(12) UK Patent Application (19) GB (11) 2463485 (13) A

(43) Date of A Publication 17.03.2010

(21) Application No: 0816715.7

(22) Date of Filing: 12.09.2008

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(51) INT CL:
H04N 5/445 (2006.01) ***G06F 17/30*** (2006.01)

(56) Documents Cited:
WO 2007/090173 A2 **WO 1998/017064 A1**
US 6499057 B1

(58) Field of Search:
INT CL **G06F, H04N**
Other: **Online: WPI, EPODOC**

(54) Abstract Title: **Providing Access to Additional Content During Playback of Video Sequences**

(57) Providing access to additional content, comprising dynamic image content, during playback of video sequences. The sequences comprise a keyed video sequence including an embedded sub-image itself comprising display keys of different formats. The different format of keys consist of a sequence of characters belonging to different character sets, each corresponding to different key entry mechanisms respectively. The sequence is played back at a user terminal (118) and a user selected key entry comprising one of the display keys is collected from an input device (130, 132). Data representing the selected key is communicated to a remote system (124), to enable the remote system to resolve the key to identify an associated link to additional content (122). Data is received from the remote system comprising data representing the link. The additional content associated with the selected key is accessed in response to the entry of the selected key and the receipt of the data representing the link.

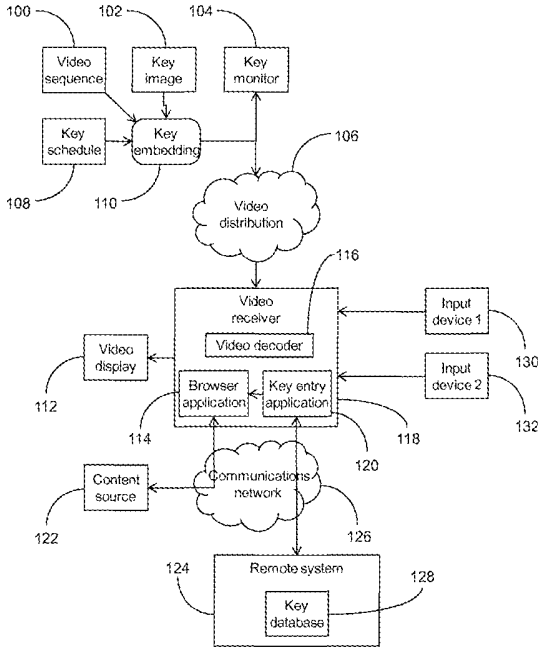

FIG. 1

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

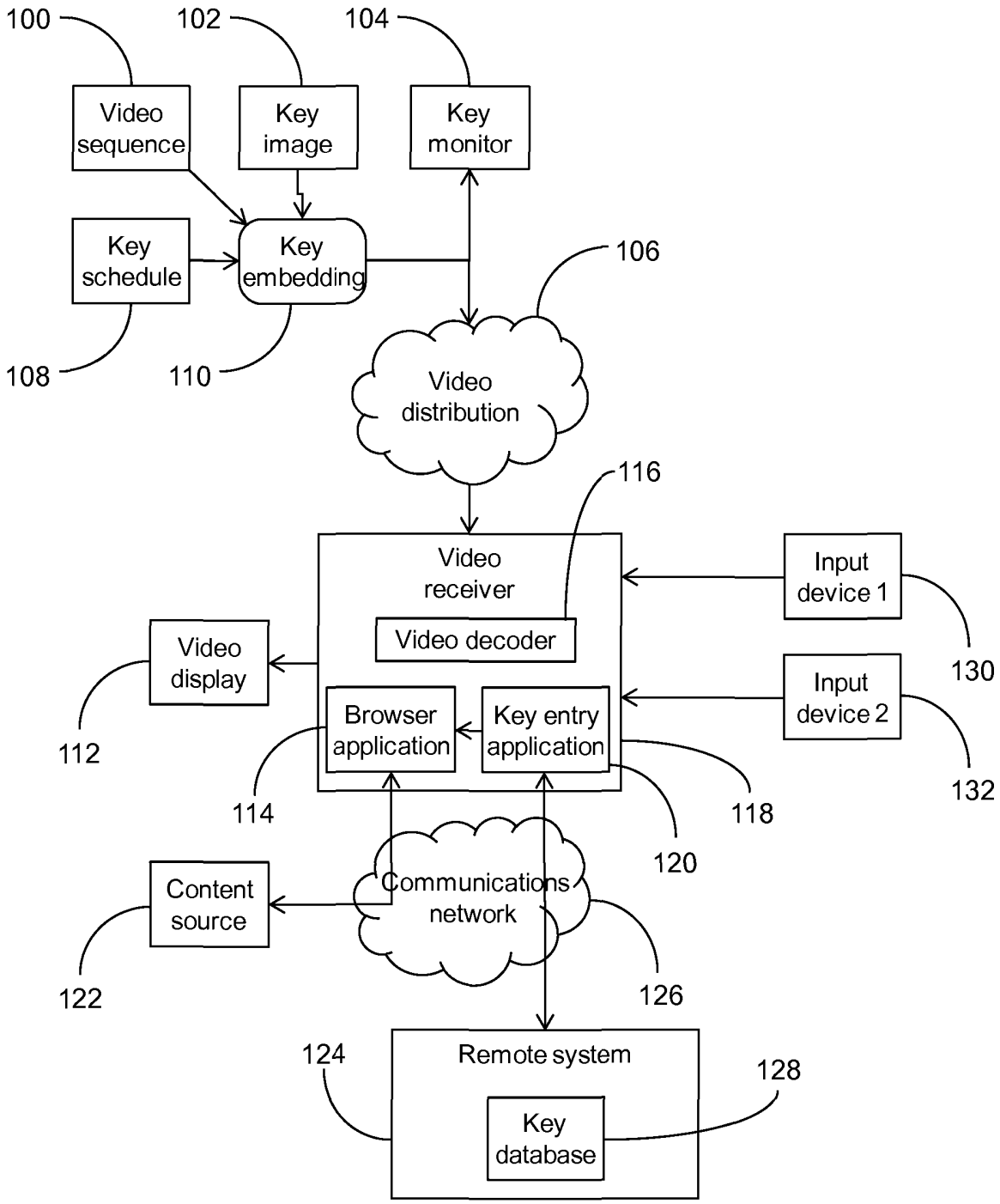
100
102
104
Video sequence
Key image
Key monitor
Key schedule
Key embedding
106
108
110
Video distribution
116
Video receiver
Video decoder
Input device 1
Video display
130
Input device 2
Browser application
Key entry application
112
114
118
132
120
Content source
Communications network
122
126
124
Remote system
128
Key database

FIG. 1

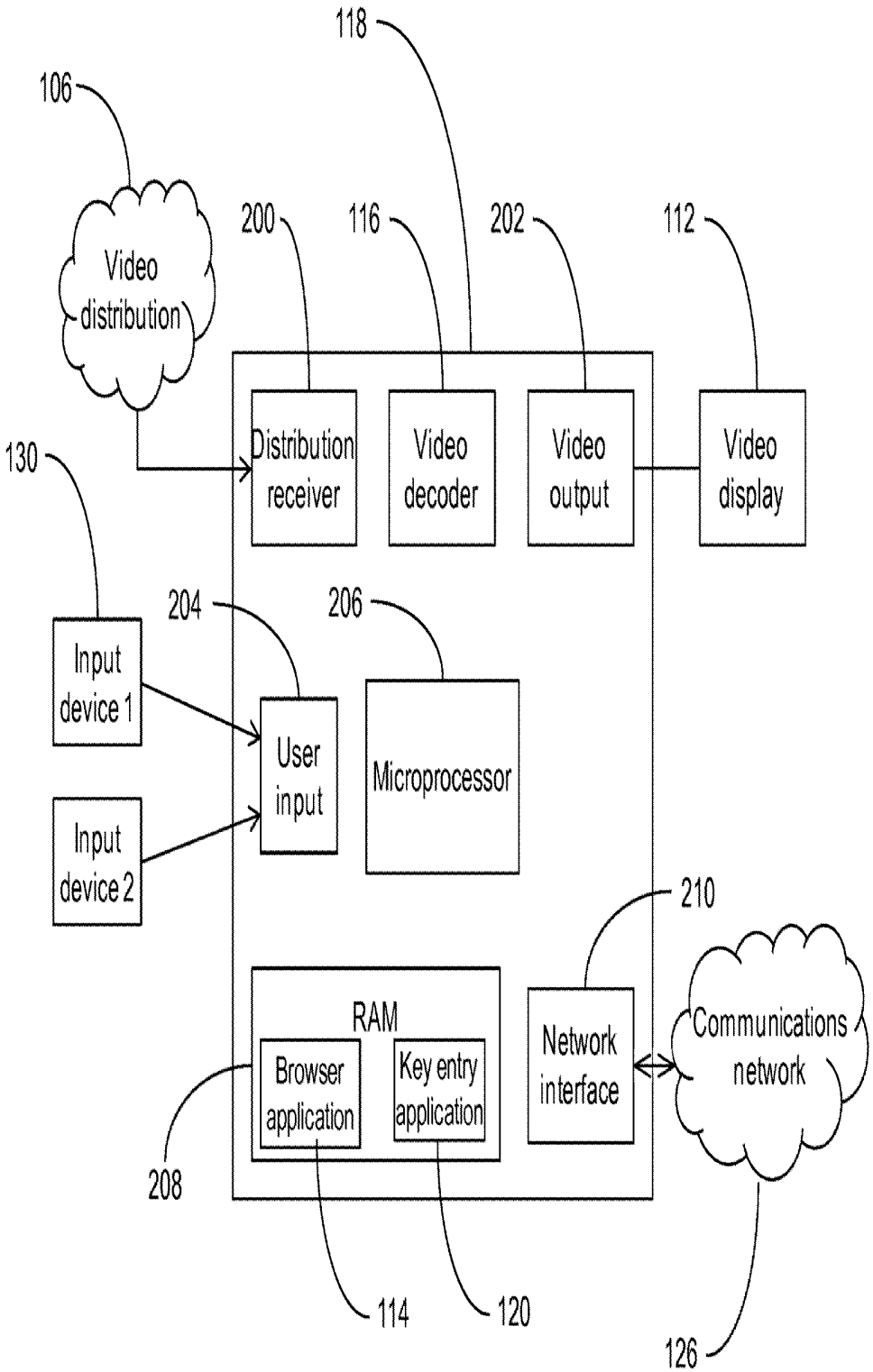
118
106
Video distribution
200
116
202
112
Distribution receiver
Video decoder
Video output
Video display
130
204
206
Input device 1
User input
Microprocessor
Input device 2
210
RAM
Browser application
Key entry application
Network interface
Communications network
208
114
120
126

FIG. 2

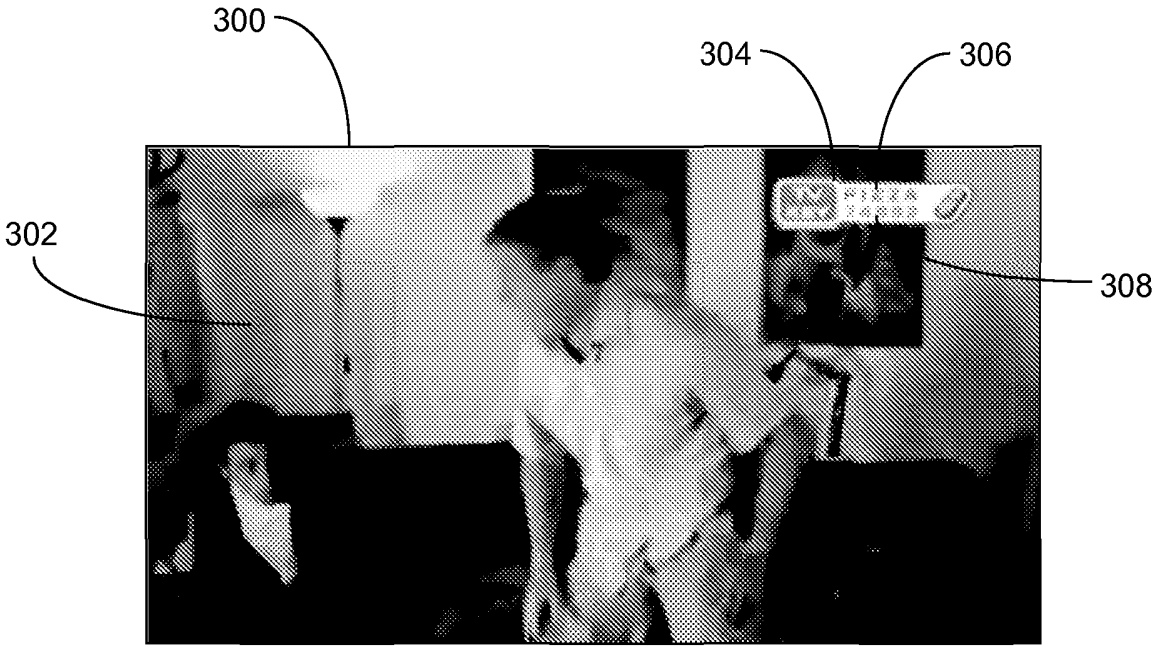

FIG. 3

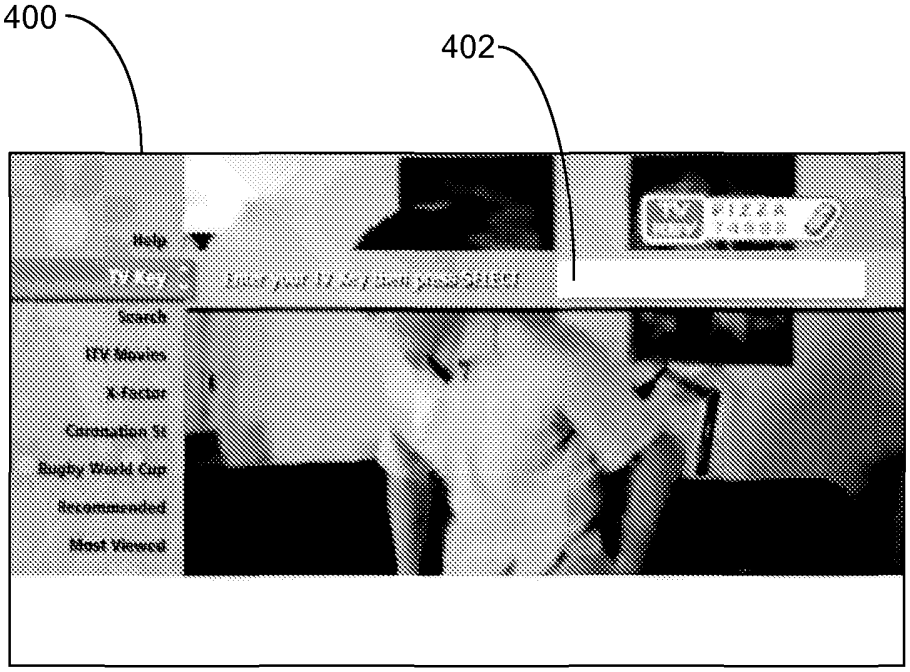

FIG. 4

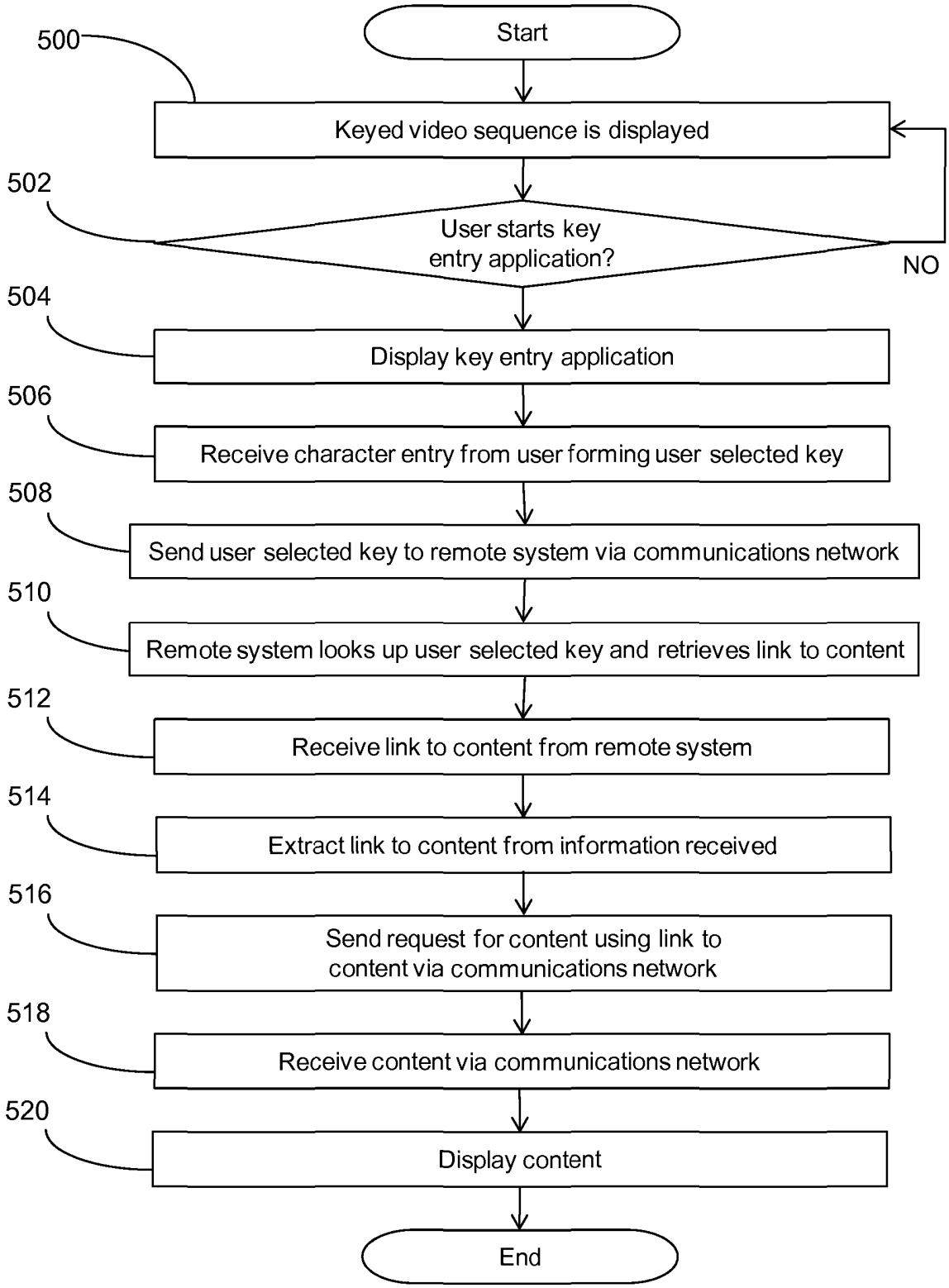
Start
500
Keyed video sequence is displayed
502
User starts key entry application?
NO
504
Display key entry application
506
Receive character entry from user forming user selected key
508
Send user selected key to remote system via communications network
510
Remote system looks up user selected key and retrieves link to content
512
Receive link to content from remote system
514
Extract link to content from information received
516
Send request for content using link to content via communications network
518
Receive content via communications network
520
Display content
End

FIG. 5

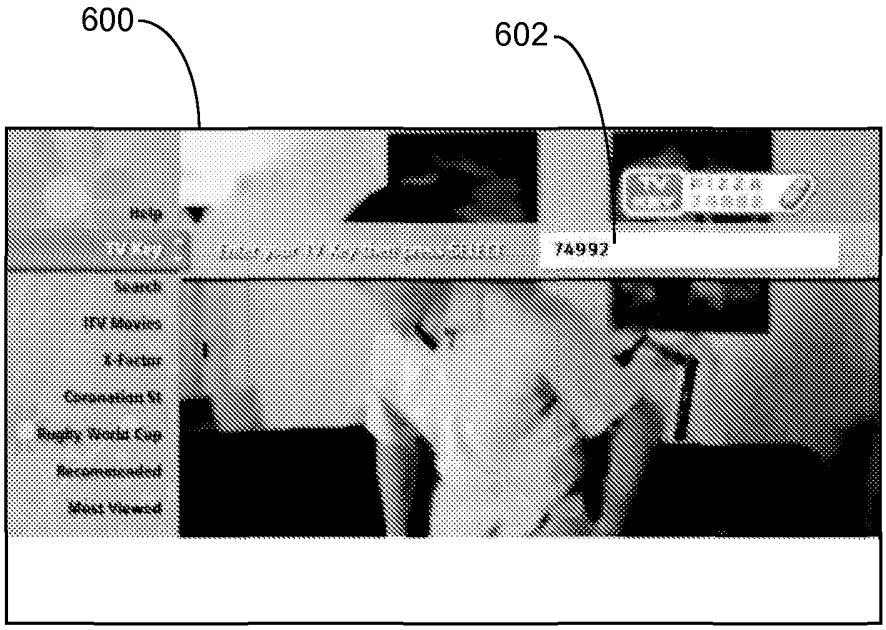

FIG. 6A

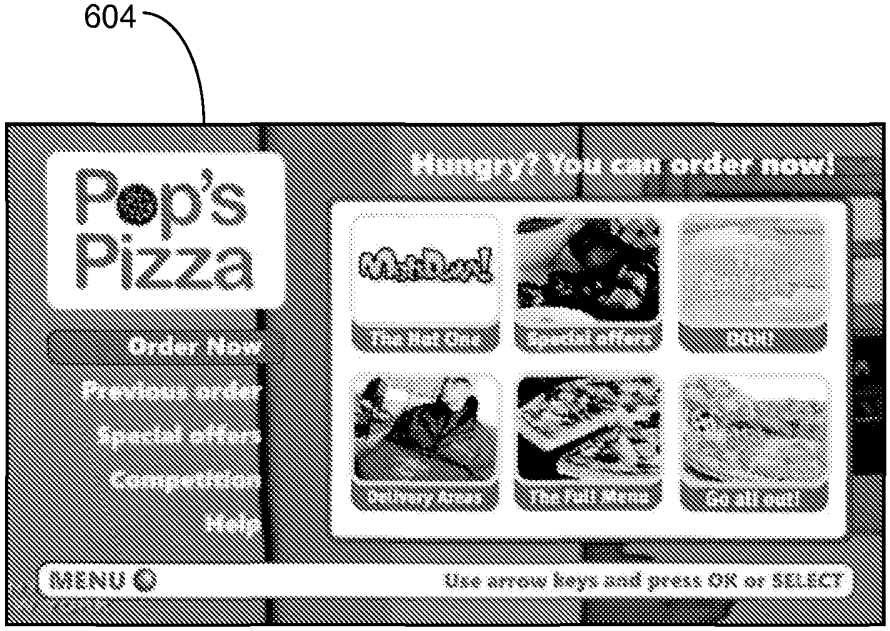

FIG. 6B

First format key	Second format key	Link to content
4653	golf	www.standrews.org.uk
46835	hotel	www.theritzlondon.com
46873	house	www.findaproperty.com
74992	pizza	www.pizza.com

FIG. 6C

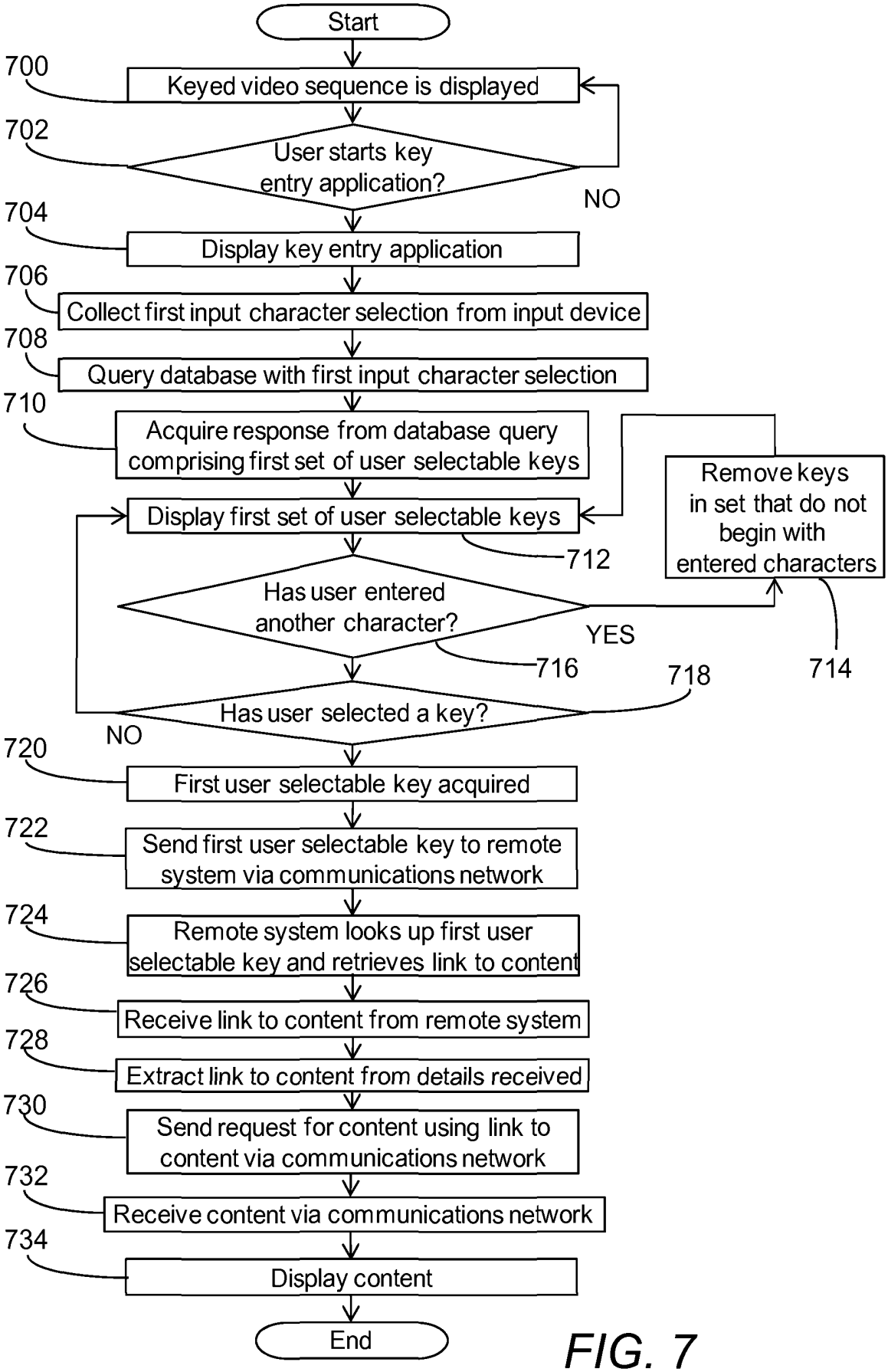
Start
700
Keyed video sequence is displayed
702
User starts key entry application?
NO
704
Display key entry application
706
Collect first input character selection from input device
708
Query database with first input character selection
710
Acquire response from database query comprising first set of user selectable keys
Remove keys in set that do not begin with entered characters
Display first set of user selectable keys
712
Has user entered another character?
YES
716
714
718
Has user selected a key?
NO
720
First user selectable key acquired
722
Send first user selectable key to remote system via communications network
724
Remote system looks up first user selectable key and retrieves link to content
726
Receive link to content from remote system
728
Extract link to content from details received
730
Send request for content using link to content via communications network
732
Receive content via communications network
734
Display content
End

FIG. 7

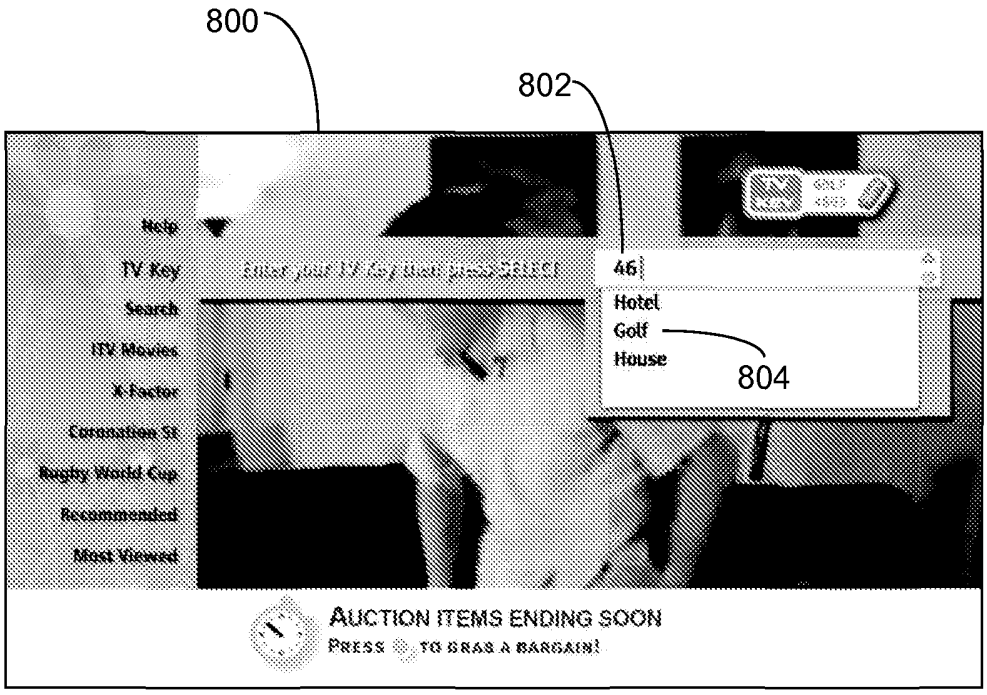
800
802
Help
TV Key
Search
ITV Movies
X Factor
Coronation St
Rugby World Cup
Recommended
Most Viewed
46
Hotel
Golf
House
804
AUCTION ITEMS ENDING SOON

FIG. 8

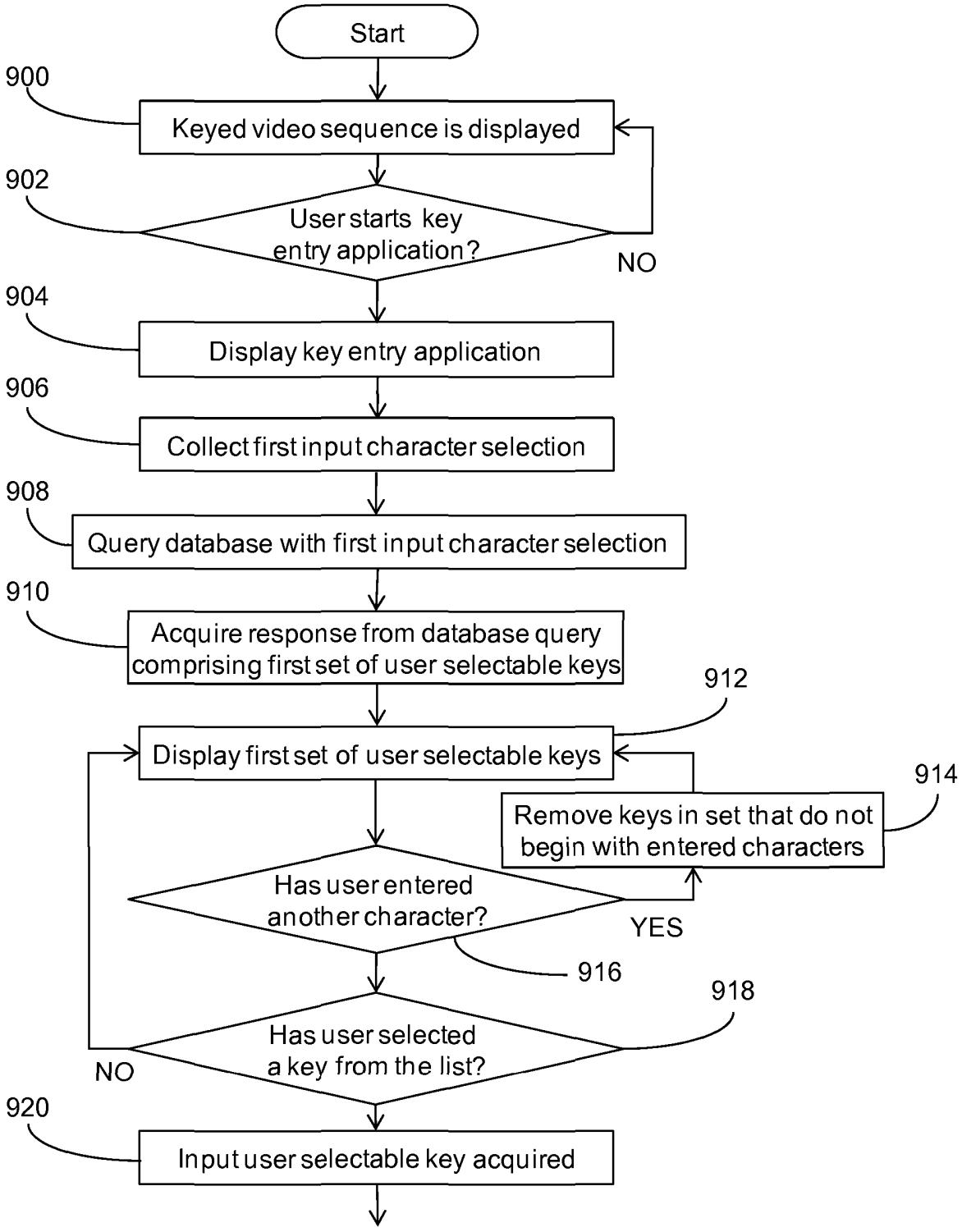
Start
900
Keyed video sequence is displayed
902
User starts key entry application?
NO
904
Display key entry application
906
Collect first input character selection
908
Query database with first input character selection
910
Acquire response from database query comprising first set of user selectable keys
912
Display first set of user selectable keys
914
Remove keys in set that do not begin with entered characters
Has user entered another character?
YES
916
918
Has user selected a key from the list?
NO
920
Input user selectable key acquired

FIG. 9

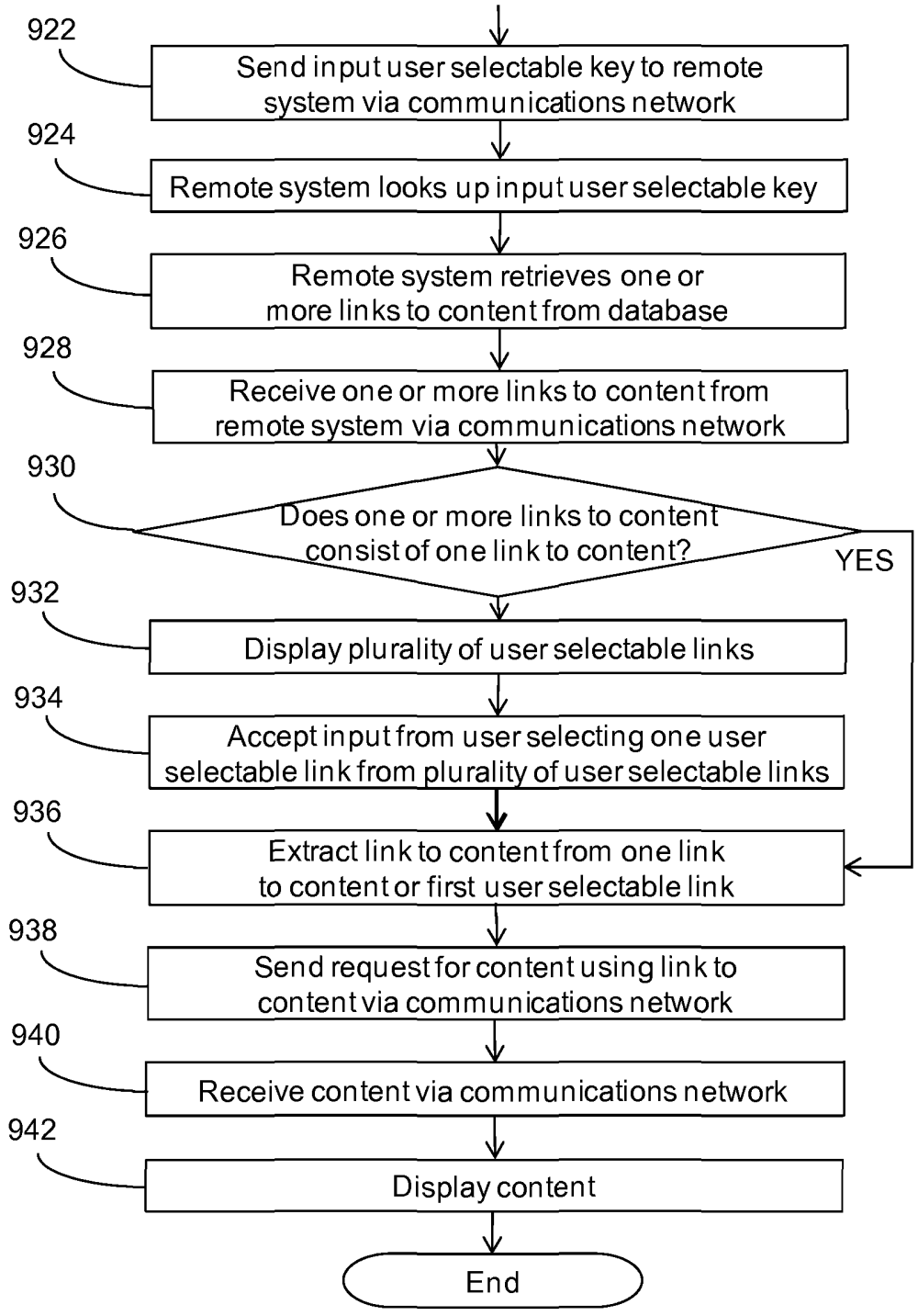
922
Send input user selectable key to remote system via communications network
924
Remote system looks up input user selectable key
926
Remote system retrieves one or more links to content from database
928
Receive one or more links to content from remote system via communications network
930
Does one or more links to content consist of one link to content?
YES
932
Display plurality of user selectable links
934
Accept input from user selecting one user selectable link from plurality of user selectable links
936
Extract link to content from one link to content or first user selectable link
938
Send request for content using link to content via communications network
940
Receive content via communications network
942
Display content
End

FIG. 9 con't

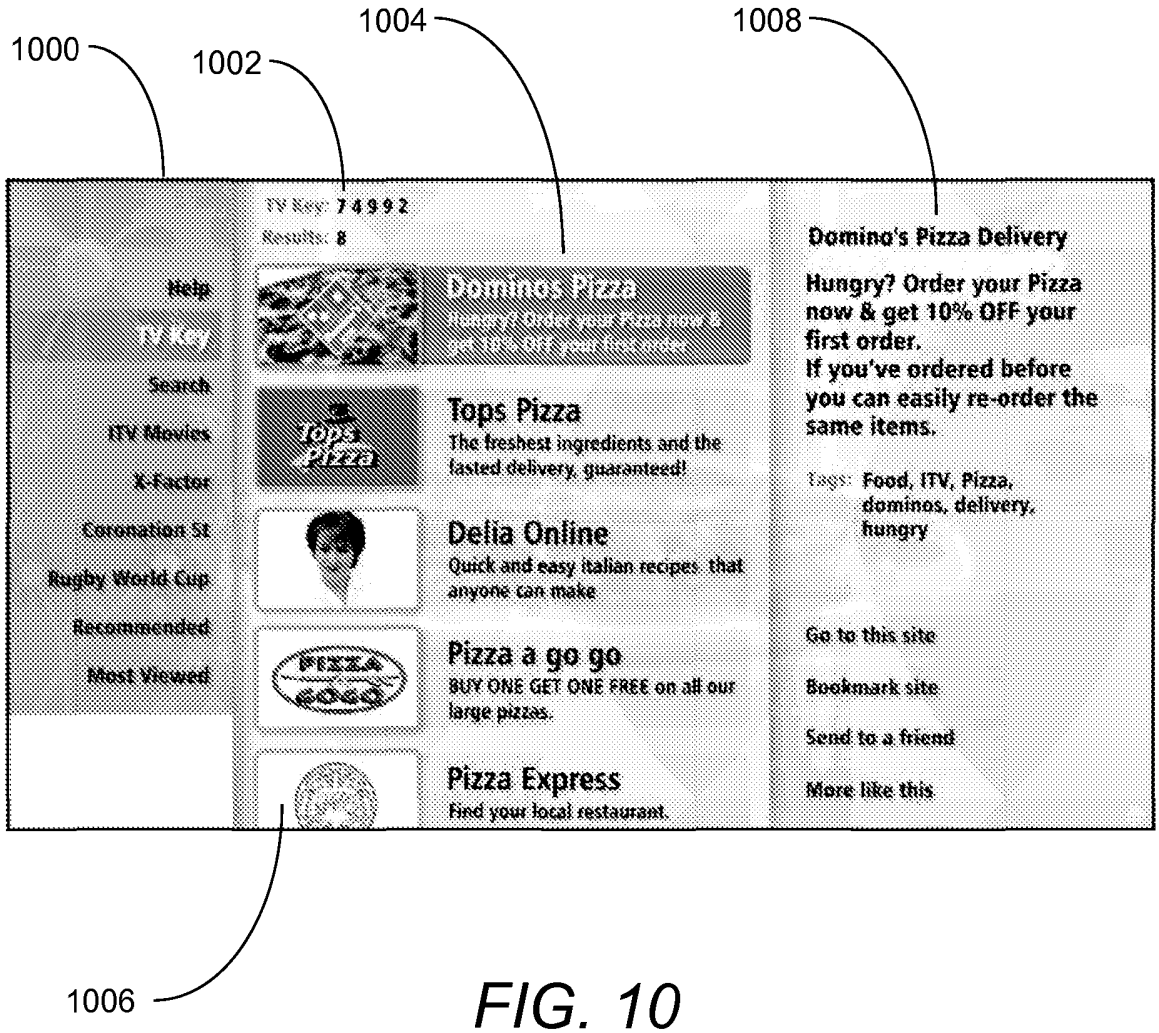

FIG. 10

Method and apparatus for providing access to additional content during playback of video sequences

Field of the Invention

The present invention relates to a method and apparatus for providing access to additional content during playback of video sequences which, when received, comprise dynamic image content.

Background of the Invention

Methods for providing access to additional content during playback of video sequences are known where an indication is displayed by the video playback device in order to present a link to the additional content. The indication may be in the form of, for example, a prompt presented to the viewer during a video sequence indicating that additional content can be accessed by pressing a particular button on an input device, or the indication may be a viewer selectable link that forms part of the video sequence such as a hyperlink that overlays a portion of the video sequence. Such methods allow the viewer to conveniently access additional content related to the video sequence that is being presented.

However the methods for accessing additional content during playback of video sequences outlined above require complex techniques for presenting a suitable indication to a viewer at an appropriate time during playback. These methods require means for transmitting a trigger to a playback device that are specific to the capabilities of the video distribution technique and video receiver used. For example, a video sequence distributed via a terrestrial digital television broadcast may have trigger data embedded in the broadcast indicating that an indication may be presented to the user, and may indicate the location of the additional content to which the video receiver may be directed if the user wishes to access this additional content. The video receiver must be able to interpret the trigger data transmitted as part of the video distribution that indicates that an indication should be presented to the user and as a result

present a prompt to the user on a video display. Finally where the video sequence is recorded, a video recorder may not be able to record the trigger data transmitted as part of the broadcast to allow access to the additional content on subsequent playback after recording.

Accommodating new trigger transmission techniques for every combination of existing video distribution technique and video receiver requires significant complexity on the video receiver. Additionally, accounting for the variety of triggering mechanisms places a heavy burden on those who wish to insert triggers for additional content into a video sequence before distribution via a variety of distribution techniques.

US patent publication number 2005/0015817 A1 is an example of a technique for providing access to additional content during playback of a video sequence where the video sequence is distributed via a specific distribution method, in this case via terrestrial analogue television broadcast. Additionally there is described a receiver that is able to record in a storage medium broadcast data relating to the appearance of a trigger for additional content during the video sequence, as well as the video sequence itself. This technique falls into the category of a specialised method for a particular video distribution technique and video receiver however, and hence it suffers from the same problems as other techniques in this category as highlighted above.

PCT publication number 2002/056590 A1 describes a video receiver comprising means for receiving television signals containing additional information data to allow the representation of an interactive image for display. The interactive image comprises a number of viewer-selectable items each associated with additional content, the receiver being responsive to viewer manipulation of an input device for selection of one of the items to cause the additional content associated with the selected item to be provided. Additionally each of the items is associated with a key uniquely identifying the service associated therewith, wherein user selection of an item is effected by entry into the input device of the key associated with the service to be selected. Resolution of a key to a link to content is achieved by the video receiver receiving

information data broadcast as part of the received television signal, said information data containing a plurality of keys and a plurality of corresponding links to content. Once again however this is a specialised triggering method that requires a particular video distribution technique and video receiver capable of receiving information data relating to links to additional content related to a video sequence via the distribution.

US patent publication number 2003/0142237 A1 describes the inclusion of a logo or brand image as a sub-image in a video sequence, the inclusion in a broadcast of the video sequence of information data referencing a teletext page or an internet address related to the video sequence, and an appropriate receiver required to access the referenced additional data. As a result this is once again a specialised triggering method that requires a particular video distribution technique and video receiver capable of receiving information data relating to links to additional content related to a video sequence via the distribution. As an alternative it is indicated that an Internet address could be included in a sub-image of a broadcast video sequence, but this requires the viewer to remember and then enter this internet address to access additional content, hence ease of access to additional content is not provided due to the complex nature of many internet addresses.

Hence prior art fails to overcome the difficulty of providing a method for presenting a trigger or prompt to the user indicating the presence of additional content that the user is able to access easily and that is independent of the video distribution technique and video receiver used. It is an object of the present invention to provide such a method.

Summary of the Invention

In accordance with one aspect of the present invention, there is provided a method for providing access to additional content during playback of video sequences which, when received, comprise dynamic image content,

wherein said video sequences comprise a keyed video sequence comprising a sub-image embedded in the dynamic image content of said keyed

video sequence, said sub-image comprising a first display key of a first format and a corresponding second display key of a second format, said first format of key consisting of a sequence of characters belonging to a first character set and said second format of key consisting of a sequence of characters belonging to a second character set which is different to said first character set, said first character set corresponding to a first key entry mechanism and said second character set corresponding to a second, different, key entry mechanisms,

said method comprising, at a first user terminal:

playing back said keyed video sequence;

collecting from a first input device an entry of a first user selected key that comprises one of said first display key and said second display key;

communicating data representing said first user selected key to a remote system via a communications network, to enable the remote system to receive the data representing said first user selected key and to resolve said first user selected key to identify a first link to additional content associated with the first user selected key;

receiving data via said communications network from said remote system, said received data comprising data representing said first link; and

accessing said additional content associated with the first user selected key in response to the entry of said first user selected key and the receipt of said data representing said first link.

According to a further aspect of the invention, there is provided a method for providing access to additional content during playback of video sequences which, when received, comprise a plurality of keyed video sequences comprising different sub-images embedded in the dynamic image content of said keyed video sequences, said different sub-images comprising different display keys each comprising a different sequence of characters,

said method comprising, at a first user terminal:

playing back said keyed video sequences;

collecting from a first input device one or more characters of a first input character selection corresponding to one or more characters of a plurality of

different user selectable keys corresponding to at least some of said display keys;

querying a key database using said first input character selection, and receiving a response to said query, said response comprising data identifying a first set of user selectable keys which include characters corresponding to said first input character selection;

displaying a plurality of user selectable keys from said first set;

collecting from said first input device a selection of a first user selectable key from said displayed user selectable keys;

communicating data representing said first user selectable key to a remote system via a communications network, to enable the remote system to receive the data representing said first user selectable key and to resolve said first user selectable key to identify a first link to additional content associated with the first user selectable key;

receiving data via said communications network from said remote system, said received data comprising data representing said first link; and

accessing said additional content associated with the first user selectable key in response to the selection of said first user selectable key and the receipt of said data representing said first link.

According to a further aspect of the invention there is provided a method for providing access to additional content during playback of video sequences which, when received, comprise a plurality of keyed video sequences comprising different sub-images embedded in the dynamic image content of said keyed video sequences, said different sub-images comprising different display keys each comprising a different sequence of characters,

said method comprising, at a first user terminal:

playing back said keyed video sequences;

collecting from a first input device a first input user selectable key corresponding to at least some of said display keys;

querying a key database using said first input user selectable key, and receiving a response to said query, said response comprising data identifying a

first set of user selectable keys which correspond to said first input user selectable key;

displaying a plurality of user selectable keys from said first set;

collecting from said first input device a selection of a second input user selectable key from said displayed user selectable keys;

receiving data via said communications network from said remote system, said received data comprising data representing a first link associated with said second input user selectable key; and

accessing said additional content associated with the second input user selectable key in response to the selection of said second input user selectable key and the receipt of said data representing said first link.

According to a yet further aspect of the invention there is provided a method for providing access to additional content during playback of video sequences which, when received, comprise a plurality of keyed video sequences comprising different sub-images embedded in the dynamic image content of said keyed video sequences, said different sub-images comprising different display keys each comprising a different sequence of characters,

said method comprising, at a first user terminal:

playing back said keyed video sequences;

collecting from a first input device an input user selectable key corresponding to at least one of said display keys;

communicating data representing said input user selectable key to a remote system via a communications network, to enable the remote system to receive the data representing said input user selectable key and to resolve said input user selectable key to identify a plurality of links to additional content associated with the input user selectable key;

receiving data via said communications network from said remote system, said received data comprising data representing said plurality of links; and

displaying a plurality of user selectable links from said plurality of links;

collecting from said first input device a selection of a first user selectable link from said displayed user selectable links; and

accessing additional content associated with the input user selectable key in response to the selection of said first input user selectable link.

Further features and advantages of the invention will become apparent from the following description of preferred embodiments of the invention, given by way of example only, which is made with reference to the accompanying drawings.

Brief Description of the Drawings

Figure 1 schematically illustrates the principle components and communication links of a system for providing access to additional content during playback of video sequences according to different embodiments of the present invention.

Figure 2 shows schematically a video receiver and its internal components according to different embodiments of the present invention.

Figure 3 shows an exemplary screenshot of dynamic video content into which a sub-image has been embedded.

Figure 4 shows an exemplary screenshot of the screen displayed by a key entry application when it is invoked by a user.

Figure 5 illustrates the steps carried out in order to provide access to additional content during playback of video sequences according to a particular embodiment of this invention.

Figure 6A shows an exemplary screenshot of the screen displayed by a key entry application after a user has entered a key.

Figure 6B shows an exemplary screenshot of additional content that is displayed by a browser application after retrieving a link to content associated to a user selected key.

Figure 6C illustrates an example of the contents of a database used by a remote system to resolve either a first format of key or a second format of key to a particular link to content.

Figure 7 illustrates the steps carried out in order to provide access to additional content during playback of video sequences according to a particular embodiment of this invention.

Figure 8 shows an exemplary screenshot of the screen displayed by a key entry application after a user has entered a first input character selection.

Figure 9 illustrates the steps carried out in order to provide access to additional content during playback of video sequences according to a particular embodiment of this invention.

Figure 10 shows an exemplary screenshot of the screen displayed by a key entry application after a list of links to content has been received from a remote system.

Detailed Description of the Invention

A detailed description of exemplary embodiments of the invention follows with reference to the figures provided.

Figure 1 schematically illustrates the principle components and communication links of a system for providing access to additional content during playback of video sequences according to different embodiments of the present invention. A key embedding device 110 creates a keyed video sequence by embedding a key image 102 as a sub-image within the dynamic image content of a video sequence 100 at the points in the sequence specified by the key display schedule 108. The sub-image comprises of a first display key of a first format and a corresponding second display key of a second format, the first format of key consisting of a sequence of characters belonging to a first character set and the second format of key consisting of a sequence of characters belonging to a second character set which is different to the first character set. For example, the first display key consists of a sequence of numeric characters and the second display key consists of a sequence of alphanumeric characters. More particularly, in preferred embodiments, the first display key consists of a sequence of solely numeric characters, and the second display key consists of a sequence of solely alphanumeric characters, including both alphabetical and

numeric characters and/or only alphabetical, non-numeric characters. Additionally in preferred embodiments the second character set corresponds to the first character set by way of a mapping of individual characters, for example the alphanumeric characters 'a', 'b', 'c' and '2' from the second character set map to the numeric character '2' in the first character set and the alphanumeric characters 'd', 'e', 'f' and '3' from the second character set map to the numeric character '3' in the first character set, etc.

A key monitor device 104 may be used in one embodiment of the invention to monitor the presence of a sub-image containing a key in the keyed video sequence.

The keyed video sequence is then distributed using a video distribution technique 106 for example terrestrial digital television broadcast, and the distribution is received by a video receiver 118 such as a set-top box for receiving a terrestrial digital television broadcast. The video receiver 118 decodes the received video distribution 106 using a video decoder 116 and reproduces the keyed video sequence using a video display 112 such as a television.

The video receiver 118 is also provided with a key entry application 120 that receives from a user a user selected key entered using either a first input device 130 comprising a first key entry mechanism, for example a numeric keypad, that is able to enter characters from the first character set, or using a second, different, input device 132 comprising second key entry mechanism, for example an alphanumeric keypad, that is able to enter characters from the second character set. For example the first input device is a television remote control device having a numeric keypad and no alphabetical keypad and the second device is a keyboard device having an alphanumeric keypad.

The user selected key entered by the user is communicated to a remote system 124, which in this embodiment is a key resolution server, via a communications network 126 such as the Internet. The remote system 124 uses a key database 128 to resolve the received key to a link to content, such as a Universal Resource Locator (URL), that is associated with the user selected key.

Both the first display key and the second display key, if selected by the user for entry, are resolved to the same link to content. Thus, the system provides flexibility with respect to the key input mechanism available to the user. If the user has a solely numeric keypad, or other numeric character entry mechanism, the user may select to enter the numeric format of display key. If the user has an alphanumeric keyboard, or other alphanumeric character entry mechanism, the user may select to enter either the numeric format of display key or the alphanumeric format of display key. Some users may select to enter the alphanumeric format of display key, since if this is a memorable word or alphanumeric character sequence, including both alphabetical and numeric characters and/or only alphabetical, non-numeric characters, it may be easier to remember. Note that the user may enter a user selected key which does not correspond to the currently displayed set of display keys, in which case the user may select a key from memory, having noted the key from a previously displayed set of keys in a previously played back video sequence.

The link to content resolved from the received key is communicated back to the key entry application 120 via the communications network 124. The key entry application 120 receives the link to content from the remote system 124 and passes this to a browser application 114 which uses it to make a request for content via the communications network 126. A content source 122 such as a web page on the World Wide Web (WWW), directed to by the link to content returns the requested content to the browser application via the communications network 126. The browser application 114 then renders the content retrieved from the content source and displays it to the user on the video display 112.

Figure 2 shows schematically the video receiver 118 and the components of which it is comprised according to different embodiments of the present invention. Within the video receiver 118 a distribution receiver 200, such as a tuner for receiving a terrestrial digital television broadcast, receives the video distribution 106 which is decoded by a video decoder 116 such as a Motion Picture Experts Group (MPEG) decoder. The decoded video is then prepared for

output on a video display 112 by the video output component 202, for example by converting the decoded video to a composite video signal.

The receiver also consists of a microprocessor 206 that processes instructions stored in a random access memory (RAM) 208 that implement a browser application 114 and a key entry application 120. The video output component 202 is able to render graphics produced by programs running on the microprocessor 206 and multiplex these with the video sequence produced by the video decoder 116. The microprocessor 206 can process user input received from means 204 for accepting user input from either a first input device 130 or a second input device 132. A network interface 210 such as a network card or a broadband modem is provided that allows the receiver to connect to a communications network 126 such as the Internet.

Figure 3 shows an exemplary screenshot 300 of dynamic video content 302 into which a sub-image 304 has been embedded. The sub-image comprises of a first display key 308 of a first format and a corresponding second display key 306 of a second display format.

Figure 4 shows an exemplary screenshot 400 of the screen displayed by the key entry application when it is invoked by the user. The screen contains a key entry field 402 into which the user may enter a key using an available input device.

Figure 5 illustrates the steps carried out in order to provide access to additional content during playback of video sequences according to a particular embodiment of this invention. Initially a keyed video sequence containing a sub-image comprising a first display key and a second display key is received from a video distribution and displayed on a video display by the video receiver (step 500). If the user wishes to access additional content related to the video sequence, the user may start the key entry application on the video receiver (step 502), for example by pressing a button on an input device. When the video receiver accepts input from the user that indicates the key entry application should be started, the video receiver displays the key entry application (step

504), for example by overlaying the graphics of the key entry application over the dynamic video content output from the video decoder.

Once displayed the key entry application receives characters entered by the user using an available input device, the received characters forming a user selected key (step 506). The user selected key entered by the user is then communicated to a remote system using the network interface to a communications network (step 508). The remote system identifies the format of key of the user selected key as either a first key format consisting of characters belonging to a first character set or a second key format consisting of characters belonging to a second character set, and the remote system then looks up the user selected key in a database (step 510) and by using the user selected key as an index into the identified format of key entries in the database retrieves a link to content associated with the key that may be for example a URL. In other embodiments of the invention the key entry application communicates the type of character set used when entering the user selected key as being either the first character set or the second character set according to the capabilities of the input device used to enter the user selected key and communicates this type of character set used to the remote system along with the user selected key.

The key entry application running on the video receiver then receives a link to content associated with the user selected key from the remote server via the communications network (step 512). The key entry application then extracts the link to content, for example a URL, from the information received from the remote system (step 514). The link is then passed to the browser application which then uses it to make a request for content from a content source via the communications network (step 516), where for example the content source is a web page on the World Wide Web. The browser application then receives the content transmitted by the content source via the communications network (step 518) and renders it for display on the video display (step 520).

Figure 6A shows an exemplary screenshot 600 of the screen displayed by the key entry application after the user has entered a key 602. Figure 6B shows an exemplary screenshot 604 of additional content that is displayed by

the browser application after retrieving a link to content associated to the user selected key.

Figure 6C illustrates an example of the contents of a database used by a remote system to resolve either a first format of key or a second format of key to a particular link to content.

Figure 7 illustrates the steps carried out in order to provide access to additional content during playback of video sequences according to a particular embodiment of this invention. Initially a keyed video sequence containing a sub-image comprising a first display key and a second display key is received from a video distribution and displayed on a video display by the video receiver (step 700). If the user wishes to access additional content related to the video sequence, the user may start the key entry application on the video receiver (step 702), for example by pressing a button on an input device. When the video receiver accepts input from the user that indicates the key entry application should be started, the video receiver displays the key entry application (step 704), for example by overlaying the graphics of the key entry application over the dynamic video content output from the video decoder.

Once displayed the key entry application collects from an input device one or more characters of a first input character selection (step 706). The first character selection entered by the user is then used to query a database (step 708) and to acquire a response from the query comprising data identifying a first set of user selectable keys which include characters corresponding to the first input selection (step 710). In one embodiment of the invention the first character selection is communicated to a remote system via a communications network, the remote system then performs the database query and the key entry application then receives data from the remote system via the communications network, the data comprising the first set of user selectable keys. The first set of user selectable keys are preferably keys of the alphanumeric format, even if the user is entering only characters in the form of numeric digits. In such case, the remote system performs mapping between the different key formats in order to identify the first set of user selectable keys.

In other embodiments of the invention the step of communicating the first character selection is triggered in response to the collection of a predetermined number of characters from the input device.

The key entry application renders the first set of user selectable keys for display on the video display (step 712). If the key entry application receives another character entered by the user (step 716) the first set of user selectable keys is either filtered to show only those keys that begin with the same characters entered by the user if the first character selection comprised of characters from the second character set, or filtered to show only those keys that begin with those characters in the second character set that correspond to those in the first character set entered by the user if the first character selection comprised of characters from the first character set (step 714). This process continues until either the key entry application receives input from the user indicating that the entered key has been selected, for example by receiving an 'enter' key input from an input device, or until the key entry application receives input from the user indicating that a key displayed in the first set of user selectable keys has been selected, for example by receiving 'up' and 'down' key inputs from an input device to highlight a chosen key in the displayed set followed by an 'enter' key input from an input device to select the highlighted key in the displayed set (step 718). The key thus selected by the user is the first user selectable key (step 720).

The first user selectable key is then communicated to a remote system using the network interface to a communications network (step 722). The remote system looks up the first user selectable key in a database (step 724) and retrieves a link to content associated with the key that may be for example a URL. The remote system then transmits the link to content associated to the first user selectable key to the key entry application running on the video receiver via the communications network (step 726). The key entry application then extracts the link to content, for example a URL, from the information received from the remote system (step 728). The link to content is then passed to the browser application which then uses it to make a request for content from a content

source via the communications network (step 730), where for example the content source is a web page on the World Wide Web. The browser application then receives the content transmitted by the content source via the communications network (step 732) and renders it for display on the video display (step 734).

Figure 8 shows an exemplary screenshot 800 of the screen displayed by the key entry application after the user has entered a first input character selection 802. Also shown is the first set of user selectable keys 804 that have been received from a remote system in response to a communication from the key entry application containing the first input character selection.

Figure 9 illustrates the steps carried out in order to provide access to additional content during playback of video sequences according to a particular embodiment of this invention. Initially a keyed video sequence containing a sub-image comprising a first display key and a second display key is received from a video distribution and displayed on a video display by the video receiver (step 900). If the user wishes to access additional content related to the video sequence, the user may start the key entry application on the video receiver (step 902), for example by pressing a button on an input device. When the video receiver accepts input from the user that indicates the key entry application should be started, the video receiver displays the key entry application (step 904), for example by overlaying the graphics of the key entry application over the dynamic video content output from the video decoder.

Once displayed the key entry application collects from an input device one or more characters of a first input character selection (step 906). The first input character selection entered by the user is then used to query a database (step 908) and to acquire a response from the query comprising data identifying a first set of user selectable keys which include characters corresponding to the first input selection (step 910). In one embodiment of the invention the first character selection is communicated to a remote system via a communications network, the remote system then performs the database query and the key entry application then receives data from the remote system via the communications

network, the data comprising the first set of user selectable keys. In other embodiments of the invention the step of communicating the first character selection is triggered in response to the collection of a predetermined number of characters from the input device.

The key application renders the first set of user selectable keys for display on the video display (step 912). If the key entry application receives another character entered by the user (step 916) the first set of user selectable keys is either filtered to show only those keys that begin with the same characters entered by the user if the first character selection comprised of characters from the second character set, or filtered to show only those keys that begin with those characters in the second character set that correspond to those in the first character set entered by the user if the first character selection comprised of characters from the first character set (step 914). This process continues until either the key entry application receives input from the user indicating that the entered key has been selected, for example by receiving an 'enter' key input from an input device, or until the key entry application receives input from the user indicating that a key displayed in the first set of user selectable keys has been selected, for example by receiving 'up' and 'down' key inputs from an input device to highlight a chosen key in the displayed set followed by an 'enter' key input from an input device to select the highlighted key in the displayed set (step 918). The key thus selected by the user is the input user selectable key (step 920).

The input user selectable key entered by the user is then communicated to a remote system using the network interface to a communications network (step 922). The remote system then looks up the input user selectable key in a database (step 924) and retrieves one or more links to content associated with the input user selectable key (step 926). The one or more links to content is then received by the key entry application from the remote system via the communications network (step 928).

If the one or more links to content received by the key entry application consists of more than one link to content the key entry application renders a

plurality of user selectable links from the more than one link to content, and displays this plurality of user selectable links (step 932). The key entry application then waits until input is received from the user indicating that one of the plurality of user selectable links to content has been selected, for example by receiving 'up' and 'down' key inputs from an input device to highlight a chosen selectable link in the displayed plurality of user selectable links followed by an 'enter' key input from an input device to select the highlighted selectable link (step 934). The link thus selected by the user is the first user selectable link.

In step 936 the key entry application has either received one link to content from the remote system, or has acquired a first user selectable link from the user. The key entry application extracts a link to content, for example a URL, either from the one link to content or from the first user selectable link. The link to content is then passed to the browser application which then uses it to make a request for content from a content source via the communications network (step 938), where for example the content source is a web page on the World Wide Web. The browser application then receives the content transmitted by the content source via the communications network (step 940) and renders it for display on the video display (step 942).

In one embodiment of the invention the remote system also transmits to the key entry application text and images that summarise the content provided by each link to content that forms the plurality of user selectable links. In the same embodiment of the invention the summary of the content provided by each link to content is displayed in conjunction with the plurality of user selectable links.

In other embodiments of the invention the remote system filters the one or more links to content according to the geographical location of the video receiver that is running the key entry application before communicating a filtered one or more links to content to the key entry application. For example, some links to content may be associated with particular geographical areas, as specified in the key database. In one embodiment of the invention the video receiver may have a unique identifier that is transmitted to the remote system

when key resolution requests are made via the communications network. In this embodiment of the invention the unique identifier may be used by the server to identify the location of the video receiver, or in other embodiments the remote system may look-up the unique identifier in a database of video receivers and extract the video receiver's geographical location from the database. In other embodiments the video receiver may be a mobile device and its geographical location may be determined by a positioning system running on the device that communicates the geographical position of the device to the remote system when a key resolution request is made. For example the positioning system might be a receiver for a Global Positioning System (GPS), or may utilise position information from a mobile communication method such as the Global System for Mobile Communications (GSM).

Figure 10 shows an exemplary screenshot 1000 of the screen displayed by the key entry application in step 932 after a list of links to content has been received from the remote system in step 928. The user has entered an input user selectable key 1002 that corresponds to several links to content that are displayed as a plurality of user selectable links 1004. Optional images 1006 and text 1008 that summarise the content provided by each link to content are shown, according to one embodiment of the invention.

The above embodiments are to be understood as illustrative examples of the invention. Further embodiments of the invention are envisaged as follows.

In embodiments of the invention the video distribution technique is via transmission over a communications network as either streaming video or as a progressive download. The communications network may be for example the Internet, or a local private network, a wireless network, or a telecommunications network such as for example General Packet Radio Service (GPRS) or a telecommunications network based on a Third Generation (3G) telecommunications standard such as for example the Universal Mobile Telecommunications System (UMTS) or Code Division Multiple Access 2000 (CDMA2000), and the distribution receiver is a means for receiving the transmission via a communications network, for example a network card, or a

broadband modem, or a wireless network card, or a telecommunications receiver such as a GPRS receiver or a receiver based on a Third Generation (3G) telecommunications standard such as for example the Universal Mobile Telecommunications System (UMTS) or Code Division Multiple Access 2000 (CDMA2000).

In other embodiments of the invention the video distribution technique is via a storage medium for example a hard disc, or an optical storage medium such as a Digital Versatile Disc (DVD) or a High Definition DVD (HD-DVD) such as a Blue Ray Disc, and the distribution receiver is a device for accessing the storage medium, such as means for accessing a hard disc or a DVD player or an HD-DVD player.

In other embodiments of the invention the video distribution technique is via a user-recorded storage medium, such as a hard disc or a Video Home System (VHS) cassette or for example an optical storage medium such as a Digital Versatile Disc (DVD) or a High Definition DVD (HD-DVD) such as a Blue Ray Disc, and the distribution receiver is a device for accessing the user recorded storage medium, such as means for accessing a hard disc or a VHS cassette player or a DVD player or an HD-DVD player.

In other embodiments of the invention the video distribution technique is via a user-recorded storage medium that is internal to the video receiver.

In other embodiments of the invention the video distribution technique is via a user-recorded storage medium that is external to and coupled with the video receiver.

In other embodiments of the invention the video distribution technique is via a user-recorded storage medium at a remote location and includes transmission to the video receiver via a communications network such as for example the Internet.

In other embodiments of the invention the video distribution technique is via an analogue broadcast.

In other embodiments of the invention the video distribution technique is via a digital broadcast.

In other embodiments of the invention the video distribution technique is via terrestrial television broadcast and the distribution receiver is a terrestrial television receiver.

In other embodiments of the invention the video distribution technique is via satellite television broadcast and the distribution receiver is a satellite television receiver.

In other embodiments of the invention the video distribution technique is via cable television broadcast and the distribution receiver is a cable television receiver.

In other embodiments of the invention the video receiver is a computer.

In other embodiments of the invention the video receiver is a mobile device such as for example a portable computer, a mobile phone or another receiver of Digital Video Broadcast for Handheld devices (DVB-H).

In other embodiments of the invention the video display is a visual display unit such as a computer monitor.

In other embodiments of the invention the video display is a screen embedded in a mobile device.

In other embodiments of the invention the key entry application may be invoked via the user selection of a menu item displayed by the video receiver.

In other embodiments of the invention the key entry application and the browser application are components of a single computer program.

In other embodiments of the invention the key entry application is implemented as dynamically generated content presented by the browser application, for example where the dynamically generated content is a web page in a markup language such as for example Hypertext Markup Language (HTML).

In other embodiments of the invention the key entry application is implemented as dynamically generated content presented by the browser application that is generated by a remote system and transmitted to the browser application via a communications network.

In other embodiments of the invention the browser application is able to render content described in a markup language such as for example Hypertext Markup Language (HTML), Wireless Markup Language (WML), Extensible HTML (XHTML), XHTML Basic, CE-HTML or another Extensible Markup Language (XML) based content description.

In other embodiments of the invention the browser application is able to render content in the form of a video sequence such as for example a video received via a communications network or a video distributed via a broadcast method received by the distribution receiver or a video stored on a storage medium accessed by the distribution receiver.

In other embodiments of the invention the keyed video sequence comprises a sub-image embedded in the dynamic video content of said keyed video sequence, said sub-image comprising a first display key of a first format, said first format of key consisting of a sequence of characters belonging to a first character set, said first character set corresponding to a first key entry mechanism.

In other embodiments of the invention the first input device is a keypad on a mobile device, for example a keypad on a mobile phone.

In other embodiments of the invention the link to content may be a Universal Resource Identifier (URI).

In other embodiments of the invention the link to content may direct the browser to access content that is for example a video sequence that is for example received via a communications network or distributed via a broadcast method or stored on a storage medium.

In other embodiments of the invention the link to content may direct the distribution receiver to access content that is for example a video sequence that is for example received via a communications network or distributed via a broadcast method or stored on a storage medium.

In other embodiments of the invention a communications network may be for example a local private network, a wireless network, or a telecommunications network such as General Packet Radio Service (GPRS), or

a telecommunications network based on a Third Generation (3G) telecommunications standard such as for example the Universal Mobile Telecommunications System (UMTS) or Code Division Multiple Access 2000 (CDMA2000), and the network interface may be for example a wireless network card or a telecommunications transceiver such as a GPRS transceiver or a network interface based on a Third Generation (3G) telecommunications standard such as for example the Universal Mobile Telecommunications System (UMTS) or Code Division Multiple Access 2000 (CDMA2000).

In other embodiments of the invention the video output component is able to present a video sequence decoded by the video decoder in one portion of the video display and graphics produced by programs running on the microprocessor in another portion of the display.

In other embodiments of the invention the video output component is able to present graphics produced by programs running on the microprocessor that consume the entire video display.

In other embodiments of the invention the video output component produces an analogue computer display signal such as a Video Graphics Array (VGA) signal.

In other embodiments of the invention the video output component produces a digital display signal such as a Digital Visual Interface (DVI) signal.

In other embodiments of the invention the video output component produces a high-definition digital display signal such as a High-Definition Multimedia Interface (HDMI) signal.

It will be appreciated that the term "playback" is intended to refer to the display of live video content such as a live sporting event as well as recorded video content.

It is to be understood that any feature described in relation to any one embodiment may be used alone, or in combination with other features described, and may also be used in combination with one or more features of any other of the embodiments, or any combination of any other of the embodiments.

Furthermore, equivalents and modifications not described above may also be employed without departing from the scope of the invention, which is defined in the accompanying claims.

Claims

1. A method for providing access to additional content during playback of video sequences which, when received, comprise dynamic image content,

wherein said video sequences comprise a keyed video sequence comprising a sub-image embedded in the dynamic image content of said keyed video sequence, said sub-image comprising a first display key of a first format and a corresponding second display key of a second format, said first format of key consisting of a sequence of characters belonging to a first character set and said second format of key consisting of a sequence of characters belonging to a second character set which is different to said first character set, said first character set corresponding to a first key entry mechanism and said second character set corresponding to a second, different, key entry mechanisms,

said method comprising, at a first user terminal:

playing back said keyed video sequence;

collecting from a first input device an entry of a first user selected key that comprises one of said first display key and said second display key;

communicating data representing said first user selected key to a remote system via a communications network, to enable the remote system to receive the data representing said first user selected key and to resolve said first user selected key to identify a first link to additional content associated with the first user selected key;

receiving data via said communications network from said remote system, said received data comprising data representing said first link; and

accessing said additional content associated with the first user selected key in response to the entry of said first user selected key and the receipt of said data representing said first link.

2. A method according to claim 1, comprising, at a second user terminal:

collecting from a second input device an entry of a second user selected key that comprises the other of said first display key and said second display key;

communicating data representing said second user selected key to a remote system via a communications network, to enable the remote system to receive the data representing said second user selected key and to resolve said second user selected key to identify a second link to additional content associated with the second user selected key;

receiving data via said communications network from said remote system, said received data comprising data representing said second link; and

accessing said additional content associated with the second user selected key in response to the entry of said second user selected key and the receipt of said data representing said second link.

3. A method according to claim 2, wherein said second link and said first link identify the same additional content.

4. A method according to any preceding claim, wherein said first and/or second input device comprises a numeric keypad, and said first user selected key is in a solely numeric character format.

5. A method according to any preceding claim, wherein said first and/or second input device comprises an alphanumeric keypad, and said second user selected key is in an alphanumeric character format.

6. A method according to claim 5, wherein said second user selected key is in a solely alphabetical character format.

7. A method according to any preceding claim, wherein the keyed video sequence is received in the form of a broadcast video sequence.

8. A method for providing access to additional content during playback of video sequences which, when received, comprise a plurality of keyed video sequences comprising different sub-images embedded in the dynamic image content of said keyed video sequences, said different sub-images comprising different display keys each comprising a different sequence of characters,

said method comprising, at a first user terminal:

playing back said keyed video sequences;

collecting from a first input device one or more characters of a first input character selection corresponding to one or more characters of a plurality of different user selectable keys corresponding to at least some of said display keys;

querying a key database using said first input character selection, and receiving a response to said query, said response comprising data identifying a first set of user selectable keys which include characters corresponding to said first input character selection;

displaying a plurality of user selectable keys from said first set;

collecting from said first input device a selection of a first user selectable key from said displayed user selectable keys;

communicating data representing said first user selectable key to a remote system via a communications network, to enable the remote system to receive the data representing said first user selectable key and to resolve said first user selectable key to identify a first link to additional content associated with the first user selectable key;

receiving data via said communications network from said remote system, said received data comprising data representing said first link; and

accessing said additional content associated with the first user selectable key in response to the selection of said first user selectable key and the receipt of said data representing said first link.

9. A method according to claim 9, wherein said first input character selection consists of a sequence of characters belonging to a first character set and said first set of user selectable keys are in a second format of key consisting of a sequence of characters belonging to a second character set which is different to said first character set, said correspondence being a mapping correspondence.

10. A method according to claim 8 or 9, wherein said querying step comprises:

communicating data representing said first input character selection to a remote key database via a communications network, to enable the remote key database to receive the data representing said first input character selection and to select said first set from the remote key database; and

receiving data via said communications network from said remote database, said received data comprising data representing said first set.

11. A method according to claim 10, wherein said step of communicating said first input character set to said remote database is triggered in response to the collection of a predetermined number of characters from said input device.

12. A method according to claim 11, wherein said step of communicating said first input character set is inhibited until said predetermined number of characters has been collected.

13. A method according to claim 11 or 12, wherein said predetermined number of characters is at least two.

14. A method according to any of claims 8 to 13, wherein said first input character selection comprises numeric, non-alphabetical characters and wherein said user selectable keys comprise alphabetical characters.

15. A method for providing access to additional content during playback of video sequences which, when received, comprise a plurality of keyed video sequences comprising different sub-images embedded in the dynamic image content of said keyed video sequences, said different sub-images comprising different display keys each comprising a different sequence of characters,

said method comprising, at a first user terminal:

playing back said keyed video sequences;

collecting from a first input device a first input user selectable key corresponding to at least some of said display keys;

querying a key database using said first input user selectable key, and receiving a response to said query, said response comprising data identifying a first set of user selectable keys which correspond to said first input user selectable key;

displaying a plurality of user selectable keys from said first set;

collecting from said first input device a selection of a second input user selectable key from said displayed user selectable keys;

receiving data via said communications network from said remote system, said received data comprising data representing a first link associated with said second input user selectable key; and

accessing said additional content associated with the second input user selectable key in response to the selection of said second input user selectable key and the receipt of said data representing said first link.

16. A method according to claim 15, wherein said first input user selectable key is in a first format of key consisting of a sequence of characters

belonging to a first character set and said first set of user selectable keys are in a second format of key consisting of a sequence of characters belonging to a second character set which is different to said first character set.

17. A method according to claim 15 or 16, comprising communicating data representing said second input user selectable key to a remote system via a communications network, to enable the remote system to receive the data representing said second input user selectable key and to resolve said second input user selectable key to identify a first link to additional content associated with the second input user selectable key.

18. A method for providing access to additional content during playback of video sequences which, when received, comprise a plurality of keyed video sequences comprising different sub-images embedded in the dynamic image content of said keyed video sequences, said different sub-images comprising different display keys each comprising a different sequence of characters,

said method comprising, at a first user terminal:

playing back said keyed video sequences;

collecting from a first input device an input user selectable key corresponding to at least one of said display keys;

communicating data representing said input user selectable key to a remote system via a communications network, to enable the remote system to receive the data representing said input user selectable key and to resolve said input user selectable key to identify a plurality of links to additional content associated with the input user selectable key;

receiving data via said communications network from said remote system, said received data comprising data representing said plurality of links; and

displaying a plurality of user selectable links from said plurality of links;

collecting from said first input device a selection of a first user selectable link from said displayed user selectable links; and

accessing additional content associated with the input user selectable key in response to the selection of said first input user selectable link.

19. Apparatus arranged to perform the method of any preceding claim.

Application No: GB0816715.7 **Examiner:** Iwan Thomas

Claims searched: 1, 8, 15 & 18 **Date of search:** 9 January 2009

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1, 8, 15 & 18 at least	WO 2007/090173 A2 (AERIELLE) See especially paragraph [0028]
X	1, 8, 15 & 18 at least	WO 98/17064 A1 (GEMSTAR) See especially lines 13-26 page 2
A	-	US6499057 B1 (PORTUESI)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

G06F; H04N

The following online and other databases have been used in the preparation of this search report

Online: WPI, EPODOC

International Classification:

Subclass	Subgroup	Valid From
H04N	0005/445	01/01/2006
G06F	0017/30	01/01/2006