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(54) Title: TRACKING OF PARTIALLY VIEWED SHOWS SO THAT THEY CAN BE MARKED FOR DELETION WHEN A PERSONAL VIDEO RECORDER RUNS OUT OF SPACE
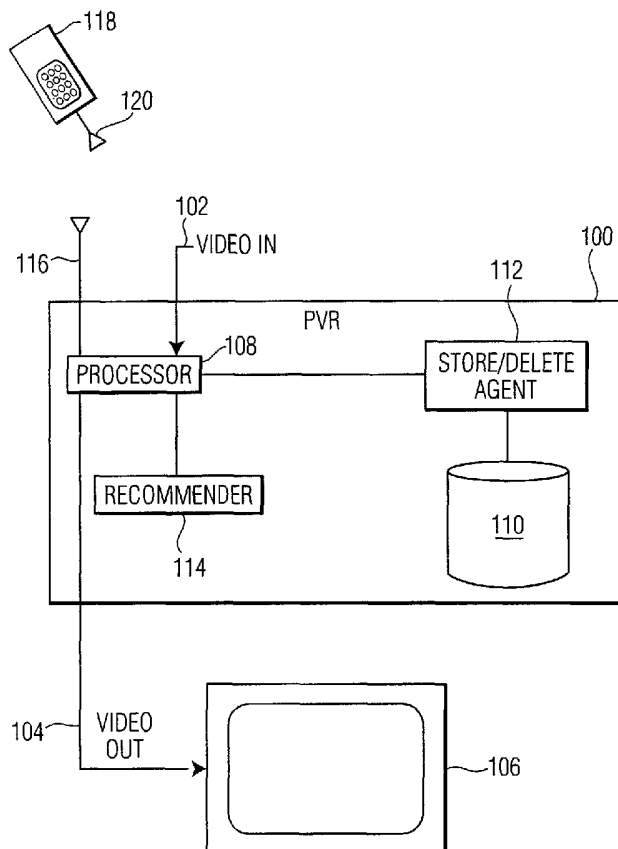
(57) Abstract: A method for managing a plurality of video data stored on a storage device. The method including the steps of: determining whether sufficient storage space remains on the storage device to store a desired video content; if sufficient storage space does not exist on the storage device to store the desired video content, determining whether any video content of the plurality of video data stored on the storage device has been partially viewed; and if video content stored on the storage device has been partially viewed, deleting the partially viewed video content to make room for storage of the desired video content on the storage device.

SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

**TRACKING OF PARTIALLY VIEWED SHOWS SO THAT THEY CAN BE
MARKED FOR DELETION WHEN A PERSONAL VIDEO RECORDER RUNS
OUT OF SPACE**

The present invention relates generally to storage devices for video content,

5   such as, personal video recorders, and more particularly, to deletion of stored video content

on the PVR if a particular video content has been partially viewed and not been tagged not

to be deleted.

Personal video recorders (PVR's) have become very popular in recent years

for recording video content, such as television broadcasts, for later viewing by a viewer.

10   Examples of PVRs are those manufactured by TiVo and Panasonic ("Replay TV").

Although such PVRs have large storage devices, typically a hard drive, the number of

television broadcasts or other video content that can be stored is not limitless. Therefore,

either the viewer must manually delete stored video data on the storage device or the PVR

must have an automatic scheme to do so. Typically, the PVR automatically deletes video

15   data when a need arises according to the FIFO (First In First Out) deletion scheme. That is,

the video content that has been stored for the longest time is the first to be deleted if there

is not enough storage space to store new video content.

Although a viewer can indicate that a particular video content not be deleted

(e.g., locked), the FIFO deletion scheme is arbitrary and does not necessarily reflect a

20   viewers preference for deleting video content from the plurality of video data stored on the

storage device that he/she no longer has interest in viewing or never had interest in

viewing.

Therefore it is an object of the present invention to provide a method for

managing the deletion of video content on a storage device that overcomes the

25   disadvantages associated with the prior art.

Accordingly, a method for managing a plurality of video data stored on a

storage device is provided. The method comprising: (a) determining whether sufficient

storage space remains on the storage device to store a desired video content; (b) if

sufficient storage space does not exist on the storage device to store the desired video

30   content, determining whether any video content of the plurality of video data stored on the

storage device has been partially viewed; and (c) if video content stored on the storage

device has been partially viewed, deleting the partially viewed video content to make room for storage of the desired video content on the storage device.

If it is determined that no video content stored on the storage device has been partially viewed, the method preferably further comprises deleting video content of the plurality of video data which was first stored on the storage device until there is sufficient space on the storage device to store the desired video content.

The method preferably further comprises storing the desired video content after deleting of the partially viewed video content.

The method preferably further comprises repeating steps (b) and (c) until there is sufficient space on the storage device to store the desired video content.

The method preferably further comprises tagging video content which has been partially viewed with an indication identifying the video content as partially viewed. In which case, the determining of whether any video content of the plurality of video data stored on the storage device has been partially viewed preferably comprises searching the plurality of video data for the tagged video content. Preferably, the partially viewed video content is further date tagged indicating a date on which the video content was partially viewed, wherein the deleting comprises: ordering the partially viewed video content in sequential order according to their corresponding date tag; and deleting the partially viewed video content having the oldest date tag. In which case the method further comprises repeating the deleting of the partially viewed particular video content having the oldest date tag until there is sufficient space on the storage device to store the desired video content.

Where the video content which has been partially viewed is tagged with an indication identifying the video content as partially viewed, the partially viewed video content is preferably further recommender tagged indicating a likelihood that a viewer would enjoy viewing the partially viewed video content, wherein the deleting comprises: determining whether the partially viewed video content has a positive recommendation from the recommender tag; and deleting the partially viewed video content having a recommender tag indicating the viewer would be unlikely to enjoy viewing thereof. Preferably, the recommender tag indicates a recommender score and wherein the

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determining of whether the partially viewed video content has a positive recommendation comprises determining whether the recommender score is greater than a predetermined threshold score.

Where the video content which has been partially viewed is tagged with an indication identifying the video content as partially viewed, the method preferably further comprises prompting a viewer after termination of the partially viewed video content if the partially viewed video content should be tagged not to be deleted. In which case, the deleting of the partially viewed video content to make room for storage of the desired video content on the storage device preferably comprises: determining whether the partially viewed video content has been tagged not to be deleted; and deleting partially viewed video content to make room for storage of the desired video content on the storage device only if the partially viewed video content has not been tagged not to be deleted.

Also provided is a personal video recorder comprising: a storage device for storing video data, the video data comprising a plurality of video content; and a processor for retrieving one of the plurality of video content from the storage device for viewing, determining whether the viewed video content is partially viewed, and tagging the viewed video content as being partially viewed.

The personal video recorder preferably further comprises means for indicating storage of a desired video content, wherein the processor further determines whether there is sufficient storage space on the storage device to store the desired video content and if there is not enough storage space to store the desired video content, deletes the partially viewed video content.

Preferably, the processor further tags the partially viewed video content with a tag indicating a date on which the video content was partially viewed, orders the partially viewed video content in sequential order according to their corresponding date tag, and if there is not enough storage space to store the desired video content, deletes the partially viewed video content having the oldest date tag. The processor preferably further tags the partially viewed video content with a recommendation indicating a likelihood that a viewer would enjoy viewing the partially viewed video content, determines whether the partially viewed video content has a positive recommendation from the recommender tag,

and deletes the partially viewed video content having a recommendation tag indicating the viewer would be unlikely to enjoy viewing thereof. The processor further prompts a viewer after termination of the partially viewed video content if the partially viewed video content should be tagged not to be deleted and the personal video recorder further

5   comprises means for indicating whether the partially viewed video content should be tagged not to be deleted.

Also provided are a computer program product for carrying out the methods of the present invention and a program storage device for the storage of the computer program product therein.

10   These and other features, aspects, and advantages of the apparatus and methods of the present invention will become better understood with regard to the following description, appended claims, and accompanying drawings where:

Figure 1 illustrates a schematic view of a preferred implementation of a personal video recorder of the present invention that supplies a video signal to a monitor.

15   Figure 2 illustrates a flowchart of a preferred implementation of a method for tagging partially viewed video content.

Figures 3A and 3B illustrates flowcharts of preferred implementation of a method for managing the storage and deletion of video content on a storage device, such as a hard drive of a personal video recorder.

20   Although this invention is applicable to numerous and various types of devices for storing video data, it has been found particularly useful in the environment of a personal video recorder which stores video content such as television broadcasts. Therefore, without limiting the applicability of the invention to a personal video recorder which stores video content such as television broadcasts, the invention will be described in

25   such environment.

Referring now to Figure 1, a video storage device, such as a personal video recorder is shown therein, the personal video recorder being generally referred to by reference numeral 100. The PVR 100 accepts a video input signal 102 and outputs the same 104 to a viewing means, such as a monitor 106. The PVR 100 can be configured as a

30   "set-top" box as illustrated, disposed remotely from the monitor 106, or integrated with the

monitor 106. The PVR 100 has a central processor 108 for controlling components thereof
and carrying out instructions contained on hardware or software in the PVR 100 or remote
therefrom. The PVR 100 has a storage device 110, such as a hard drive, for storing video
data thereon. The video data comprises a plurality of video content such as television,

5   cable, Internet, cellular, and/or satellite broadcasts and/or video on demand transmissions.
The storage device 110 is under the control of a store/delete agent 112 which instructs the
storage device to delete of store certain video content. The store/delete agent 112 is under
the control of the processor 108, and may be formed integrally therewith. In addition to the
typical function of the processor 108 for a typical PVR, the added functionality of the

10   processor 108 will be described below in detail with regard to the methods of the present
invention.

The PVR also preferably contains a recommender 114 for recommending
certain video content to a viewer. Recommenders are well known in the art and can
provide a yes/no recommendation or a recommendation score based on the viewing habits

15   of the viewer. The PVR also preferably has means for accepting data or instructions, such
as a receiver 116 for receiving a wireless transmission from a remote control 118 having a
transmitter 120. The processor 108 includes components, such as a demodulator (not
shown) for receiving the wireless transmission, which may be RF or infrared signals, and
converting such signals into instructions readable by the processor 108. The means for

20   accepting data or instructions preferably works with an on-screen menu displayed on the
monitor 106, as is known in the art.

The methods of the present invention will now be described with reference
to Figures 2, 3A, and 3B. Referring first to Figure 2, there is illustrated a flowchart
showing a preferred implementation of a method for tagging partially viewed video

25   content. At step 202, either a viewer instructs the PVR 100 to store a desired video
content, such as a video movie from a cable broadcast signal 102, or the recommender 114
decides, based on the previous viewing habits of the viewer, to store the desired video
content on the storage device 110. In the case of the viewer instructing the PVR 100 to
store the desired video content, the viewer operates the remote control 118 to input the

30   instruction or operates a button (not shown) on the PVR itself. The signal from the remote
control 118 or button (not shown) is input into the processor 108, which in turn instructs

the store/delete agent 112 to store the desired video content. Typically, the store/delete agent 112 assigns a portion of the storage device 110 where the desired video content is stored and where it can later be retrieved and stores the desired video content at the assigned portion at step 204.

5   At step 206, when the viewer later decides that he/she wants to view the desired stored video content and instructs the PVR 100, preferably, through the remote control 118, the desired video content is retrieved from the storage device 110 and is output as an output signal 104 to the monitor 106 for viewing by the viewer. The processor 108 monitors the viewing of the desired video content to determine if the same is only partially

10   viewed at step 208. That is, the processor 108 determines if viewing of the desired video content has terminated before completion of the same. Video content, such as movies and music videos are stamped with a running time, therefore the determination in step 208 is preferably accomplished by counting down a clock (preferably integral with the processor 108). If the clock has any time left when the operation of the PVR 100 is stopped or if the

15   monitor 106 is powered off or its display is changed to view another video content, the processor 108 decides that the desired video content has been partially viewed (shown schematically as step 208-YES). Alternatively, the clock does not have to count down to zero for the processor to determine that the desired video content has been totally viewed, if a predetermined amount of the desired video content has been viewed, for example 98%,

20   the processor 108 can also determine that the desired video content has been totally viewed. Thus, if less than the predetermined amount has been viewed, the processor 108 will determine that the desired video content has been partially viewed.

           If it is determined that the desired video content has been totally viewed (or a significant portion thereof has been viewed), the method proceeds along path 208-NO to

25   step 210 where the method ends. However, if it is determined that the desired video content has been partially viewed, the method proceeds along path 208-YES to step 212. At step 212, the viewer is prompted upon the stoppage in viewing of the desired video content if the same should be tagged as not to be deleted (alternatively referred to herein as "locked"). The prompt is preferably displayed on the monitor 106 and the viewer responds

30   by inputting an instruction, preferably with the remote control 118. At step 214, it is determined whether the user inputs an instruction for the desired video content that has

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been partially viewed to be locked. If the viewer indicates that the desired video content is not to be locked (shown schematically as step 214-NO), the desired video content is tagged at step 216 with an identifier indicating the desired video content has been partially viewed. If the viewer indicates that the desired video content is to be locked (not to be

5   deleted), the desired video content is tagged "not to be deleted" at step 218 before being tagged partially viewed at step 216. After the desired video content is appropriately tagged, the method ends at step 210.

The methods of the present invention are particularly suited to be carried out by a computer software program, such computer software program preferably containing

10   modules corresponding to the individual steps of the methods. Such software can of course be embodied in a computer-readable medium, such as an integrated chip or a peripheral device.

Referring now to Figures 3A and 3B, there is illustrated a flowchart showing a preferred implementation of a method for managing the storing and deleting of

15   video data on the storage device 110, the method being generally referred to by reference numeral 300. As in step 202, at step 302, either a viewer instructs the PVR 100 to store a desired video content, such as a video movie from a cable broadcast signal 102, or the recommender 114 decides, based on the previous viewing habits of the viewer, to store the desired video content on the storage device 110. At step 304, it is determined if there is

20   sufficient storage space on the storage device 110 to store the desired video content. If there is sufficient storage space remaining on the storage device 110 to store the desired video content, the method proceeds along path 304-YES to step 306, where the processor and store/delete agent provide the necessary instructions to store the desired video content on the storage device 110.

25   If it is determined that there is not enough storage space on the storage device 110 to store the desired video content, the method proceeds along path 304-NO to step 308. At step 308, it is determined whether any video content on the storage device 110 has been tagged as partially viewed. After searching the storage device 110 for the partially viewed tag, if none of the video content on the storage device 110 has been tagged

30   as partially viewed, the method proceeds along path 308-NO to step 310 where a deletion scheme is carried out to delete video content in order to free up storage space for storing

the desired video content. Although many such deletion schemes now known or later developed can be implemented without departing from the scope or spirit of the present invention, the FIFO deletion scheme is preferred. After video content has been deleted from the storage device 110 to free up storage space for the desired video content, the

5   desired video content is stored on the storage device 110 at step 311.

If video content on the storage device 110 has been tagged as being partially viewed, the method proceeds along path 308-NO to step 312. Although many schemes are possible for choosing which of the partially viewed video content is to be deleted first, it is preferred to delete the oldest partially viewed video, as will now be described with

10   reference to steps 312-318. At step 312, all of the video content on the storage device 110 which have been tagged as being partially viewed are sequentially ordered from newest to oldest according to the date tag described above, and the oldest is assigned a numerical value of 1. At step 314, it is determined if the oldest partially viewed video content has been further tagged not to be deleted (or locked). If the oldest partially viewed video

15   content has been tagged not to be deleted, the method proceeds along path 314-YES to step 316, where the oldest partially viewed video content is incremented by 1 to equal the next oldest partially viewed video content in the sequence.

At step 318, it is determined whether any oldest remain in the sequence, i.e., it is determined whether there are any other partially viewed video content remaining on

20   the storage device 110. If there are no more partially viewed video content remaining, the method proceeds along path 318-NO to steps 310 and 311 where a deletion scheme, such as FIFO is used to delete video content on the storage device 110 and to store the desired video content, respectively. If it is determined that there are more partially viewed video content remaining in the sequence, the method proceeds along path 318-YES and the loop

25   pf steps 314, 316, and 318 repeats until the sequence of partially viewed video content is completed (318-NO) or if any of the partially viewed video content in the sequence has not been tagged for locking, in which case the method proceeds along path 314-NO to routine 320.

Although, it is preferred to prompt the viewer to determine if a partially

30   viewed video content should be tagged not to be deleted, those skilled in the art will appreciate that the method 300 can delete the partially viewed video content without such a

determination. However, partially viewing a video content may not always indicate a dislike for the video content. For instance, viewing of a video content can be terminated before completion thereof for reasons unrelated to whether or not the same is liked or disliked by the viewer, such as due to an emergency or simply because the viewer is tired

5   or has a greater desire to view or do something else.

Referring now to Figure 3B, routine 320 is shown therein. At step 322, it is determined if the oldest partially viewed video content in the sequence which has not been tagged as locked has a positive recommender score based on the recommender tag described above. The positive recommender score, as discussed above, can be a thumbs-

10   up/thumbs-down indication or a score, above which is indicative of a positive recommendation. If it is determined that the oldest partially viewed video content in the sequence has a positive recommender score, the method proceeds along path 322-YES to step 316 where oldest is incremented by one (it is determined whether the next oldest partially viewed video content in the sequence, if any, has been tagged as locked). The

15   assumption is that the viewer, even if he/she did not indicate the partially viewed video content as locked, is likely to again view the same if it has a positive recommendation. Although, it is preferred to use this scheme in combination with prompting the viewer to determine if the partially viewed video content should be locked, it can also be used in place of. In such a situation, the recommender score would be used as a means for deciding

20   whether the viewer would want to lock the partially viewed video content without actually prompting him/her to do so.

If it is determined that the oldest partially viewed video content does not have a positive recommendation, the method proceeds along path 322-NO to step 324, where the oldest partially viewed video content is deleted from the storage device 110.

25   The method then proceeds to step 304 where it is determined if there is sufficient free storage space on the storage device 110 to store the desired video content. If there is, the desired video content is stored at step 306, if there is not, the method proceeds from step 308 until there is sufficient storage space to store the desired video content.

While there has been shown and described what is considered to be preferred embodiments

30   of the invention, it will, of course, be understood that various modifications and changes in form or detail could readily be made without departing from the spirit of the invention. It

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is therefore intended that the invention be not limited to the exact forms described and illustrated, but should be constructed to cover all modifications that may fall within the scope of the appended claims.

CLAIMS:

1.   A method for managing a plurality of video data stored on a storage device
(110), the method comprising:

          (a) determining whether sufficient storage space remains on the storage
device (110) to store a desired video content;

5   (b) if sufficient storage space does not exist on the storage device (110) to
store the desired video content, determining whether any video content of the plurality of
video data stored on the storage device (110) has been partially viewed; and

          (c) if video content stored on the storage device (110) has been partially
viewed, deleting the partially viewed video content to make room for storage of the desired
10   video content on the storage device (110).

2.   The method of claim 1, wherein if it is determined that no video content
stored on the storage device (110) has been partially viewed, the method further comprises
deleting video content of the plurality of video data which was first stored on the storage
device (110) until there is sufficient space on the storage device (110) to store the desired
15   video content.

3.   The method of claim 1, further comprising storing the desired video content
after deleting of the partially viewed video content.

4.   The method of claim 1, further comprising repeating steps (b) and (c) until
there is sufficient space on the storage device (110) to store the desired video content.

20   5.   The method of claim 1, further comprising tagging video content which has
been partially viewed with an indication identifying the video content as partially viewed.

6.   The method of claim 5, wherein the determining of whether any video
content of the plurality of video data stored on the storage device (110) has been partially
viewed comprises searching the plurality of video data for the tagged video content.

7.   The method of 5, wherein the partially viewed video content is further date tagged indicating a date on which the video content was partially viewed, wherein the deleting comprises:

        ordering the partially viewed video content in sequential order according to
5   their corresponding date tag; and

        deleting the partially viewed video content having the oldest date tag.

8.   The method of claim 7, further comprising repeating the deleting of the partially viewed particular video content having the oldest date tag until there is sufficient space on the storage device (110) to store the desired video content.

10   9.   The method of 5, wherein the partially viewed video content is further recommender tagged indicating a likelihood that a viewer would enjoy viewing the partially viewed video content, wherein the deleting comprises:

        determining whether the partially viewed video content has a positive recommendation from the recommender tag; and

15   deleting the partially viewed video content having a recommender tag indicating the viewer would be unlikely to enjoy viewing thereof.

10.   The method of claim 9, wherein the recommender tag indicates a recommender score and wherein the determining of whether the partially viewed video content has a positive recommendation comprises determining whether the recommender
20   score is greater than a predetermined threshold score.

11.   The method of claim 5, further comprising prompting a viewer after termination of the partially viewed video content if the partially viewed video content should be tagged not to be deleted.

12.   The method of claim 11, wherein the deleting of the partially viewed video
25   content to make room for storage of the desired video content on the storage device (110) comprises:

determining whether the partially viewed video content has been tagged not to be deleted; and

deleting partially viewed video content to make room for storage of the desired video content on the storage device (110) only if the partially viewed video content
5   has not been tagged not to be deleted.

13.   A personal video recorder (100) comprising:

a storage device (110) for storing video data, the video data comprising a plurality of video content; and

a processor (108) for retrieving one of the plurality of video content from
10   the storage device (110) for viewing, determining whether the viewed video content is partially viewed, and tagging the viewed video content as being partially viewed.

14.   The personal video recorder of claim 13, further comprising means (116, 118, 120) for indicating storage of a desired video content, wherein the processor (108) further determines whether there is sufficient storage space on the storage device (110) to
15   store the desired video content and if there is not enough storage space to store the desired video content, deletes the partially viewed video content.

15.   The personal video recorder of claim 14, wherein the processor further tags the partially viewed video content with a tag indicating a date on which the video content was partially viewed, orders the partially viewed video content in sequential order
20   according to their corresponding date tag, and if there is not enough storage space to store the desired video content, deletes the partially viewed video content having the oldest date tag.

16.   The method of claim 14, wherein the processor (108) further tags the partially viewed video content with a recommendation indicating a likelihood that a viewer
25   would enjoy viewing the partially viewed video content, determines whether the partially viewed video content has a positive recommendation from the recommender tag, and deletes the partially viewed video content having a recommendation tag indicating the viewer would be unlikely to enjoy viewing thereof.

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17.   The personal video recorder of claim 14, wherein the processor (108) further prompts a viewer after termination of the partially viewed video content if the partially viewed video content should be tagged not to be deleted and the personal video recorder (100) further comprises means (116, 118, 120) for indicating whether the partially

5   viewed video content should be tagged not to be deleted.

18.   The personal video recorder of claim 17, wherein the processor (108) further determines whether the partially viewed video content has been tagged not to be deleted, and deletes partially viewed video content to make room for storage of the desired video content on the storage device (110) only if the partially viewed video content has not

10   been tagged not to be deleted.

19.   A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for managing a plurality of video data stored on a storage device (110), the method comprising:

            determining whether sufficient storage space remains on the storage device

15   (110) to store a desired video content;

            if sufficient storage space does not exist on the storage device (110) to store the desired video content, determining whether any video content of the plurality of video data stored on the storage device (110) has been partially viewed; and

            if video content stored on the storage device (110) has been partially

20   viewed, deleting the partially viewed video content to make room for storage of the desired video content on the storage device (110).

20.   A computer program product embodied in a computer-readable medium for managing a plurality of video data stored on a storage device (110), the computer program product comprising:

25   computer readable program code means for determining whether sufficient storage space remains on the storage device (110) to store a desired video content;

            computer readable program code means for determining whether any video content of the plurality of video data stored on the storage device (110) has been partially

viewed if sufficient storage space does not exist on the storage device (110) to store the desired video content; and

computer readable program code means for deleting the partially viewed video content to make room for storage of the desired video content on the storage device (110) if

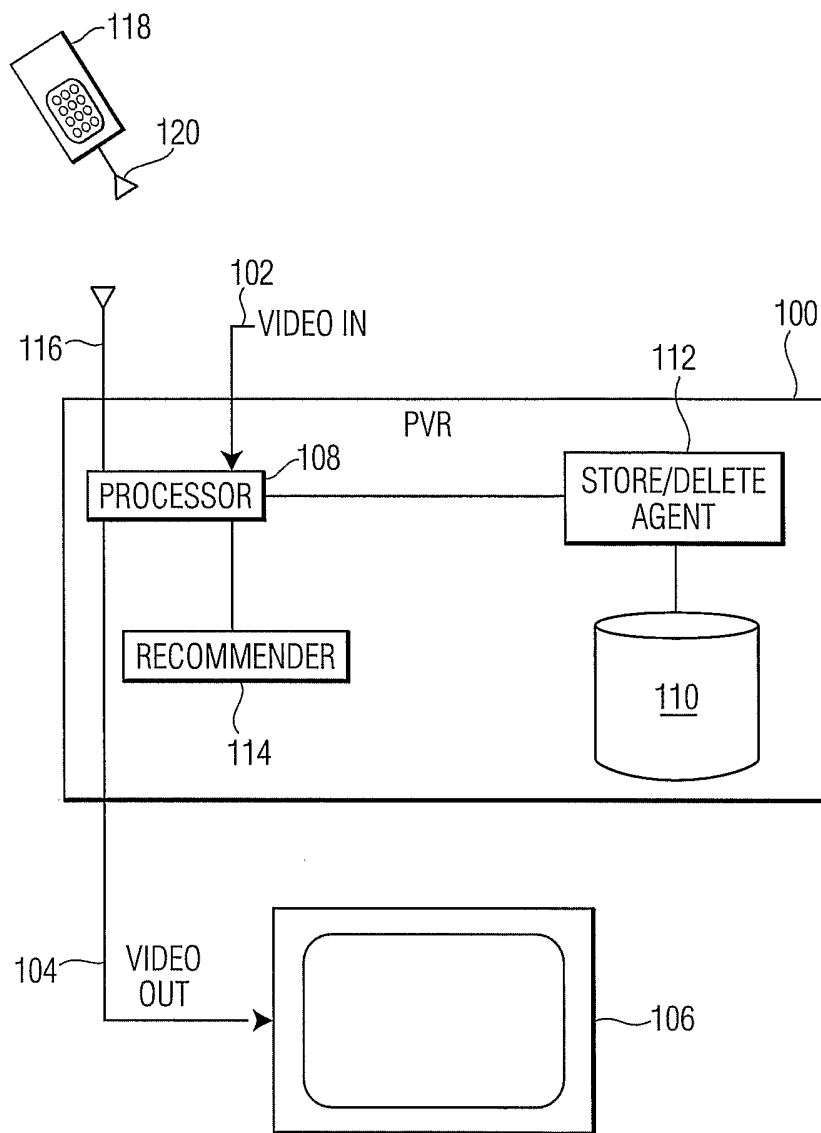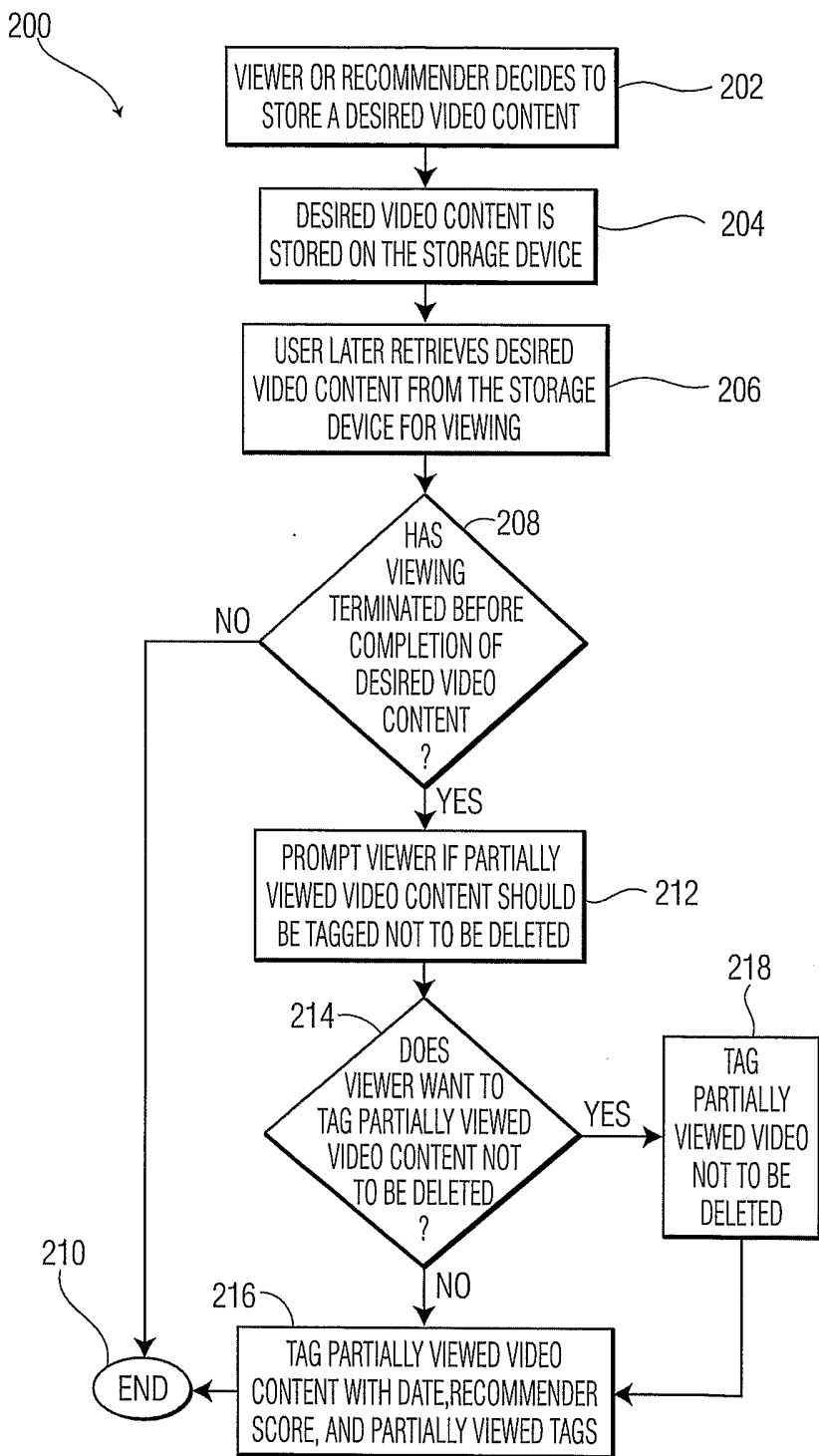5   video content stored on the storage device (110) has been partially viewed.
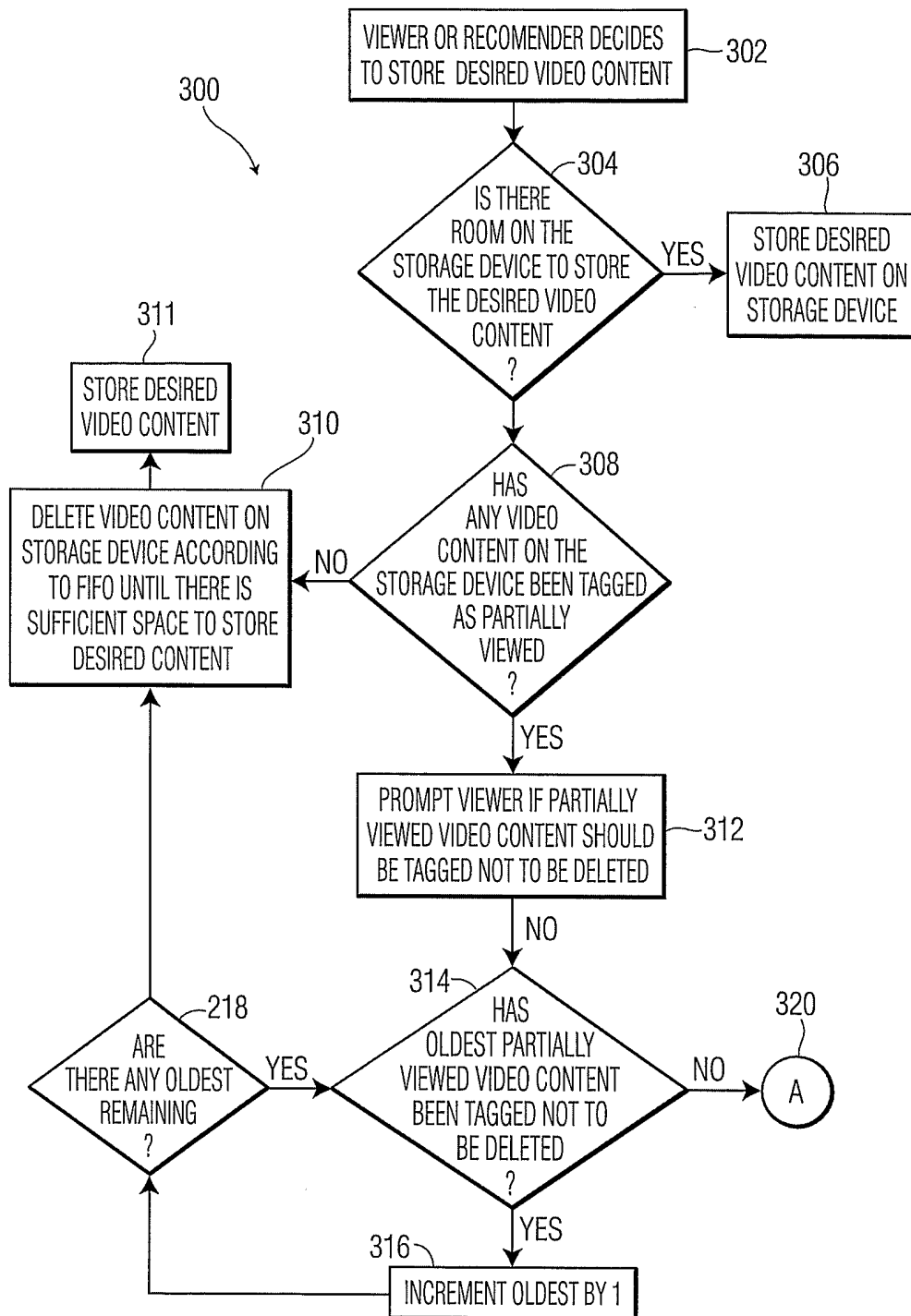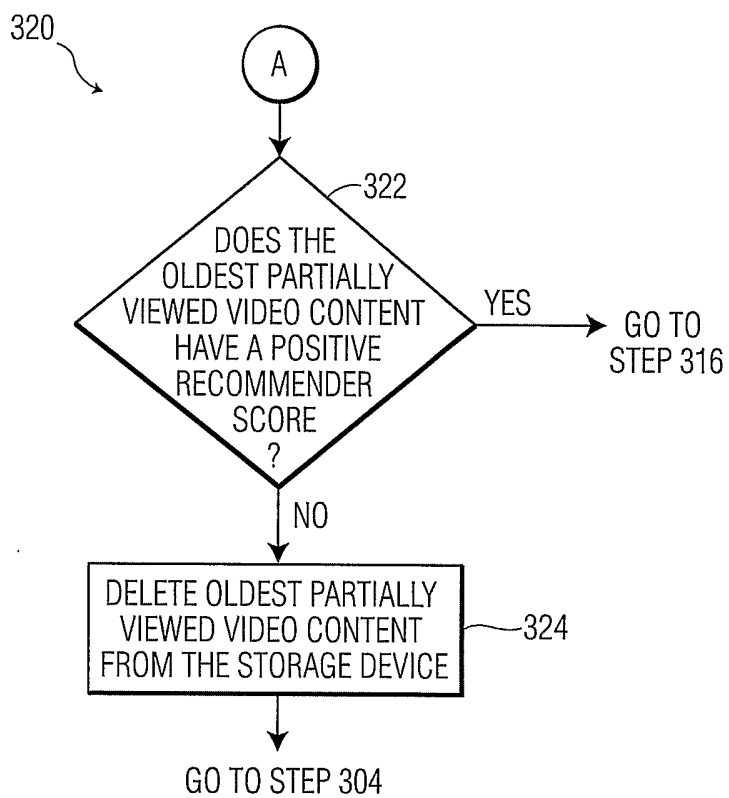
FIG. 1

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FIG. 2

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FIG. 3A

320

A

322

DOES THE
OLDEST PARTIALLY
VIEWED VIDEO CONTENT   YES   GO TO
HAVE A POSITIVE   STEP 316
RECOMMENDER
SCORE
?

NO

DELETE OLDEST PARTIALLY
VIEWED VIDEO CONTENT   324
FROM THE STORAGE DEVICE

GO TO STEP 304

FIG. 3B

INTERNATIONAL SEARCH REPORT

In | ional Application No
PCT/IB 03/04723

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7   H04N5/76

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)
IPC 7   H04N   G11B

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 practical, search terms used)

EPO-Internal, WPI Data, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 091 358 A (PIONEER CORP) 11 April 2001 (2001-04-11)	13
Y	abstract	1-12, 14-20
	paragraphs '0001!-'0013! paragraphs '0019!-'0024! paragraph '0035! paragraphs '0039!-'0050! paragraph '0052! paragraphs '0074!-'0081! paragraph '0088! paragraph '0094! figures 1,7,8	
	-/--	

| X | Further documents are listed in the continuation of box C. | | X | Patent family members are listed in 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 document 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

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Date of the actual completion of the international search	Date of mailing of the international search report
30 January 2004	13/02/2004

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, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Horstmannshoff, J

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