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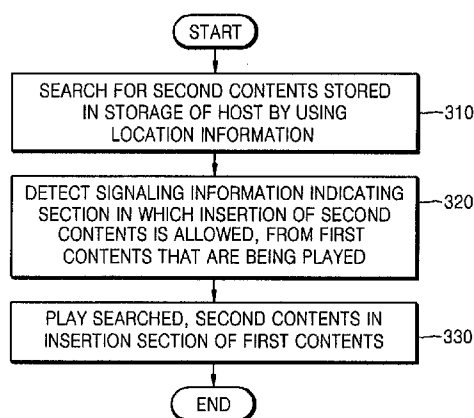
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FIG. 3



(57) Abstract: Provided are a method and apparatus for inserting a designated, specific advertisement stream to be played, searched from advertisement streams stored in a storage of a host, so as to play the advertisement stream in an AD break when advertisement streams stored in the storage of the host are used. The method of inserting second contents stored in a storage of a host while first contents input from an external provider are played includes: searching for the second contents by using location information indicating a location of the second contents stored in the storage; detecting signaling information indicating a section in which insertion of the second contents is allowed, from the first contents; and playing the searched, second contents in the second section of the first contents that are being played, based on the signaling information. A plurality of advertisement streams are stored in the storage and a specific advertisement stream designated by an application can be selectively played. Furthermore, specific video/audio components that constitute contents for advertisement can be designated and played so that the exposure effect of advertisements that are most interesting to a user can be maximized.

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METHOD FOR INSERTING CONTENTS SEARCHED FROM STORAGE OF A HOST AND APPARATUS THEREOF

5

TECHNICAL FIELD

The present invention relates to a method and an apparatus for inserting contents,
10 and more particularly, to a method and an apparatus for inserting specific advertisement
streams that are stored in a host during a specific advertisement (AD) break in contents
streams input from a headend device.

BACKGROUND ART

15 A client-based digital program insertion (DPI) function allows a multi system
operator (MSO) to designate an application such as a target engine, etc., disposed at a
client such as a set top box so that a specific advertisement can be displayed during an
AD break in the middle of a running program and also allows a client device to switch
streams of the running program to streams of another specific advertisement by using a
20 channel switch function.

By using the client-based DPI function, an MSO may allow a client device (not a
headend device such as a relay) to perform an operation of inserting a desired
advertisement and may provide a specialized advertisement to a user by providing a
function of selecting a desired, specific advertisement stream from several advertisement
25 streams to the application of the client device.

In order to increase the effect of a specialized advertisement to the user, data
investigating a user's preference may be referred to when a user selects a specific
advertisement stream. Such a user's preference may be investigated by using a metric
technique (for example, multiple regression) or a nonmetric technique (for example,
30 LINMAP, MONANOVA, PREEFMAP, Johnson's nonmetric algorithm, etc.)

Advertisement streams are transmitted in real-time in the form of another program
of another channel or the same channel in the format of an MPEG-2 transport stream

(TS).

FIG. 1 illustrates a conventional system for inserting contents in a live stream by using channel switch.

Referring to FIG. 1, the system for inserting contents in a live stream by using channel switch comprises a headend device 110 and a host 120. The headend device 110 of an MSO transmits data 111 including DPI signaling and contents (including advertisement streams) to a host 120 in a TS form. In addition, the headend device 110 operates a target engine 122 which is a kind of an application 121 in the host 120 by using a command and control. The target engine 122 performs an advertisement inserting operation by using a switch engine (SE) 123-1 of an OpenCable Application Platform (OCAP) 123, which is a middleware standard for the host 120.

When a specific advertisement stream that is being transmitted in real-time is switched and inserted, a DPI operation may be performed using a DPI trigger method or a DPI timeline method. The DPI operation performed by using a DPI trigger method will now be described as follows.

(i) A DPI signaling descriptor of a DPI signaling (i.e., DPI signaling description and DPI trigger) is transmitted from the headend device 110 to notify that the DPI operation will be performed at a currently-viewing channel.

(ii) The target engine 122 generates a switch instruction object including channel information on which an insertion advertisement will be loaded and a switch identifier (ID) and transfers the switch instruction object to a switch engine 123-1.

(iii) The switch engine 123-1 parses information of the switch instruction object and is ready to perform switching.

(iv) When a time for inserting a specific advertisement comes, the headend device 110 transfers a DPI trigger to the host 120.

(v) In the host 120, a switch ID of the switch instruction object is compared with a synchronized_event_id of the DPI trigger when the DPI trigger is received. When the switch ID of the switch instruction object is the same as the synchronized_event_id of the DPI trigger, the system performs the DPI operation by switching a viewing channel by using channel information of an insertion advertisement of the switch instruction object.

On the other hand, when the switch ID of the switch instruction object is different

from the synchronized_event_id of the DPI trigger, the system regards this state as a malfunction, and informs the target engine 122 of the malfunction.

FIG. 2 illustrates a conventional method of inserting contents in a live stream by using channel switch.

5 Referring to FIG. 2, as an example, a currently-viewing channel is referred to as Ch 1, wherein Ch 1 comprises a general program broadcasting 210 and an advertisement (AD) break 220.

Channels 133, 134, and 135 comprise insertion advertisements which are classified according to user's taste. For example, Ch 133 may be a car advertisement,
10 Ch 134 may be a fashion advertisement, and Ch 135 may be an infant goods advertisement, etc.

Regarding Ch 1, when there are two spots such as an AD spot 1(221) and an AD spot 2(222) in the AD break 220, a corresponding section may be switched to Addressible AD 1 and Addressible AD 2 of Ch 133 by using channel switch, as illustrated in FIG. 1.
15 Thus, users who are interested in cars may be exposed more frequently to a specialized advertisement in this way.

When advertisement streams have been already stored in a storage of a host, i.e., in order to switch a live stream to the advertisement streams stored in the storage of the host without using channel switch, location information of a corresponding specific
20 advertisement stream is parsed without performing a channel switch operation, and when a DPI trigger is received, the corresponding advertisement stream must be played.

However, in this case, a specific advertisement stream must be selected from a plurality of advertisement streams stored in the storage at an advertisement insertion time and must be switched. However, since there is no method of selecting an advertisement
25 stream from the storage in order to be inserted, switching cannot be performed.

In addition, (i) when there is no storage, advertisement streams are transmitted in a TS form, as described previously, and javax.t.locator.Locator that is used to designate services in the TS form of Java Application Program Interface (API) may be used. However, (ii) when there is a storage and advertisement streams stored in the storage are
30 used, the advertisement streams stored in the storage are not in the form of a TS and thus, javax.tv.locator.Locator cannot be used.

DESCRIPTION OF THE DRAWINGS

The above and other features and advantages of the present invention will become more apparent by describing in detail exemplary embodiments thereof with reference to the attached drawings in which:

5 FIG. 1 illustrates a conventional system for inserting contents in a live stream by using channel switch;

 FIG. 2 illustrates a conventional method of inserting contents in a live stream by using channel switch;

 FIG. 3 is a flowchart illustrating a method of selecting contents from a storage of a host and inserting the contents, according to an embodiment of the present invention; and

10 FIG. 4 is a functional block diagram illustrating an apparatus for selecting contents from a storage of a host and inserting the contents, according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

TECHNICAL PROBLEM

15 The present invention provides a method and apparatus for inserting a designated, specific advertisement stream to be played, which is searched from advertisement streams stored in a storage of a host, so as to play the advertisement stream in an AD
20 break when advertisement streams stored in the storage of the host are used.

TECHNICAL SOLUTION

 According to an aspect of the present invention, there is provided a method of inserting second contents stored in a storage of a host while first contents input from an
25 external provider are being played, the method including: searching for the second contents by using location information indicating a location of the second contents stored in the storage; detecting signaling information from the first contents, the signaling information indicating a section in which insertion of the second contents is allowed; and
30 playing the searched, second contents in the second section of the first contents that are being played based on the signaling information.

 According to another aspect of the present invention, there is provided an

apparatus for inserting second contents stored in a storage of a host while first contents input from an external provider are being played, the apparatus including: a searching unit searching for the second contents by using location information indicating a location of the second contents stored in the storage; a signaling information detecting unit
5 detecting signaling information indicating a section in which insertion of the second contents is allowed, from the first contents; and a playing unit playing the searched, second contents in the second section of the first contents that are being played based on the signaling information.

ADVANTAGEOUS EFFECTS

In the conventional art in which no technology related to a standard document about location information on advertisement streams of a storage exists, specific advertisement contents cannot be designated and inserted by using a storage medium which may be a key function of DPI, and a multi system operation (MSO) cannot
15 designate and insert video/audio components in desired contents. However, in the method and the apparatus for inserting contents according to the present invention, a plurality of advertisement streams are stored in the storage and a specific advertisement stream designated by an application can be selectively played. Furthermore, specific video/audio components that constitute contents for advertisement can be designated
20 and played. As a result, the present invention can be used in relation to advertisement operations of the MSO by maximizing the exposure effect of advertisements that are most interesting to a user.

BEST MODE

According to an aspect of the present invention, there is provided a method of
25 inserting second contents stored in a storage of a host while first contents input from an external provider are being played, the method including: searching for the second contents by using location information indicating a location of the second contents stored in the storage; detecting signaling information from the first contents, the signaling
30 information indicating a section in which insertion of the second contents is allowed; and playing the searched, second contents in the second section of the first contents that are

being played based on the signaling information.

The location information may be in a form of a uniform resource locator (URL) and may include a protocol having an information exchange form that can be interpreted by the host, and a storage path of the storage of the host in which the second contents are
5 stored.

The location information may further include an identifier (ID) of an audio or a video component provided to the second contents.

When a plurality of component IDs exists, the location information may be in a form in which the plurality of component IDs are combined, or in an array form in which
10 the plurality of component IDs are arranged.

When a plurality of component IDs exists, the location information may designate at least one or more of the plurality of components.

The searching for the second contents may use an OpenCable Application Platform (OCAP) digital program insertion (DPI) function.

15 The signaling information may include at least one selected from the group consisting of a DPI signaling descriptor, a DPI trigger, and a DPI timeline.

The playing of the searched, second contents in the section of the first contents that are being played may include playing at least one or more components designated in the location information.

20 According to another aspect of the present invention, there is provided an apparatus for inserting second contents stored in a storage of a host while first contents input from an external provider are being played, the apparatus including: a searching unit searching for the second contents by using location information indicating a location of the second contents stored in the storage; a signaling information detecting unit
25 detecting signaling information indicating a section in which insertion of the second contents is allowed, from the first contents; and a playing unit playing the searched, second contents in the second section of the first contents that are being played based on the signaling information.

The location information may be in a form of a uniform resource locator (URL) and may include a protocol having an information exchange form that can be interpreted
30 by the host, and a storage path of the storage of the host in which the second contents are

stored.

The location information may further include an identifier (ID) of an audio or a video component provided to the second contents.

When a plurality of component IDs exists, the location information may be in a form
5 in which the plurality of component IDs are combined, or in an array form in which the plurality of component IDs are arranged.

When a plurality of component IDs exists, the location information may designate at least one or more of the plurality of components.

The searching unit searching for the second contents may use an OpenCable
10 Application Platform (OCAP) digital program insertion (DPI) function.

The signaling information may include at least one selected from the group consisting of a DPI signaling descriptor, a DPI trigger, and a DPI timeline.

The playing unit may play at least one or more components designated in the location information.

15 According to another aspect of the present invention, there is provided a computer readable recording medium storing a program for executing the method of inserting second contents stored in a storage of a host.

According to another aspect of the present invention, there is provided a method of searching second contents to be inserted from a storage of a host while first
20 contents input from an external provider are played, the method including searching for the second contents by using contents location information including a protocol having an information exchange form that can be interpreted by the host, and a storage path of the storage of the host in which the second contents are stored.

According to another aspect of the present invention, there is provided an
25 apparatus for searching second contents to be inserted from a storage of a host while first contents input from an external provider are played, wherein the second contents are searched for by using contents location information including a protocol having an information exchange form that can be interpreted by the host, and a storage path of the storage of the host in which the second contents are stored.

30

MODE OF THE INVENTION

The attached drawings for illustrating exemplary embodiments of the present invention are referred to in order to gain a sufficient understanding of the present invention, the merits thereof, and the objectives accomplished by the implementation of the present invention.

Hereinafter, the present invention will be described in detail by explaining exemplary embodiments of the invention with reference to the attached drawings.

Hereinafter, a method and an apparatus for inserting an advertisement stream to be played, which is searched from advertisement streams stored in a storage will be described for the case of a client device comprising a storage when performing digital program insertion (DPI), for example, a personal video recorder (PVR) or a digital video recorder (DVR)

FIG. 3 is a flowchart illustrating a method of selecting contents from a storage of a host and inserting the contents, according to an embodiment of the present invention.

Referring to FIG. 3, the method of selecting contents from the storage of the host and inserting the contents according to the current embodiment of the present invention is a method of inserting second contents such as specific advertisement streams stored in the storage of the host in first contents while the first contents (including DPI signaling) input from an external provider are being played. The method of FIG. 3 comprises searching for the second contents by using location information indicating the location of the second contents stored in the storage (operation 310), detecting signaling information indicating a section of the first contents in which insertion of the second contents is allowed (operation 320), and playing the searched, second contents in the section of the first contents that are being played based on the signaling information (operation 330).

Advertisement streams that will be later used to perform a DPI operation using the storage must be stored in the storage in advance. Referring to the host 120 of FIG. 1, the target engine 122 or another application 121 may store advertisement streams in the storage by using a Java DVR Application Program Interface (API).

In addition, in operation 310, location information is used as meta data for searching for the second contents (e.g. advertisement streams) stored in the storage. In a conventional method of designating contents by using TV Locator provided by a DPI

standard, physical channel information, program number, etc., are used in a live stream and thus they cannot be used to designate the location of contents stored in the storage. Thus, the present invention provides a method of designating contents stored in the storage by defining location information such as MediaLocator.

5 MediaLocator, which is a uniform resource locator (URL) form, comprises a protocol and a media path of media and is indicated in the form of "protocol://media_path".

The protocol is a rule of an information exchange form that can be interpreted by a platform processing the protocol and may be extended in various shapes. For example,
10 the protocol may be a well-known protocol such as file:// or a platform-dependent protocol such as "dvr://" or "rec://", which is understood by a platform.

The location information may further comprise an identifier (ID) of an audio or video component provided to the second contents in view of the relationship between a service and a component. When a plurality of component IDs exist, the plurality of
15 component IDs may be indicated in a form in which the plurality of component IDs are combined, or in an array form in which the plurality of component IDs are arranged. Although will be described later, a component, for example, "component_id1," may be a specific advertisement video file, "component_id2" may be an English audio file, and "component_id3" may be a Spanish audio file.

20 Regarding second contents having a plurality of components, a method of selecting components may be provided as follows.

(i) When only MediaLocator is referred to, the second contents may have the form of "protocol://media_path: component_id1+component_id2+component_id3"

(ii) When an array form is referred to, the second contents may have the form of
25 "MediaLocator[0] == protocol://media_path1:component_id1", "MediaLocator[1] == protocol://media_path1:component_id2".

Thus, when a plurality of component IDs exist, the location information MediaLocator may designate at least one or more of the plurality of components.

According to the present invention, an application of a host may store a plurality of
30 advertisement streams to be inserted by using a Java DVR API and may designate and play a desired audio/video component in corresponding contents stored as in the

following (a) – (c) items.

(a) Advertisement stream 1: protocol://media_path1:101+102+103

(b) Advertisement stream 2: protocol://media_path2:201+202+203

(c) Advertisement stream 3: protocol://media_path3:301+302+303

5 A target engine of an application generates an advertisement stream (for example, it is assumed that an advertisement stream 2 is to be inserted at this time), from advertisement streams stored in a storage before an AD break starts, as an object which is called switch instruction. The target engine sets location information in an URL form such as “protocol://media_path2:component_id1+component_id2” and transfers the
10 location information to a switch engine through an OpenCable Application Platform (OCAP) digital program insertion (DPI) API.

Before the AD break starts, DPI signaling comprising a DPI signaling descriptor and a DPI trigger are input, and the switch engine parses
“protocol://media_path2:component_id1+component_id2”, which is an advertisement
15 stream member variable in the switch instruction object. A corresponding advertisement stream 2 stored in the storage is searched for and played so that switching to the advertisement stream 2 is performed and as such, the advertisement stream 2, which includes second contents, is inserted in the AD break of first contents.

For example, when a transport stream (TS) which is called “service2.ts” in a path
20 “Program Files/downloads” of the storage is inserted and elementary streams (ES) having program identifiers (PIDs) such as 201, 202, and 203 need to be played, a protocol of MediaLocator may be indicated in the form “dvr://” or “file://”, and media_path may be indicated in the form of “Program Files/downloads/service2.ts”. Thus, the program of MediaLocator may be indicated in the form of “dvr://Program
25 Files/downloads/service2.ts:201+202+203”.

When the program of MediaLocator is indicated in the form of “dvr://Program Files/downloads/service2.ts:201+203” among the above examples, the elementary streams (ES) having PIDs such as 201 (e.g. a car advertisement video stream) and 203 (e.g. a Spanish audio stream) are played so that only the designated ES can be selected
30 from advertisement streams stored and can be inserted.

FIG. 4 is a functional block diagram of an apparatus for selecting contents from a

storage of a host and inserting the contents, according to an embodiment of the present invention.

Referring to FIG. 4, the apparatus for selecting contents from the storage of the host and inserting the contents according to the current embodiment of the present invention inserts second contents such as specific advertisement streams stored in a storage 440 of the host in first contents while the first contents input from an external provider are being played, and comprises a signaling information detecting unit 410 which detects signaling information indicating a section of the first contents in which insertion of the second contents is allowed, a searching unit 420 which searches the second contents by using location information indicating the location of the second contents stored in the storage 440 of the host, and a playing unit 430 which plays the searched, second contents in the section of the first contents that are being played based on the signaling information that is detected by the signaling information detecting unit 410.

According to an embodiment of the present invention, in the case of a PVR or DVR, advertisement streams are stored in a storage 440 and then, during insertion advertisement, i.e., during switching, the advertisement streams can be played. Furthermore, when the contents that are recorded by using a recording function of the PVR or DVR are repeatedly played and when a corresponding AD break starts, a plurality of advertisement streams stored in the storage 440 are interchanged and are inserted so that different advertisements can be played whenever the contents are played even in the same contents.

The invention can also be embodied as computer readable codes on a computer readable recording medium. The computer readable recording medium is any data storage device that can store data which can be thereafter read by a computer system. Examples of the computer readable recording medium include read-only memory (ROM), random-access memory (RAM), CD-ROMs, magnetic tapes, floppy disks, optical data storage devices, and carrier waves (such as data transmission through the Internet).

While this invention has been particularly shown and described with reference to exemplary embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims. The exemplary

embodiments should be considered in descriptive sense only and not for purposes of limitation. Therefore, the scope of the invention is defined not by the detailed description of the invention but by the appended claims, and all differences within the scope will be construed as being included in the present invention.

CLAIMS

What is claimed is:

5 1. A method of inserting second contents stored in a storage of a host while first contents input from an external provider are being played, the method comprising:

 searching for the second contents by using location information indicating a location of the second contents stored in the storage;

10 detecting signaling information from the first contents, the signaling information indicating a section in which insertion of the second contents is allowed; and

 playing the searched, second contents in the second section of the first contents that are being played based on the signaling information.

15 2. The method of claim 1, wherein the location information is in a form of a uniform resource locator (URL) and comprises a protocol having an information exchange form that can be interpreted by the host, and a storage path of the storage of the host in which the second contents are stored.

20 3. The method of claim 2, wherein the location information further comprises an identifier (ID) of an audio or a video component provided to the second contents.

25 4. The method of claim 3, wherein, when a plurality of component IDs exists, the location information is in a form in which the plurality of component IDs are combined, or in an array form in which the plurality of component IDs are arranged.

30 5. The method of claim 4, wherein, when a plurality of component IDs exists, the location information designates at least one or more of the plurality of components.

6. The method of claim 5, wherein the searching for the second contents uses an OpenCable Application Platform (OCAP) digital program insertion (DPI) function.

7. The method of claim 6, wherein the signaling information comprises at least one selected from the group consisting of a DPI signaling descriptor, a DPI trigger, and a DPI timeline.

8. The method of claim 7, wherein the playing of the searched, second contents in the section of the first contents that are being played comprises playing at least one or more components designated in the location information.

9. An apparatus for inserting second contents stored in a storage of a host while first contents input from an external provider are being played, the apparatus comprising:

a searching unit searching for the second contents by using location information indicating a location of the second contents stored in the storage;

a signaling information detecting unit detecting signaling information indicating a section in which insertion of the second contents is allowed, from the first contents; and

a playing unit playing the searched, second contents in the second section of the first contents that are being played based on the signaling information.

10. The apparatus of claim 9, wherein the location information is in a form of a uniform resource locator (URL) and comprises a protocol having an information exchange form that can be interpreted by the host, and a storage path of the storage of the host in which the second contents are stored.

11. The apparatus of claim 10, wherein the location information further comprises an identifier (ID) of an audio or a video component provided to the second contents.

12. The apparatus of claim 11, wherein, when a plurality of component

IDs exists, the location information is in a form in which the plurality of component IDs are combined, or in an array form in which the plurality of component IDs are arranged.

13. The apparatus of claim 12, wherein, when a plurality of component
5 IDs exists, the location information designates at least one or more of the plurality of components.

14. The apparatus of claim 13, wherein the searching unit searching for
the second contents uses an OpenCable Application Platform (OCAP) digital program
10 insertion (DPI) function.

15. The apparatus of claim 14, wherein the signaling information
comprises at least one selected from the group consisting of a DPI signaling descriptor, a
DPI trigger, and a DPI timeline.

15 16. The apparatus of claim 15, wherein the playing unit plays at least one or
more components designated in the location information.

17. A computer readable recording medium storing a program for executing the
20 method of claim 1.

18. A method of searching second contents to be inserted from a storage
of a host while first contents input from an external provider are played, the method
comprising searching for the second contents by using contents location information
25 including a protocol having an information exchange form that can be interpreted by the
host, and a storage path of the storage of the host in which the second contents are
stored.

19. An apparatus for searching second contents to be inserted from a
30 storage of a host while first contents input from an external provider are played, wherein
the second contents are searched for by using contents location information including a

protocol having an information exchange form that can be interpreted by the host, and a storage path of the storage of the host in which the second contents are stored.

2/2

FIG. 3

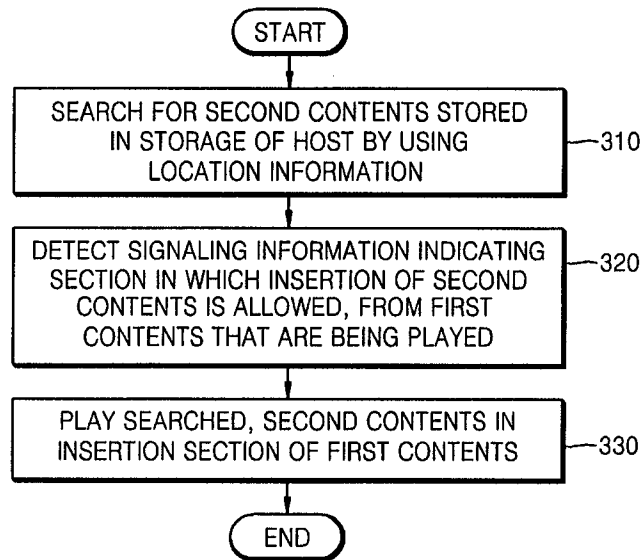
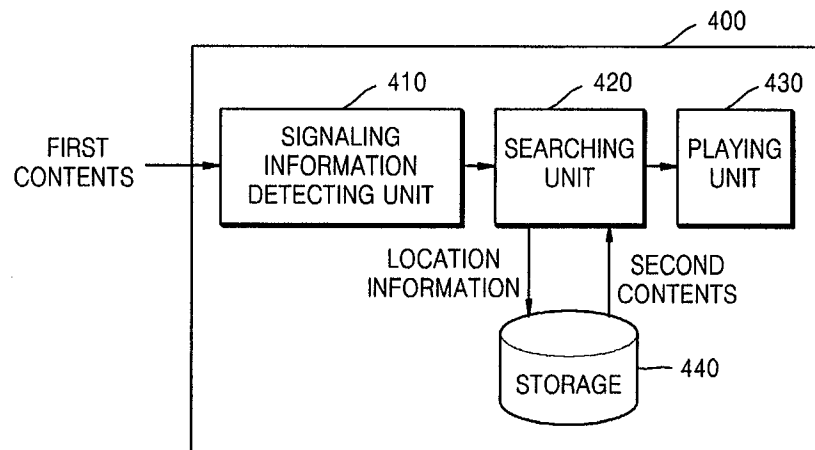


FIG. 4



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2008/001673**A. CLASSIFICATION OF SUBJECT MATTER****H04H 20/86(2008.01)i**

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 8 H04H

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

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

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

eKIPASS (KIPO internal): "content, program, advertisement, insert, replacement"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	US 2003-0195901 A1 (HYUN-DOO SHIN et al.) 16 October 2003 See abstract; paragraphs [0007]-[0014] and [0042]; claims 1-4.	1-2, 9-10, 17-19 3-8, 11-16
Y A	US 2007-0101360 A1 (SRINIVAS GUTTA et al.) 03 May 2007 See abstract; paragraphs [0001]-[0006] and [0025]-[0027]; claims 1, 16, 20 and 21; figure 2.	1-2, 9-10, 17-19 3-8, 11-16
Y A	KR 10-2003-0067988 A (LG ELECTRONICS INC.) 19 August 2003 See the whole document.	1-2, 9-10, 17-19 3-8, 11-16
A	US 2003-0174837 A1 (BRANT L. CANDELORE et al.) 18 September 2003 See abstract; claim 1.	1-19

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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