, over-the-top content providers, or other providers of content. Content source 416 may also include a remote media server used to store different types of content (including video content selected by a user), in a location remote from any of the user equipment devices. Systems and methods for remote storage of content, and providing remotely stored content to user equipment are discussed in greater detail in connection with Ellis et al., U.S. Patent No. 7,761,892, issued July 20, 2010, which is hereby incorporated by reference herein in its entirety.

[0090] Media guidance data source 418 may provide media guidance data, such as the media guidance data described above. Media guidance application data may be provided to the user equipment devices using any suitable approach. In some embodiments, the guidance application may be a stand-alone interactive television program guide that receives program guide data via a data feed (e.g., a continuous feed or trickle feed). Program schedule data and other guidance data may be provided to the user equipment on a television channel sideband, using an in-band digital signal, using an out-of-band digital signal, or by any other suitable data transmission technique. Program schedule data and other media guidance data may be provided to user

equipment on multiple analog or digital television channels.

[0091] In some embodiments, guidance data from media guidance data source 418 may be provided to users' equipment using a client-server approach. For example, a user equipment device may pull media guidance data from a server, or a server may push media guidance data to a user equipment device. In some embodiments, a guidance application client residing on the user's equipment may initiate sessions with source 418 to obtain guidance data when needed, e.g., when the guidance data is out of date or when the user equipment device receives a request from the user to receive data. Media guidance may be provided to the user equipment with any suitable frequency (e.g., continuously, daily, a user-specified period of time, a system-specified period of time, in response to a request from user equipment, etc.). Media guidance data source 418 may provide user equipment devices 402, 404, and 406 the media guidance application itself or software updates for the media guidance application.

[0092] Media guidance applications may be, for example, stand-alone applications implemented on user equipment devices. For example, the media guidance application may be implemented as software or a set of executable instructions which may be stored in storage 308, and executed by control circuitry 304 of a user equipment device 300. In some embodiments, media guidance applications may be client-server applications where only a client application resides on the user equipment device, and a server application resides on a remote server. For example, media guidance applications may be implemented partially as a client

application on control circuitry 304 of user equipment device 300 and partially on a remote server as a server application (e.g., media guidance data source 418) running on control circuitry of the remote server. When executed by control circuitry of the remote server (such as media guidance data source 418), the media guidance application may instruct the control circuitry to generate the guidance application displays and transmit the generated displays to the user equipment devices. The server application may instruct the control circuitry of the media guidance data source 418 to transmit data for storage on the user equipment. The client application may instruct control circuitry of the receiving user equipment to generate the guidance application displays.

[0093] Content and/or media guidance data delivered to user equipment devices 402, 404, and 406 may be over-the-top (OTT) content. OTT content delivery allows Internet-enabled user devices, including any user equipment device described above, to receive content that is transferred over the Internet, including any content described above, in addition to content received over cable or satellite connections. OTT content is delivered via an Internet connection provided by an Internet service provider (ISP), but a third party distributes the content. The ISP may not be responsible for the viewing abilities, copyrights, or redistribution of the content, and may only transfer IP packets provided by the OTT content provider. Examples of OTT content providers include YOUTUBE, NETFLIX, and HULU, which provide audio and video via IP packets. Youtube is a trademark owned by Google Inc., Netflix is a trademark owned by Netflix Inc., and Hulu

is a trademark owned by Hulu, LLC. OTT content providers may additionally or alternatively provide media guidance data described above. In addition to content and/or media guidance data, providers of OTT content can distribute media guidance applications (e.g., web-based applications or cloud-based applications), or the content can be displayed by media guidance applications stored on the user equipment device.

[0094] Media guidance system 400 is intended to illustrate a number of approaches, or network configurations, by which user equipment devices and sources of content and guidance data may communicate with each other for the purpose of accessing content and providing media guidance. The embodiments described herein may be applied in any one or a subset of these approaches, or in a system employing other approaches for delivering content and providing media guidance. The following four approaches provide specific illustrations of the generalized example of FIG. 4.

[0095] In one approach, user equipment devices may communicate with each other within a home network. User equipment devices can communicate with each other directly via short-range point-to-point communication schemes described above, via indirect paths through a hub or other similar device provided on a home network, or via communications network 414. Each of the multiple individuals in a single home may operate different user equipment devices on the home network. As a result, it may be desirable for various media guidance information or settings to be communicated between the different user equipment devices. For

example, it may be desirable for users to maintain consistent media guidance application settings on different user equipment devices within a home network, as described in greater detail in Ellis et al., U.S. Patent Application No. 11/179,410, filed July 11, 2005. Different types of user equipment devices in a home network may also communicate with each other to transmit content. For example, a user may transmit content from user computer equipment to a portable video player or portable music player.

[0096] In a second approach, users may have multiple types of user equipment by which they access content and obtain media guidance. For example, some users may have home networks that are accessed by in-home and mobile devices. Users may control in-home devices via a media guidance application implemented on a remote device. For example, users may access an online media guidance application on a website via a personal computer at their office, or a mobile device such as a PDA or web-enabled mobile telephone. The user may set various settings (e.g., recordings, reminders, or other settings) on the online guidance application to control the user's in-home equipment. The online guide may control the user's equipment directly, or by communicating with a media guidance application on the user's in-home equipment. Various systems and methods for user equipment devices communicating, where the user equipment devices are in locations remote from each other, is discussed in, for example, Ellis et al., U.S. Patent No. 8,046,801, issued October 25, 2011, which is hereby incorporated by reference herein in its entirety.

[0097] In a third approach, users of user equipment devices inside and outside a home can use their media guidance application to communicate directly with content source 416 to access content. Specifically, within a home, users of user television equipment 402 and user computer equipment 404 may access the media guidance application to navigate among and locate desirable content. Users may also access the media guidance application outside of the home using wireless user communications devices 406 to navigate among and locate desirable content.

[0098] In a fourth approach, user equipment devices may operate in a cloud computing environment to access cloud services. In a cloud computing environment, various types of computing services for content sharing, storage or distribution (e.g., video sharing sites or social networking sites) are provided by a collection of network-accessible computing and storage resources, referred to as "the cloud." For example, the cloud can include a collection of server computing devices, which may be located centrally or at distributed locations, that provide cloud-based services to various types of users and devices connected via a network such as the Internet via communications network 414. These cloud resources may include one or more content sources 416 and one or more media guidance data sources 418. In addition to or in the alternative, the remote computing sites may include other user equipment devices, such as user television equipment 402, user computer equipment 404, and wireless user communications device 406. For example, the other user equipment devices may provide access to a stored copy of a video or a streamed video. In such

embodiments, user equipment devices may operate in a peer-to-peer manner without communicating with a central server.

[0099] The cloud provides access to services, such as content storage, content sharing, or social networking services, among other examples, as well as access to any content described above, for user equipment devices. Services can be provided in the cloud through cloud computing service providers, or through other providers of online services. For example, the cloud-based services can include a content storage service, a content sharing site, a social networking site, or other services through which user-sourced content is distributed for viewing by others on connected devices. These cloud-based services may allow a user equipment device to store content to the cloud and to receive content from the cloud rather than storing content locally and accessing locally-stored content.

[0100] A user may use various content capture devices, such as camcorders, digital cameras with video mode, audio recorders, mobile phones, and handheld computing devices, to record content. The user can upload content to a content storage service on the cloud either directly, for example, from user computer equipment 404 or wireless user communications device 406 having content capture feature. Alternatively, the user can first transfer the content to a user equipment device, such as user computer equipment 404. The user equipment device storing the content uploads the content to the cloud using a data transmission service on communications network 414. In some embodiments, the user equipment device itself is a cloud resource,

and other user equipment devices can access the content directly from the user equipment device on which the user stored the content.

[0101] Cloud resources may be accessed by a user equipment device using, for example, a web browser, a media guidance application, a desktop application, a mobile application, and/or any combination of access applications of the same. The user equipment device may be a cloud client that relies on cloud computing for application delivery, or the user equipment device may have some functionality without access to cloud resources. For example, some applications running on the user equipment device may be cloud applications, i.e., applications delivered as a service over the Internet, while other applications may be stored and run on the user equipment device. In some embodiments, a user device may receive content from multiple cloud resources simultaneously. For example, a user device can stream audio from one cloud resource while downloading content from a second cloud resource. Or a user device can download content from multiple cloud resources for more efficient downloading. In some embodiments, user equipment devices can use cloud resources for processing operations such as the processing operations performed by processing circuitry described in relation to FIG. 3.

[0102] FIG. 5 is a flow-chart of illustrative steps involved in modifying the visual properties of an icon relative to an interface. It should be noted that process 500, or any step thereof, could be provided by any of the devices shown in FIGS. 3-4. For example, process 500 may be executed by control circuitry 304 (FIG. 3) on user equipment devices 402, 404, and/or 406

(FIG. 4) as instructed by the media guidance application to generate for display an interface (e.g., interface 100 (FIG 1A), interface 130 (FIG. 1B), interface 150 (FIG. 1C), interface 170 (FIG. 1D), interface 200 (FIG. 2A), and/or interface 230 (FIG. 2B). In addition, one or more steps of process 500 may be incorporated into or combined with one or more steps of any other process (e.g., as described in FIG. 6).

[0103] At step 502, the media guidance application receives a user request to access an interface of a media guidance application, in which the interface includes an icon associated with a function performed by the media guidance application. For example, the media guidance application may receive a user request (e.g., via user input interface 310 (FIG. 3)) to generate for display one or more menus (e.g., menu 126 (FIG. 1A)) in an interface (e.g., interface 200 (FIG. 2A)). The menu may include one or more icons (e.g., icon 128 (FIG. 1A)).

[0104] At step 504, the media guidance application determines a frequency of use of the icon, in which the frequency of use indicates how often the icon was selected when presented to the user at one or more previous times. The media guidance application may use one or more techniques for determining a frequency of use. For example, the media guidance application may incorporate and/or access a counter or clock component to track the number of times or the length of time interfaces, menus, and/or icons are accessed and/or presented. For example, using the counter or clock component, the media guidance application may track the number of times that an icon is selected (or not selected) while an interface presenting the icon is

generated for display, the number of times that an icon is selected (or not selected) within a given period of time, the length of time that an icon is presented on an interface before the icon is selected, etc.

[0105] In some embodiments, the media guidance application may store the frequency of use of one or more icons locally (e.g., at storage 308 (FIG. 3) of user equipment devices 402, 404, and/or 406 (FIG. 4)) or remotely (e.g., at media guidance data source 418 (FIG. 4) and/or any other location accessible via communications network 414 (FIG. 4)). For example, the media guidance application may store the current frequency of use associated with each icon in a lookup table database. The media guidance application may then cross-reference the database in order to retrieve the current frequency of use of an icon. Additionally, the media guidance application may edit the records associated with a particular icon in response to determining that the record is out-of-date or that the frequency of use associated with the particular icon has been changed (e.g., in response to a user selection of the icon).

[0106] In some embodiments, the frequency of use of an icon may be relative to a frequency of use of an interface in which the icon is presented. For example, the media guidance application may track e.g., via a counter component incorporated into and/or accessible by control circuitry 304 (FIG. 3)) and/or record (e.g., at storage 308 (FIG. 3)) the frequency of use of an icon as a ratio, percentage, or other unit of measurement that compares the amount of times or instances that the media guidance application presented an interface (e.g., interface 130 (FIG. 1B)) and/or

menu (e.g., menu 126 (FIG. 1B)) that included an icon (e.g., icon 128 (FIG. 1B)), but did not receive a user selection (e.g., received via user input interface 310 (FIG. 3)) of the icon while the interface was generated for display (e.g., as shown in FIG. 1B).

[0107] Additionally or alternatively, the frequency of use of an icon may be relative to the amount of time that the icon was presented. For example, the media guidance application may track (e.g., via a clock component incorporated into and/or accessible by control circuitry 304 (FIG. 3)) the amount of time that the media guidance application presented the icon (e.g., five minutes), but did not receive a user selection (e.g., received via user input interface 310 (FIG. 3)) of the icon (e.g., icon 204 (FIG. 2A)). For example, each time an interface (e.g., interface 200 (FIG. 1A)) or a particular menu (e.g., menu 126 (FIG.1C)) on the interface is accessed, the media guidance application may clock (e.g., via control circuitry 304 (FIG. 3)) how long the icon was presented without receiving a selection by a user. Additionally, the media guidance application may instruct (e.g., via control circuitry 304 (FIG. 3)) the clock component to toll the running of the clock when the interface and/or menu featuring the icon is not displayed and resume the clock the next time the interface and/or menu is accessed.

[0108] Additionally or alternatively, the frequency of use of an icon may be relative to the frequency of use of another icon (e.g., presented on the same interface). For example, the media guidance application may track (e.g., via a clock or counter component incorporated into and/or accessible by

control circuitry 304 (FIG. 3)) how often a particular icon (e.g., icon 204 (FIG. 2A)) is selected versus how often a different icon (e.g., icon 218 (FIG. 2A)) on the same or different interface, menu, etc. is selected. For example, the media guidance application may automatically remove, replace, etc. an icon associated with the lowest frequency of use (e.g., icon 218 (FIG. 1A)) on any one interface (e.g., interface 200 (FIG. 2A)) and/or menu (e.g., menu 126 (FIG. 1B)).

[0109] At step 506, the media guidance application compares the frequency of use to a threshold frequency. For example, the media guidance application may compare (e.g., via control circuitry 304 (FIG. 3)) one or more frequencies of use of the icon (e.g., associated with one or more of the various measurement techniques discussed above) with one or more threshold frequencies. For example, the media guidance application may compare the frequency of use of each icon (e.g., icons 202 (FIG. 2A)) to one or more threshold frequencies. For example, the media guidance application may compare (e.g., via control circuitry 304 (FIG. 3)) a first icon (e.g., icon 204 (FIG. 2A)) to a first threshold frequency (e.g., associated with a first visual property or a particular value in a range of values associated with the first visual property). The media guidance application may also compare a second icon (e.g., icon 218 (FIG. 2A)) to the first threshold frequency. Additionally or alternatively, the media guidance application may compare the second icon (e.g., icon 218 (FIG. 2A)) to a second threshold frequency (e.g., associated with a second visual property or a particular value in a range of values associated with the second visual property).

[0110] For example, the media guidance application may compare different icons to different threshold frequencies. In some embodiments, the media guidance may compare different icons to different threshold frequencies based on additional factors. For example, the media guidance application may determine that an icon associated with a particular function (e.g., ordering pay-per-view) is rarely used. However, based on additional factors (e.g., the function being a source of revenue to a content producer), the media guidance application may apply a lower threshold frequency to the particular icon in order to cause the media guidance application to perform an action (e.g., modify the visual properties, remove from an interface, etc.). In another example, the media guidance application may determine that an icon associated with a different function (e.g., editing parental controls) is rarely used. However, based on additional factors (e.g., that the function, although rarely edited/changed, is frequently running in the background of the interface), the media guidance application may apply a lower threshold frequency to the particular icon in order to cause the media guidance application to perform an action (e.g., modify the visual properties, remove from an interface, etc.).

[0111] At step 508, the media guidance application, in response to determining that the frequency of use corresponds to the threshold frequency, modifies the visual property of the icon relative to the interface. For example, in response to determining that a frequency of use associated with a particular icon (e.g., icon 218 (FIG. 2A)) corresponds to a threshold frequency, the media guidance application may (e.g.,

via control circuitry 304 (FIG. 3)) modify the visual properties of the icon. The amount or degree at which the visual properties are modified (or the particular visual properties that are modified) may, in some embodiments, be associated with the particular threshold.

[0112] For example, if a threshold frequency is associated with the shape of an icon, corresponding (or not corresponding) to the threshold frequency may affect the shape of the icon. For example, in response to determining that a frequency of use associated with an icon (e.g., icon 204 (FIG. 2A)) corresponds to a threshold frequency, the media guidance application may add additional sides to the shape of the icon (e.g., change the icon from a square to a pentagon). In contrast, in response to determining that a frequency of use associated with the icon (e.g., icon 204 (FIG. 2A)) corresponds to a threshold frequency, the media guidance application may subtract a side from the shape of the icon (e.g., change the icon from a square to a triangle).

[0113] In some embodiments, the effect of corresponding (or not corresponding) to the same threshold frequency may depend on a current visual property of different icons. For example, in response to determining that a frequency of use associated with a first icon (e.g., currently having a square shape) corresponds to a threshold frequency, the media guidance application may add additional sides to the shape of the icon (e.g., change the icon from a square to a pentagon). In contrast, in response to determining that a frequency of use associated with a second icon (e.g., currently having a pentagon shape)

corresponds to a threshold frequency, the media guidance application may also add additional sides to the shape of the icon (e.g., change the icon from a pentagon to a hexagon).

[0114] It is contemplated that the steps or descriptions of FIG. 5 may be used with any other embodiment of this disclosure. In addition, the steps and descriptions described in relation to FIG. 5 may be done in alternative orders or in parallel to further the purposes of this disclosure. For example, each of these steps may be performed in any order or in parallel or substantially simultaneously to reduce lag or increase the speed of the system or method. Furthermore, it should be noted that any of the devices or equipment discussed in relation to FIGS. 3-4 could be used to perform one of more of the steps in FIG. 5.

[0115] FIG. 6 is a flow-chart of illustrative steps involved in determining a visual property of an icon. It should be noted that process 600, or any step thereof, could be provided by, any of the devices shown in FIGS. 3-4. For example, process 600 may be executed by control circuitry 304 (FIG. 3) on user equipment device 402, 404, and/or 406 (FIG. 4) as instructed by the media guidance application to generate for display an interface (e.g., interface 100 (FIG 1A), interface 130 (FIG. 1B), interface 150 (FIG. 1C), interface 170 (FIG. 1D), interface 200 (FIG. 2A), and/or interface 230 (FIG. 2B). In addition, one or more steps of process 600 may be incorporated into or combined with one or more steps of any other process (e.g., as described in FIG. 5).

[0116] At step 602, the media guidance application retrieves a visual property of an icon. For example,

the media guidance application may have received a user request (e.g., via user input interface 310 (FIG. 3)) to generate an interface (e.g., interface 130 (FIG. 1B)) that includes an icon (e.g., icon 128 (FIG. 1B)). In order to generate the icon, the media guidance application may retrieve the current visual property or properties associated with the icon.

[0117] In another example, the media guidance application may retrieve the visual property of an icon following an instance of an interface. For example, in response to determining that a user has closed an interface, the media guidance application (e.g., via control circuitry 304 (FIG. 3)) may update the visual properties associated with various icons. In another example, the media guidance application may retrieve the visual properties of the icons periodically or maintain a continuous update of the visual properties of the icons.

[0118] In some embodiments, the media guidance application may store the visual properties of one or more icons locally (e.g., at storage 308 (FIG. 3) of user equipment devices 402, 404, and/or 406 (FIG. 4)) or remotely (e.g., at media guidance data source 418 (FIG. 4) and/or any other location accessible via communications network 414 (FIG. 4)). For example, the media guidance application may store the current visual properties associated with each icon in a lookup table database. The media guidance application may then cross-reference the database in order to retrieve the visual properties of an icon. Additionally, the media guidance application may edit the records associated with a particular icon in response to determining that the record is out-of-date or that the visual properties

associated with the particular icon have been changed (e.g., in response to a change in the frequency of use).

[0119] At step 604, the media guidance application determines whether or not to retrieve a threshold frequency based on a number of times the icon was selected. For example, each time an interface (e.g., interface 200 (FIG. 2A)) or a particular menu (e.g., menu 126 (FIG. 1B)) on the interface is accessed, the media guidance application may record whether or not a particular icon (e.g., icon 128 (FIG. 1B)) was also selected by a user. The number of times the icon was selected relative to a number of times the interface was previously accessed (e.g., represented as a ratio, percentage, etc.) may then be used to determine a frequency of use of the icon relative to the number of times the interface was previously accessed. For example, as explained above the media guidance application may determine a frequency of use for a particular icon through a variety of techniques. The media guidance application (e.g., via control circuitry 304 (FIG. 3)) may also select a threshold frequency that correspond to the technique used to determine the frequency of use. For example, if the media guidance application calculates (e.g., via control circuitry 304 (FIG. 3)) the frequency of use in terms of number of times the icon was selected relative to a number of times the interface was previously accessed, the media guidance application may also select a threshold frequency that identifies the number of times that the icon needs to be selected relative to the number of times the interface is accessed before modifying the visual properties of the icon.

[0120] If the media guidance application determines to retrieve a threshold frequency based on a number of times the icon was selected, the media guidance application proceeds to step 606 and determines frequency of use based on the number of times the icon has been selected relative to the number of times the interface was previously accessed. For example, the media guidance application may store (e.g., at storage 308 (FIG. 3)) the number of times (e.g., as determined by a counter component incorporated into and/or accessible by control circuitry 304 (FIG. 3)) a user request (e.g., received via user input interface 310 (FIG. 3)) for an icon (e.g., icon 204 (FIG. 2A)) was received while an interface (e.g., interface 200 (FIG. 2A)) featuring the icon was generated for display. After which, the media guidance application proceeds to step 616.

[0121] If the media guidance application determines not to retrieve a threshold frequency based on a number of times the icon was selected, the media guidance application proceeds to step 608. At step 608, the media guidance application determines whether or not to retrieve a threshold frequency based on the length of time that the icon was not selected while the interface was presented. For example, the media guidance application (e.g., via control circuitry 304 (FIG. 3)) may select a threshold frequency that corresponds to the length of time that the icon was not selected while the interface was presented. For example, if the media guidance application calculates (e.g., via control circuitry 304 (FIG. 3)) the frequency of use in terms of the length of time (e.g., via a clock component incorporated into and/or accessible by control

circuitry 304 (FIG. 3)) that the icon was not selected while the interface was presented, the media guidance application may also select a threshold frequency that identifies the maximum length of time that the icon needs to be selected within, relative to the amount of time that the interface is accessed, before modifying the visual properties of the icon.

[0122] If the media guidance application determines to retrieve a threshold frequency based on the length of time that the icon was not selected while the interface was presented, the media guidance application proceeds to step 610. For example, the media guidance application may retrieve (e.g., from storage 308 (FIG. 3) and/or any location accessible via communications network 414 (FIG. 4)) a maximum a length of time (e.g., as measured by a clock component incorporated into and/or accessible by control circuitry 304 (FIG. 3)) before which a user request (e.g., received via user input interface 310 (FIG. 3)) for an icon (e.g., icon 204 (FIG. 2A)) may be received while an interface (e.g., interface 200 (FIG. 2A)) featuring the icon was generated for display.

[0123] At step 610, the media guidance application determines a frequency of use based on the length of time that the icon has not been selected while the interface was presented at one or more previous times. For example, each time an interface (e.g., interface 200 (FIG. 2A)) or a particular menu (e.g., menu 126 (FIG. 1C)) on the interface is accessed, the media guidance application may clock how long the icon (e.g., icon 204 (FIG. 2A)) was presented without receiving a selection by a user. Additionally, the media guidance application may toll the running of the clock when the

interface featuring the icon is not displayed and resume the clock the next time the interface is accessed. After the media guidance application presents the icon for a particular amount of time (e.g., thirty minutes) without receiving a user selection, the media guidance application may adjust the visual properties of the icon relative to the interface and/or other icons on the interface.

[0124] At step 612, the media guidance application retrieves a default threshold frequency. For example, the media guidance application may determine (e.g., via control circuitry 304 (FIG. 3)) a threshold frequency based on any suitable technique as described herein. After determining the default threshold frequency, the media guidance application proceeds to step 614, and the media guidance application determines the frequency of use based on a metric associated with the default threshold frequency. For example, the media guidance application (e.g., via control circuitry 304 (FIG. 3)) may compare how often a particular icon (e.g., icon 204 (FIG. 2A)) is selected versus how often a different icon (e.g., icon 218 (FIG. 2A)) on the same or different interface, menu, etc. is selected. For example, the media guidance application may automatically remove, replace, etc. an icon associated with the lowest frequency of use on any one interface.

[0125] At step 616, the media guidance application determines if the frequency threshold corresponds to the threshold of use of the icon. For example, in some embodiments, step 616 may correspond to step 506 (FIG. 5)). As described above, the media guidance application may compare (e.g., via control circuitry 304 (FIG. 3)) one or more frequencies of use of the

icon (e.g., associated with one or more of the various measurement techniques discussed above) with one or more threshold frequencies. For example, the media guidance application may compare the frequency of use of each icon (e.g., icons 202 (FIG. 2A)) to one or more threshold frequencies.

[0126] For example, the media guidance application may compare (e.g., via control circuitry 304 (FIG. 3)) a first icon (e.g., icon 204 (FIG. 2A)) to a first threshold frequency (e.g., associated with an semi-transparent opaqueness). The media guidance application may also compare a second icon (e.g., icon 218 (FIG. 2A)) to the first threshold frequency. Additionally or alternatively, the media guidance application may compare the second icon (e.g., icon 218 (FIG. 2A)) to a second threshold frequency (e.g., associated with removing the icon from interface 200 (FIG. 2A)).

[0127] If the frequency threshold corresponds to the threshold of use of the icon, the media guidance application proceeds to step 618. For example, if the frequency of use associated with an icon (e.g., icon 204 (FIG. 2A)) is three selections every ten times an interface (e.g., interface 200 (FIG. 2A) featuring the icon is generated for display, and the threshold frequency is associated with less than four selections every ten times an interface featuring an icon is generated for display. The media guidance application may determine (e.g., via control circuitry 304(FIG. 3)) that the frequency of use associated with an icon corresponds to the threshold frequency.

[0128] At step 618, the media guidance application cross-references a database to determine an effect of

correspondence on visual property of the icon. For example, in response to determining that a frequency of use associated with a first icon (e.g., currently having a visual property of complete opaqueness) corresponds to a threshold frequency, the media guidance application may cross-reference a database (e.g., stored locally at storage 308 (FIG. 3) or remotely at any location accessible via communications network 414 (FIG. 4)) to determine a particular effect the correspondence may have on the visual properties of the first icon (e.g., modifying the visual property to be semi-opaque). In another example, in response to determining that a frequency of use associated with a second icon (e.g., currently having a visual property of near transparency) corresponds to the same threshold frequency, the media guidance application may cross-reference the database to determine a particular effect the correspondence may have on the visual properties of the second icon (e.g., removal from the interface).

[0129] In some embodiments, the database may also contain additional factors that may affect the modification of a visual property of an icon. For example, the database may include rules related to one or more icons that limit the amount or degree of a modification or the type of modification (or the visual property that may be modified) that can occur to a particular icon. For example, as explained above, in some embodiments, the modification of a visual property of an icon may be incremental. If the database indicates that the particular icon has incremental modification, the media guidance application may restrict any modification in the current value associated with an icon based on an updated frequency

of use to a value adjacent to the current value in the range of values associated with the visual property each time the interface featuring the icon is accessed. In another example, the database may indicate whether or not the visual properties of a particular icon should be modified irrespective of any correspondence with a threshold frequency. For example, the database may indicate that the visual properties of a particular icon (e.g., an icon for a paid advertisement) should not be affected by the frequency of use of the icon.

[0130] At step 620, the media guidance application adjusts the visual property of the icon based on the effect. For example, if the media guidance application receives (e.g., via I/O path 302 (FIG. 3)) an output of the database that indicates that, based on the correspondence of the frequency of use of the particular icon and the threshold frequency how the visual properties of the particular icon should be modified, the media guidance application (e.g., via control circuitry 304 (FIG. 3)) may transmit instructions to adjust the visual properties associated with the particular icon accordingly.

[0131] At step 622, the media guidance application determines whether or not to compare the frequency of use to additional threshold frequencies. For example, in some embodiments, the media guidance application may compare the frequency of use associated with a icon (e.g., icon 128 (FIG. 1B)) to one or more threshold frequencies. In some embodiments, the one or more threshold frequencies may correspond to different visual properties of an icon. For example, if the frequency of use of the icon corresponds to a first threshold frequency, the size of the icon may be

modified. Additionally or alternatively, if the frequency of use of the icon corresponds to a second threshold frequency, the brightness of the icon may be modified.

[0132] In some embodiments, the one or more threshold frequencies may correspond to different amounts or degrees at which the visual properties of an icon are affected. For example, if the frequency of use of the icon corresponds to a first threshold frequency, the size of the icon may be modified by ten percent. Additionally or alternatively, if the frequency of use of the icon corresponds to a second threshold frequency, the size of the icon may be modified by fifty percent.

[0133] If the media guidance application determines to compare the frequency of use to additional threshold frequencies, the media guidance application returns to step 604. If the media guidance application determines not to compare the frequency of use to additional threshold frequencies, the media guidance application proceeds to step 624. At step 624, the media guidance application determines the current visual property of the icon. For example, the media guidance application may execute the adjustments to the visual properties of the icon described in step 620, if any, to the visual properties retrieved in step 602 to determine the current visual properties of icon. In some embodiments, the media guidance application may then store the current visual properties of the icon (e.g., as storage 308 (FIG. 3) and/or any location accessible via communications network 414 (FIG. 4)) for future use.

[0134] It is contemplated that the steps or descriptions of FIG. 6 may be used with any other embodiment of this disclosure. In addition, the steps and descriptions described in relation to FIG. 6 may be done in alternative orders or in parallel to further the purposes of this disclosure. For example, each of these steps may be performed in any order or in parallel or substantially simultaneously to reduce lag or increase the speed of the system or method. Furthermore, it should be noted that any of the devices or equipment discussed in relation to FIGS. 3-4 could be used to perform one of more of the steps in FIG. 6.

[0135] The above-described embodiments of the present disclosure are presented for purposes of illustration and not of limitation, and the present disclosure is limited only by the claims which follow. Furthermore, it should be noted that the features and limitations described in any one embodiment may be applied to any other embodiment herein, and flowcharts or examples relating to one embodiment may be combined with any other embodiment in a suitable manner, done in different orders, or done in parallel. In addition, the systems and methods described herein may be performed in real-time. It should also be noted, the systems and/or methods described above may be applied to, or used in accordance with, other systems and/or methods.

What is Claimed is:

1. A method for customizing functions of media guidance applications, the method comprising:

receiving a user request to access an interface of a media guidance application, wherein the interface includes an icon associated with a function performed by the media guidance application;

determining a frequency of use of the icon, wherein the frequency of use indicates how often the icon was selected when presented to a user at one or more previous times;

comparing the frequency of use to a threshold frequency; and

in response to determining that the frequency of use corresponds to the threshold frequency, modifying a visual property of the icon relative to the interface.

2. The method of claim 1 further comprising removing the icon from the interface in response to determining that the frequency of use corresponds to the threshold frequency.

3. The method of claim 2 further comprising, in response to removing the icon from the interface, including a different icon associated with a different function performed by the media guidance application.

4. The method of claim 2 further comprising, in response to removing the icon from the interface, automatically rearranging other icons in the interface.

5. The method of claim 2, further comprising prompting the user to confirm removal of the icon from the interface.

6. The method of claim 1, wherein modifying the visual property of the icon includes adjusting a brightness or a size of the icon relative to other icons in the interface.

7. The method of claim 1, wherein modifying the visual property of the icon includes decreasing an opaqueness associated with the icon relative to the interface each time the interface is accessed as the frequency of use decreases.

8. The method of claim 1, wherein the frequency of use is based on a number of times that the icon was selected relative to a number of times that the interface was previously accessed.

9. The method of claim 1, wherein the frequency of use is based on a length of time that the icon was not selected while presented to the user at one or more previous times.

10. The method of claim 1, wherein the interface includes a plurality of icons, and wherein each of the plurality of icons is associated with individual visual properties, wherein the individual visual properties are based on a frequency at which each of the plurality of icons is selected by the user.

11. A system for customizing functions of media guidance applications, the system comprising control circuitry configured to:

receive a user request to access an interface of a media guidance application, wherein the interface includes an icon associated with a function performed by the media guidance application;

determine a frequency of use of the icon, wherein the frequency of use indicates how often the icon was selected when presented to a user at one or more previous times;

compare the frequency of use to a threshold frequency; and

in response to determining that the frequency of use corresponds to the threshold frequency, modify a visual property of the icon relative to the interface.

12. The system of claim 11, wherein the control circuitry is further configured to remove the icon from the interface in response to determining that the frequency of use corresponds to the threshold frequency.

13. The system of claim 12, wherein the control circuitry is further configured to include a different icon associated with a different function performed by the media guidance application in response to removing the icon from the interface.

14. The system of claim 12, wherein the control circuitry is further configured to automatically rearrange other icons in the interface in response to removing the icon from the interface.

15. The system of claim 12, wherein the control circuitry is further configured to prompt the user to confirm removal of the icon from the interface.

16. The system of claim 11, wherein the visual property of the icon includes a brightness or a size of the icon relative to other icons in the interface.

17. The system of claim 11, wherein the control circuitry configured to modify the visual property of the icon is further configured to decrease an opaqueness associated with the icon relative to the interface each time the interface is accessed as the frequency of use decreases.

18. The system of claim 11, wherein the frequency of use is based on a number of times that the icon was selected relative to a number of times that the interface was previously accessed.

19. The system of claim 11, wherein the frequency of use is based on a length of time that the icon was not selected while presented to the user at one or more previous times.

20. The system of claim 11, wherein the interface includes a plurality of icons, and wherein each of the plurality of icons is associated with individual visual properties, wherein the individual visual properties are based on a frequency at which each of the plurality of icons is selected by the user.

21. A system for customizing functions of media guidance applications, the system comprising:

means for receiving a user request to access an interface of a media guidance application, wherein the interface includes an icon associated with

a function performed by the media guidance application;

means for determining a frequency of use of the icon, wherein the frequency of use indicates how often the icon was selected when presented to a user at one or more previous times;

means for comparing the frequency of use to a threshold frequency; and

in response to determining that the frequency of use corresponds to the threshold frequency, means for modifying a visual property of the icon relative to the interface.

22. The system of claim 21 further comprising means for removing the icon from the interface in response to determining that the frequency of use corresponds to the threshold frequency.

23. The system of claim 22 further comprising means for including a different icon associated with a different function performed by the media guidance application in response to removing the icon from the interface.

24. The system of claim 22 further comprising means for automatically rearranging other icons in the interface in response to removing the icon from the interface.

25. The system of claim 22 further comprising means for prompting the user to confirm removal of the icon from the interface.

26. The system of claim 21, wherein the means for modifying the visual property of the icon

includes means for adjusting a brightness or a size of the icon relative to other icons in the interface.

27. The system of claim 21, wherein the means for modifying the visual property of the icon includes means for decreasing an opaqueness associated with the icon relative to the interface each time the interface is accessed as the frequency of use decreases.

28. The system of claim 21, wherein the frequency of use is based on a number of times that the icon was selected relative to a number of times that the interface was previously accessed.

29. The system of claim 21, wherein the frequency of use is based on a length of time that the icon was not selected while presented to the user at one or more previous times.

30. The system of claim 21, wherein the interface includes a plurality of icons, and wherein each of the plurality of icons is associated with individual visual properties, wherein the individual visual properties are based on a frequency at which each of the plurality of icons is selected by the user.

31. A method for customizing functions of media guidance applications, the method comprising:

receiving a user request to access an interface of a media guidance application, wherein the interface includes an icon associated with a function performed by the media guidance application, and wherein the interface is generated for display on a display device;

determining a frequency of use of the icon, wherein the frequency of use indicates how often the icon was selected when presented to a user at one or more previous times;

comparing the frequency of use to a threshold frequency; and

in response to determining that the frequency of use corresponds to the threshold frequency, modifying a visual property of the icon relative to the interface on the display device.

32. The method of claim 31 further comprising removing the icon from the interface in response to determining that the frequency of use corresponds to the threshold frequency.

33. The method of claim 32 further comprising in response to removing the icon from the interface, including a different icon associated with a different function performed by the media guidance application.

34. The method of claim 32 or 33 further comprising, in response to removing the icon from the interface, automatically rearranging other icons in the interface.

35. The method of anyone of claims 32-34, further comprising prompting the user to confirm removal of the icon from the interface.

36. The method of any one of claims 31-35, wherein modifying the visual property of the icon includes adjusting a brightness or a size of the icon relative to other icons in the interface.

37. The method of any one of claims 31-36, wherein modifying the visual property of the icon includes decreasing an opaqueness associated with the icon relative to the interface each time the interface is accessed as the frequency of use decreases.

38. The method of any one of claims 31-37, wherein the frequency of use is based on a number of times that the icon was selected relative to a number of times that the interface was previously accessed.

39. The method of any one of claims 31-38, wherein the frequency of use is based on a length of time that the icon was not selected while presented to the user at one or more previous times.

40. The method of any one of claims 31-39, wherein the interface includes a plurality of icons, and wherein each of the plurality of icons is associated with individual visual properties, wherein the individual visual properties are based on a frequency at which each of the plurality of icons is selected by the user.

41. Non-transitory computer readable storage media comprising machine readable instructions for:

receiving a user request to access an interface of a media guidance application, wherein the interface includes an icon associated with a function performed by the media guidance application;

determining a frequency of use of the icon, wherein the frequency of use indicates how often the icon was selected when presented to a user at one or more previous times;

comparing the frequency of use to a threshold frequency; and

in response to determining that the frequency of use corresponds to the threshold frequency, modifying a visual property of the icon relative to the interface.

42. The computer readable storage media of claim 41 further comprising machine readable instructions for removing the icon from the interface in response to determining that the frequency of use corresponds to the threshold frequency.

43. The computer readable storage media of claim 42 further comprising machine readable instructions for including a different icon associated with a different function performed by the media guidance application in response to removing the icon from the interface.

44. The computer readable storage media of claim 42 further comprising machine readable instructions for automatically rearranging other icons in the interface in response to removing the icon from the interface.

45. The computer readable storage media of claim 42 further comprising machine readable instructions for prompting the user to confirm removal of the icon from the interface.

46. The computer readable storage media of claim 41, wherein the visual property of the icon includes a brightness or a size of the icon relative to other icons in the interface.

47. The computer readable storage media of claim 41 further comprising machine readable instructions for decreasing an opaqueness associated with the icon relative to the interface each time the interface is accessed as the frequency of use decreases.

48. The computer readable storage media of claim 41, wherein the frequency of use is based on a number of times that the icon was selected relative to a number of times that the interface was previously accessed.

49. The computer readable storage media of claim 41, wherein the frequency of use is based on a length of time that the icon was not selected while presented to the user at one or more previous times.

50. The computer readable storage media of claim 41, wherein the interface includes a plurality of icons, and wherein each of the plurality of icons is associated with individual visual properties, wherein the individual visual properties are based on a frequency at which each of the plurality of icons is selected by the user.

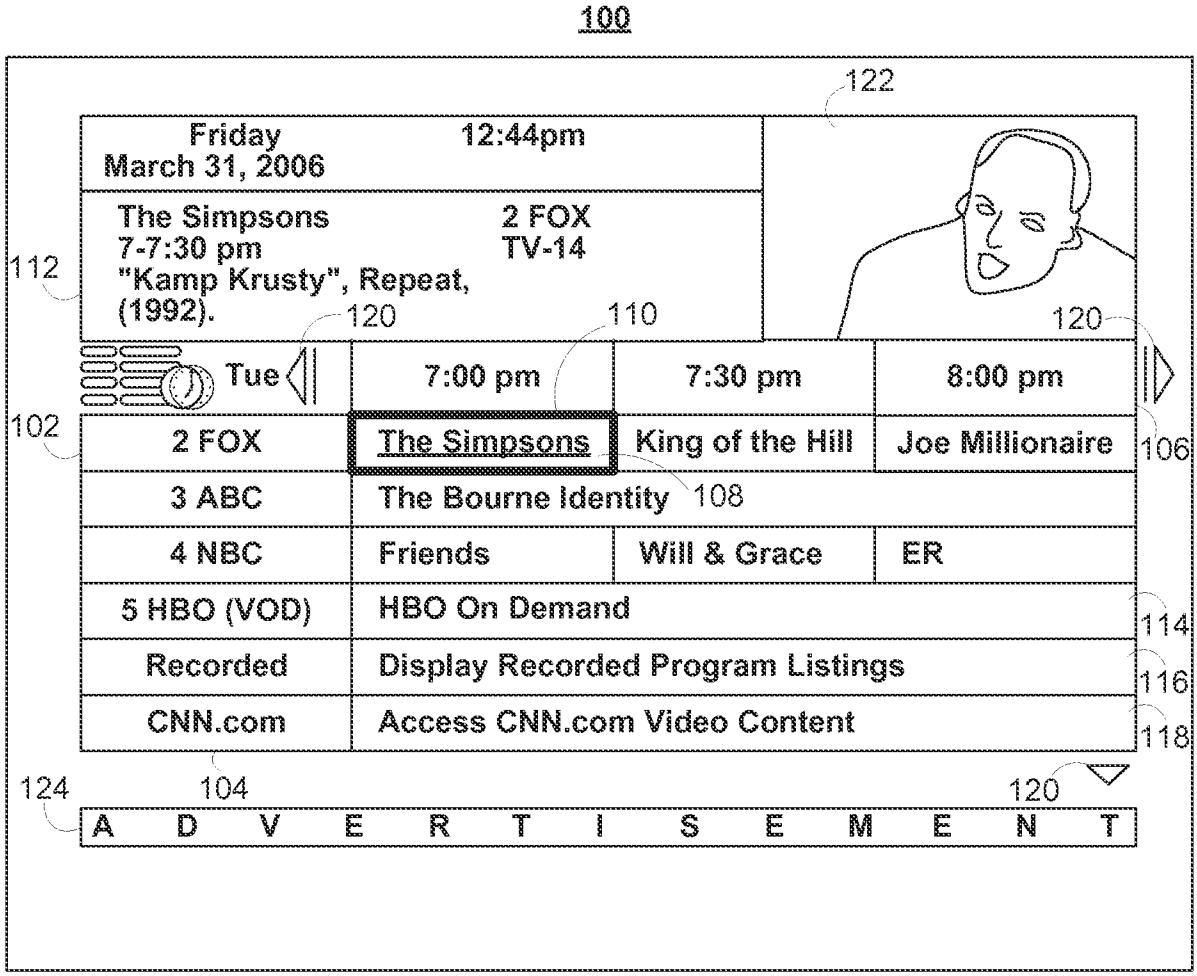

100
122
Friday
March 31, 2006
12:44pm
The Simpsons
7-7:30 pm
"Kamp Krusty", Repeat,
(1992).
2 FOX
TV-14
112
120
110
120
Tue
7:00 pm
7:30 pm
8:00 pm
102
2 FOX
The Simpsons
King of the Hill
Joe Millionaire
106
3 ABC
The Bourne Identity
108
4 NBC
Friends
Will & Grace
ER
5 HBO (VOD)
HBO On Demand
114
Recorded
Display Recorded Program Listings
116
CNN.com
Access CNN.com Video Content
118
124
104
120
ADVERTISEMENT

FIG. 1A

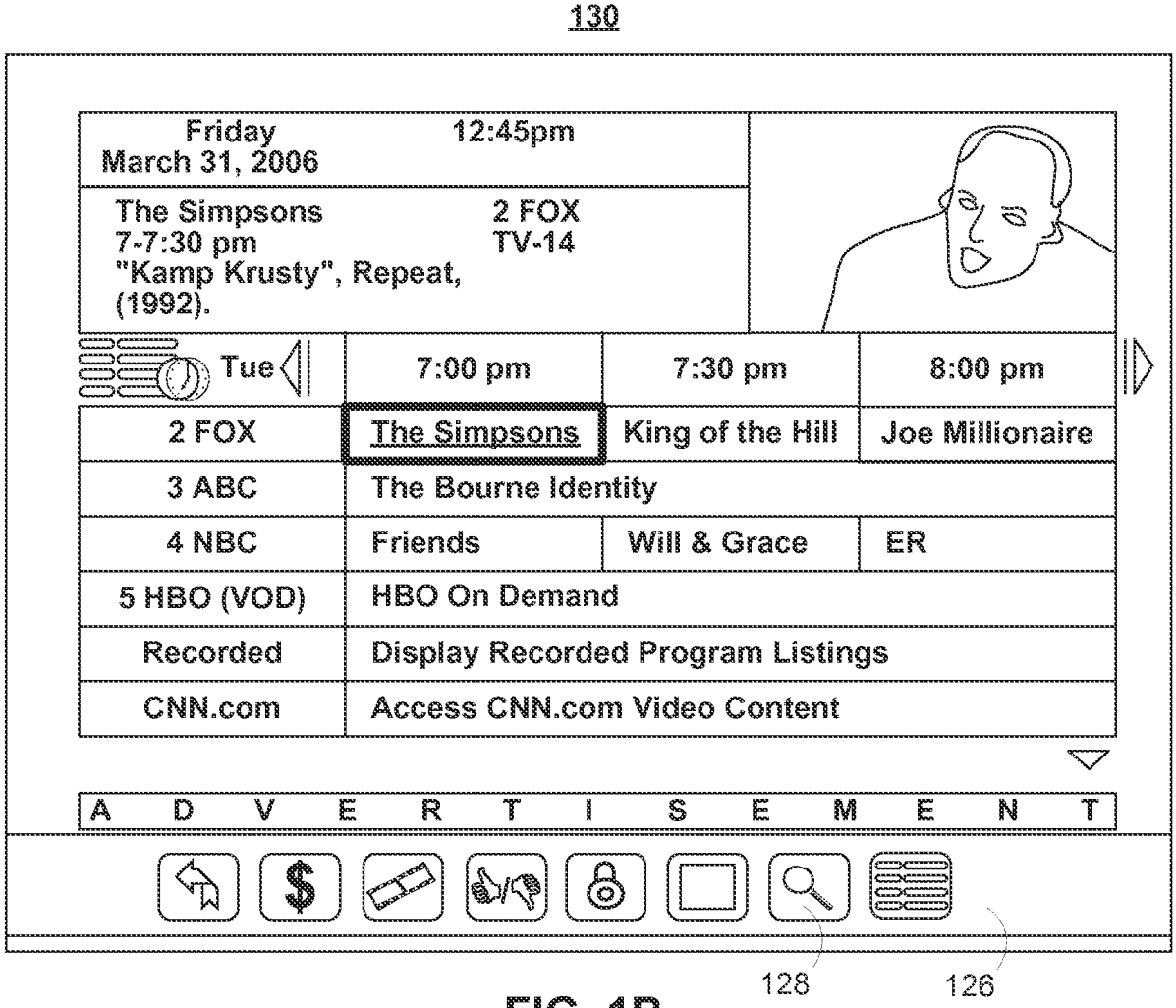

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"Kamp Krusty", Repeat,
(1992).
2 FOX
TV-14
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7:00 pm
7:30 pm
8:00 pm
2 FOX
The Simpsons
King of the Hill
Joe Millionaire
3 ABC
The Bourne Identity
4 NBC
Friends
Will & Grace
ER
5 HBO (VOD)
HBO On Demand
Recorded
Display Recorded Program Listings
CNN.com
Access CNN.com Video Content
A D V E R T I S E M E N T
128
126

FIG. 1B

150

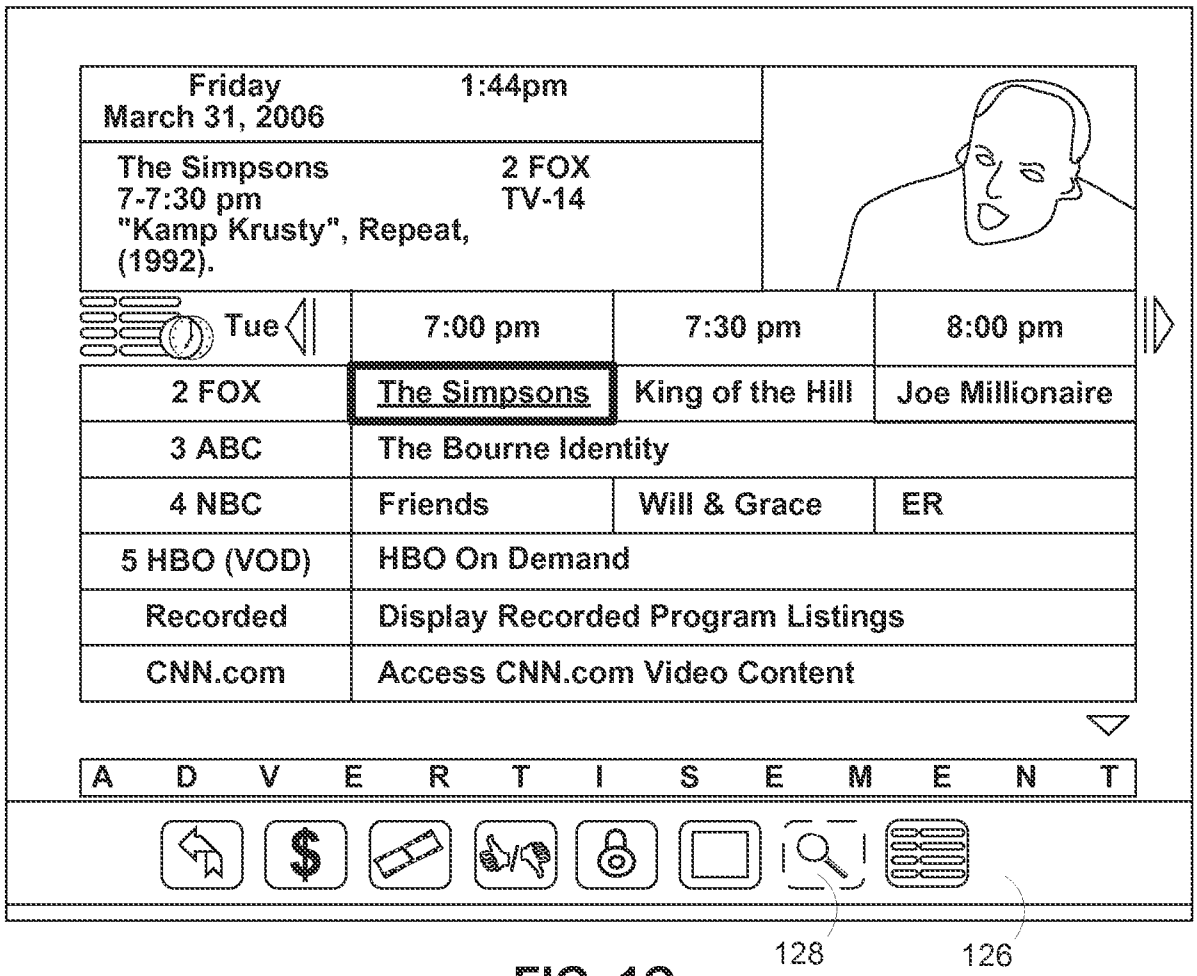

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The Simpsons
7-7:30 pm
"Kamp Krusty", Repeat,
(1992).
2 FOX
TV-14
Tue
7:00 pm
7:30 pm
8:00 pm
2 FOX
The Simpsons
King of the Hill
Joe Millionaire
3 ABC
The Bourne Identity
4 NBC
Friends
Will & Grace
ER
5 HBO (VOD)
HBO On Demand
Recorded
Display Recorded Program Listings
CNN.com
Access CNN.com Video Content
A D V E R T I S E M E N T
128
126

FIG. 1C

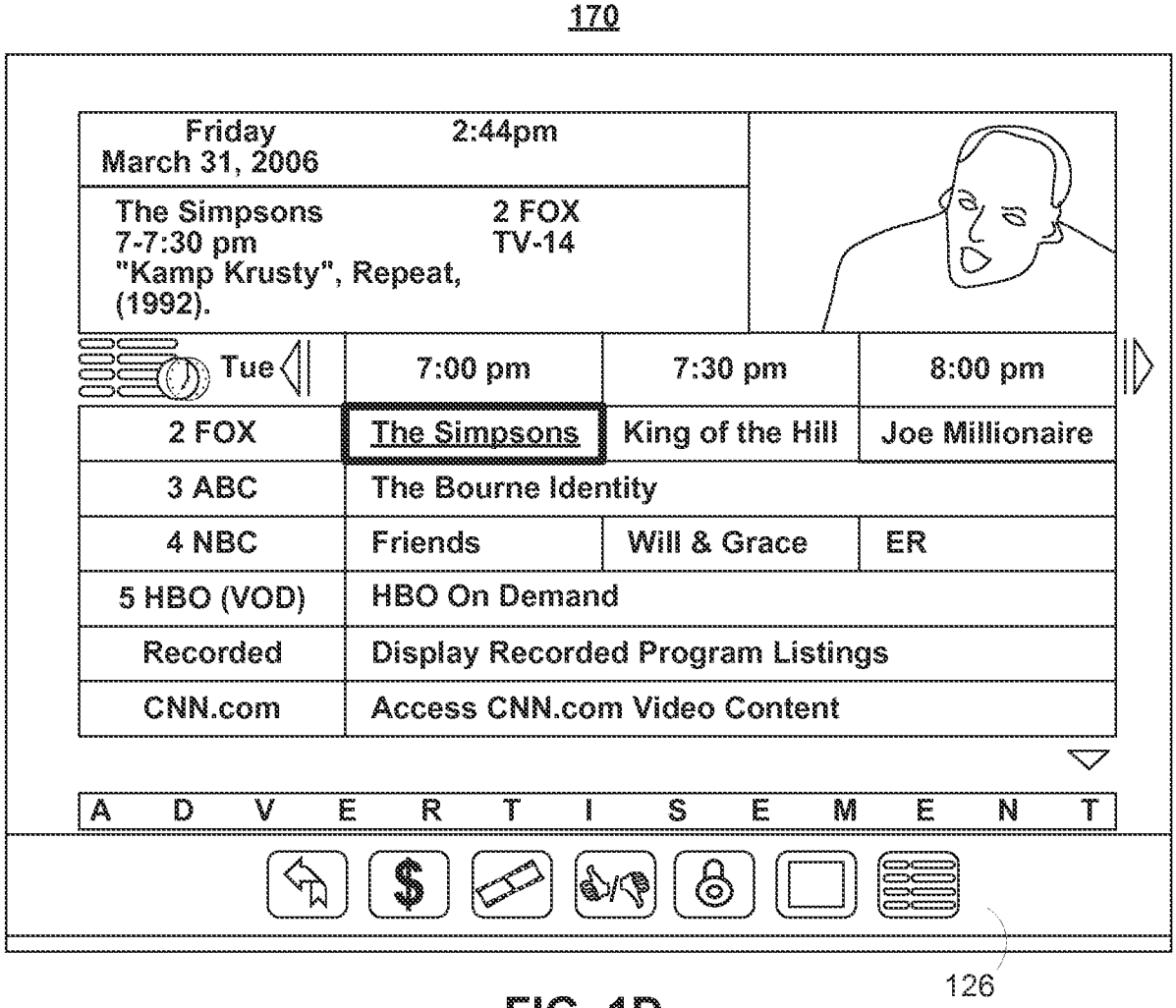

170
Friday
March 31, 2006
2:44pm
The Simpsons
7-7:30 pm
"Kamp Krusty", Repeat,
(1992).
2 FOX
TV-14
Tue
7:00 pm
7:30 pm
8:00 pm
2 FOX
The Simpsons
King of the Hill
Joe Millionaire
3 ABC
The Bourne Identity
4 NBC
Friends
Will & Grace
ER
5 HBO (VOD)
HBO On Demand
Recorded
Display Recorded Program Listings
CNN.com
Access CNN.com Video Content
A D V E R T I S E M E N T
126

FIG. 1D

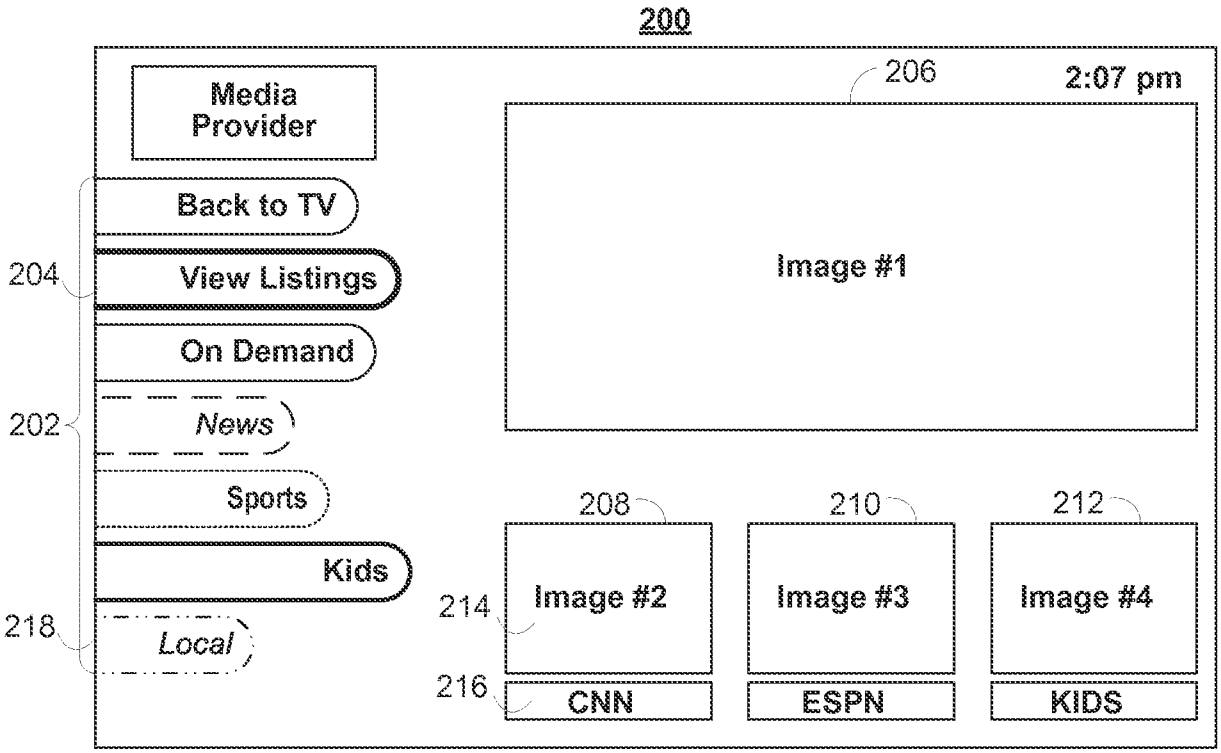

200
Media Provider
Back to TV
View Listings
On Demand
News
Sports
Kids
Local
204
202
218
206
2:07 pm
Image #1
208
210
212
214
Image #2
Image #3
Image #4
216
CNN
ESPN
KIDS

FIG. 2A

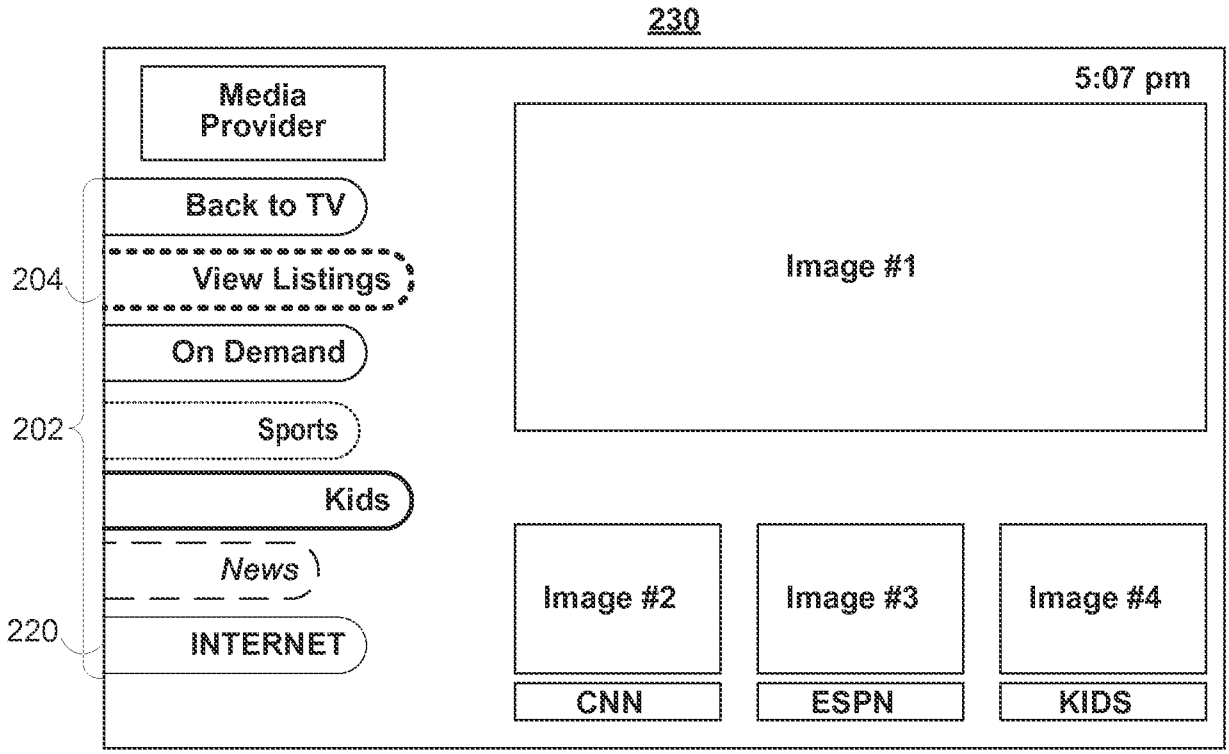

230
Media Provider
5:07 pm
Back to TV
204
View Listings
On Demand
202
Sports
Kids
News
220
INTERNET
Image #1
Image #2
Image #3
Image #4
CNN
ESPN
KIDS

FIG. 2B

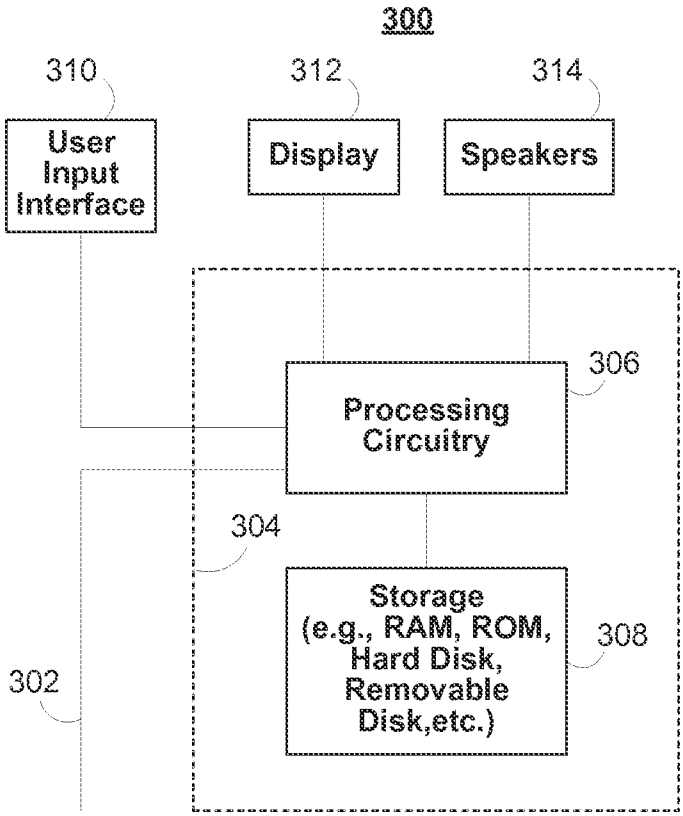

300
310
User Input Interface
312
Display
314
Speakers
306
Processing Circuitry
304
Storage (e.g., RAM, ROM, Hard Disk, Removable Disk,etc.)
308
302

FIG. 3

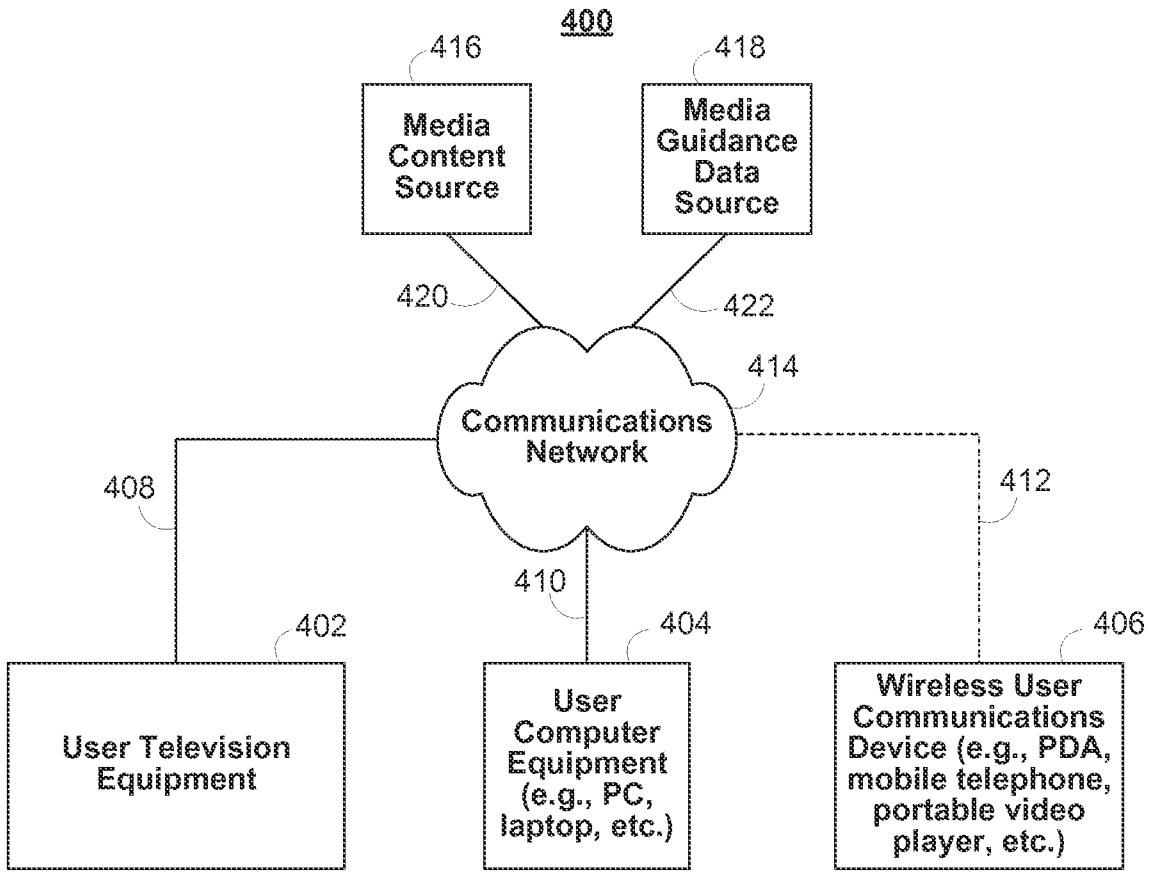

400
416
Media Content Source
418
Media Guidance Data Source
420
422
414
Communications Network
408
412
410
402
404
406
User Television Equipment
User Computer Equipment (e.g., PC, laptop, etc.)
Wireless User Communications Device (e.g., PDA, mobile telephone, portable video player, etc.)

FIG. 4

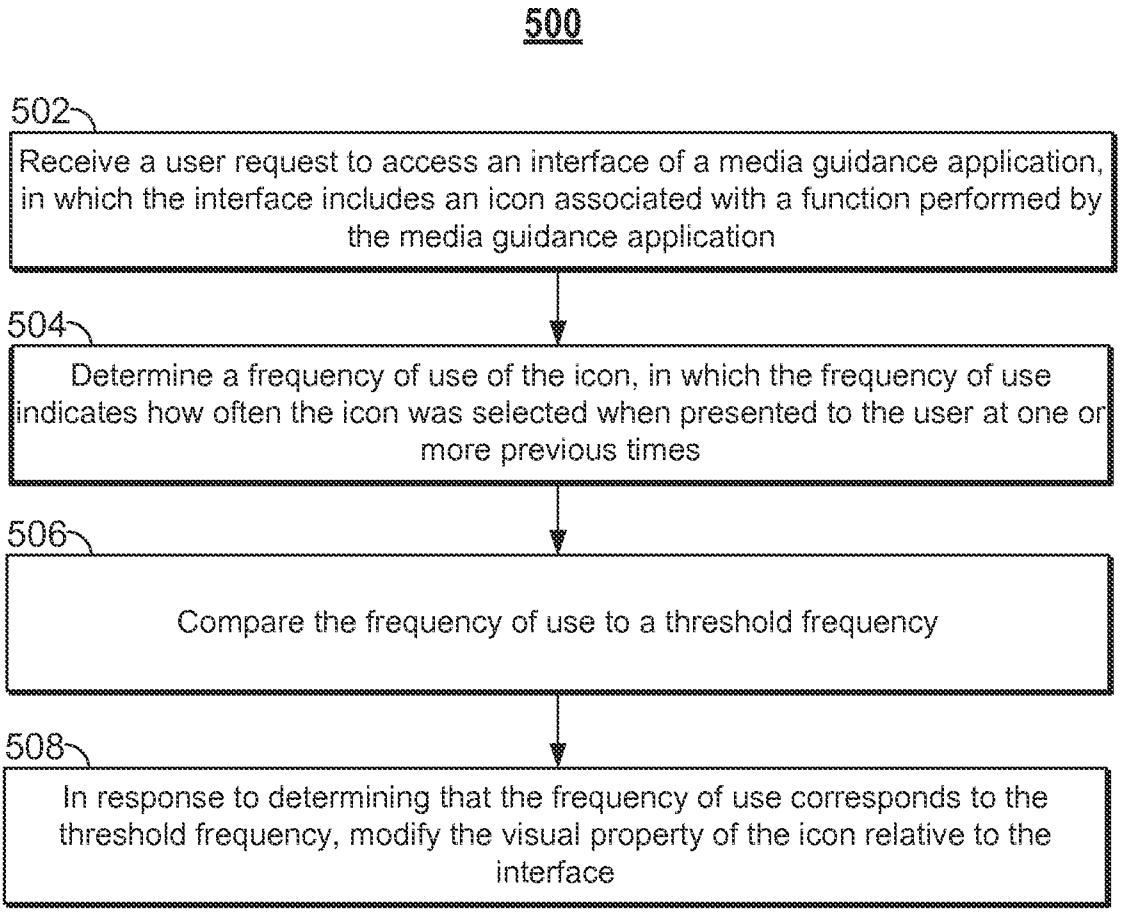

500
502
Receive a user request to access an interface of a media guidance application, in which the interface includes an icon associated with a function performed by the media guidance application
504
Determine a frequency of use of the icon, in which the frequency of use indicates how often the icon was selected when presented to the user at one or more previous times
506
Compare the frequency of use to a threshold frequency
508
In response to determining that the frequency of use corresponds to the threshold frequency, modify the visual property of the icon relative to the interface

FIG. 5

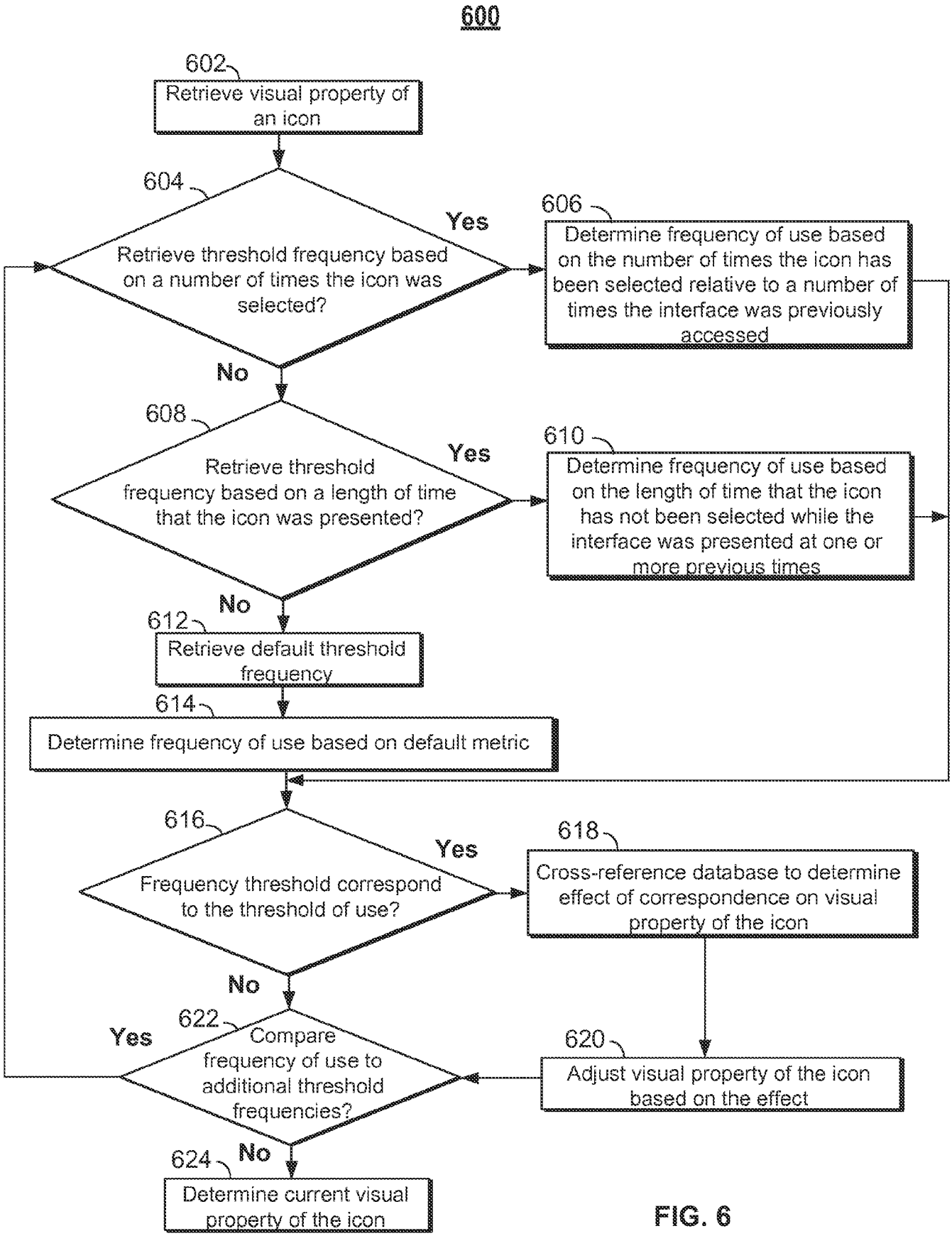

600
602
Retrieve visual property of an icon
604
Retrieve threshold frequency based on a number of times the icon was selected?
Yes
606
Determine frequency of use based on the number of times the icon has been selected relative to a number of times the interface was previously accessed
No
608
Retrieve threshold frequency based on a length of time that the icon was presented?
Yes
610
Determine frequency of use based on the length of time that the icon has not been selected while the interface was presented at one or more previous times
No
612
Retrieve default threshold frequency
614
Determine frequency of use based on default metric
616
Frequency threshold correspond to the threshold of use?
Yes
618
Cross-reference database to determine effect of correspondence on visual property of the icon
No
622
Compare frequency of use to additional threshold frequencies?
Yes
620
Adjust visual property of the icon based on the effect
No
624
Determine current visual property of the icon

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/062119

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04N21/44222 H04N21/4858 H04N21/442 H04N21/488
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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DEBEVC M ET AL: "ADAPTIVE BAR IMPLEMENTATION AND ERGONOMICS", INFORMATICA, SLOVENSKO DRUSTVO INFORMATIKA, SL, vol. 18, no. 3, 1 October 1994 (1994-10-01), pages 357-366, XP009043124, ISSN: 0350-5596 Section 5 "Adaptivity of the bar"; figures 3,4 ----- -/--	1-50

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 December 2014	07/01/2015

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Marzal-Abarca, X

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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2014/062119

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Matjaz Debevc ET AL: "Design and Evaluation of an Adaptive Icon Toolbar", User Modeling and User-Adapted Interaction 6, 1 March 1996 (1996-03-01), pages 1-21, XP55073152, Netherlands Retrieved from the Internet: URL:http://rd.springer.com/content/pdf/10.1007/BF00126652.pdf [retrieved on 2013-07-26] Section 2 "Functioning of the adaptive bar"; figures 1,2	1-50
X	US 2013/268876 A1 (CHO SIE-JOON [KR] ET AL) 10 October 2013 (2013-10-10) paragraph [0038] - paragraph [0095]; figures 1-4	1-50
X	EP 2 400 732 A1 (LG ELECTRONICS INC [KR]) 28 December 2011 (2011-12-28) paragraph [0125]; figure 8	1-50

4

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2014/062119

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2013268876 A1	10-10-2013	KR 20130112629 A	14-10-2013
		US 2013268876 A1	10-10-2013
		WO 2013151331 A1	10-10-2013
EP 2400732 A1	28-12-2011	CN 102298490 A	28-12-2011
		EP 2400732 A1	28-12-2011
		KR 20110139857 A	30-12-2011
		US 2011320977 A1	29-12-2011