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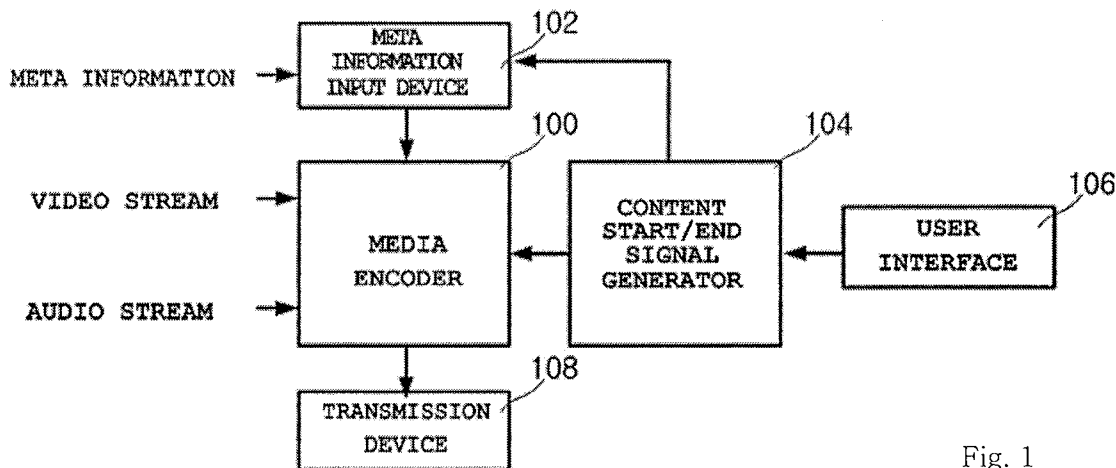(54) Title: METHOD OF PROCESSING MEDIA DATA AND RECEIVER, BROADCASTING SYSTEM

Fig. 1

(57) Abstract: A method of processing media data capable of efficiently managing storage areas of a receiver by temporarily storing the media data for a time shift only in a case where it is possible to receive the entire media data of content, and a transmission system and a receiver therefor are provided. A method of transmitting media data includes: coding the media data by inserting start information into a predetermined position that is previously determined when a start signal of content is input and inserting end information into a predetermined position that is previously determined when an end signal of the content is input; and transmitting the coded media data. In addition, a method of processing media data that is coded by inserting start information into a start part of content and inserting end information into an end part of the content includes: (a) checking whether the start information is included by decoding the media data; (b) temporarily storing the received media data until media data including the end information is received if the start information is included; and (c) normally storing the temporarily stored media data when a record command of a user is received while the media data is being temporarily stored.

【DESCRIPTION】

【Invention Title】

METHOD OF PROCESSING MEDIA DATA AND RECEIVER, BROADCASTING SYSTEM

5   【Technical Field】

The present invention relates to a technique for transmitting and receiving contents, and more particularly, to a method of processing media data capable of selectively classifying and storing

10   contents that is being received by a receiver including small storage areas, a transmission system, and a receiver therefor.

【Background Art】

Recently, personal video recorders

15   (hereinafter, abbreviated to as 'PVRs' which record and reproduce a digital broadcasting program by including a storage medium such as a hard disk have been launched, as digital broadcasting receivers have been distributed. The PVR including a central

20   processing unit (CPU) with high performance employs a method of recording a digital broadcasting program in a storage medium such as a massive hard disc drive (HDD) in units of files. Accordingly, it is possible to easily search for a stored program and

25   watch the found program by repeatedly reproducing and editing the found program. The method of

recording a broadcasting program by using the PVR includes an immediate record method in which a program is immediately recorded while watching the program, a time shift record method using a time shift function of the PVR, and the like.

In the time shift function, it is possible to watch a passed broadcast program or watch a program while skipping uninteresting parts by temporarily storing or buffering a watched program for a predetermined time. Since in the time shift function, broadcasting signals are unconditionally buffered in a temporary storage area, there is a problem in that even unnecessary broadcasting signals such as an advertisement and a part of content are stored. Accordingly, a technique of storing media data for a time shift only in a case where it is possible to receive the entire media data of content has been requested to be developed.

Recently, various broadcasting types of contents are commercialized in correspondence with commercialization of a DMB service or wireless Internet service. Types of receivers for the various broadcasting types of contents have been diversified. As broadcasting methods of contents are diversified, a technique for efficiently managing a storage area by minimizing storage of unnecessary

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media data by temporarily storing media data of the content only in a case where it is possible to receive the entire media data of the content without using additional information on the broadcasting program has been requested to be developed. In addition, a technique for easily managing the stored media data by classifying and storing the media data in units of contents has been also requested to be developed.

【Disclosure】

【Technical Problem】

The present invention provides a method of processing media data capable of efficiently managing a storage area by minimizing storage of unnecessary media data by temporarily storing media data of the content only in a case where it is possible to receive the entire media data of the content without using additional information on the broadcasting program as broadcasting methods of contents are diversified, and a transmission system and a receiver therefor.

The present invention also provides a method of processing media data capable of easily managing the media data by storing the media data for a time shift in units of contents, and a transmission system and a receiver therefor.

【Technical Solution】

According to an aspect of the present invention, there is provided a method of transmitting media data, the method comprising:

5   coding the media data by inserting start information into a predetermined position that is previously determined when a start signal of content is input and inserting end information into a predetermined position that is previously determined when an end

10   signal of the content is input; and transmitting the coded media data.

According to another aspect of the present invention, there is provided a method of processing media data that is coded by inserting start

15   information into a start part of content and inserting end information into an end part of the content, the method comprising: (a) checking whether the start information is included by decoding the media data; (b) temporarily storing the received

20   media data until media data including the end information is received if the start information is included; and (c) normally storing the temporarily stored media data when a record command of a user is received while the media data is being temporarily

25   stored.

In the present invention, it is possible to

efficiently manage a storage area by minimizing storage of unnecessary media data by temporarily storing media data of the content only in a case where it is possible to receive the entire media data of the content without using additional information on the broadcasting program as broadcasting methods of contents are diversified.

【Advantageous Effects】

In the present invention, it is possible to efficiently manage a storage area by minimizing storage of unnecessary media data by temporarily storing media data of the content only in a case where it is possible to receive the entire media data of the content without using additional information on the broadcasting program as broadcasting methods of contents are diversified.

In addition, it is possible to easily manage the media data by classifying and storing the media data in units of contents.

【Description of Drawings】

FIG. 1 is a schematic diagram illustrating a system for transmitting media data according to an exemplary embodiment of the present invention.

FIG. 2 illustrates a structure of meta information according to an exemplary embodiment of the present invention.

FIG. 3 is a block diagram illustrating a receiver according to an exemplary embodiment of the present invention.

FIG. 4 is a flowchart of a method of processing media data according to an exemplary embodiment of the present invention.

【Best Mode】

Hereinafter, a structure and an operation of a system for transmitting media data according to an exemplary embodiment of the present invention will be described in detail with reference to the
5   attached drawings.

FIG. 1 is a schematic diagram illustrating a structure of a system for transmitting information for representing a start and an end of content in addition to media data. FIG. 2 illustrates a
10   structure of meta information according to an exemplary embodiment of the present invention. FIG. 3 is a block diagram illustrating a receiver according to an exemplary embodiment of the present invention. FIG. 4 is a flowchart of a method of
15   processing media data according to an exemplary embodiment of the present invention. The present invention will be described in detail with reference to FIGS. 1 to 4.

The structure and the operation of the system
20   for transmitting media data according to an embodiment of the present invention will be described with reference to FIG. 1. The system for transmitting media data is constructed with a media encoder 100, a meta information input device 102, a
25   content start/end signal generator 104, a user interface 106, and a transmission device 108.

The meta information input device 102 receives various types of meta information including content start information and content end information for representing an input point or input period of start and end signals of the content and provides the various type of meta information to the media encoder 100. As shown in FIG. 2, the meta information is constructed with MetaDataStartCode, MetaDataLength, and MetaDataField_1 to MetaDataField_k. The MetaDataStartCode is an identifier for recognizing predetermined meta information with a length of m bits. The MetaDataLength is an indicator for representing the entire length of the meta information. The MetaDataField_1 to MetaDataField_k are pieces of real meta information. The meta information includes a title, a type, and description on the content. Specifically, the meta information includes start information and end information of a program according to an exemplary embodiment of the present invention.

The content start and end signal generator 104 automatically detects start and end points of the content and provides the start and end signals of the content to the media encoder 100 and the meta information input device 102. Alternatively, the

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content start and end signal generator 104 provides the start and end signals that are received from the user interface 106 to the media encoder 100 and the meta information input device 102.

5   The media encoder 100 codes the meta information and the media data which are provided by the meta information input device 102. Here, the media data indicates data that includes video and audio data of the content. Specifically, when the

10 start and end signals of the content are input from the content start and end signal generator 104, the media encoder 100 indicates that the content starts or ends at a corresponding position by inserting the meta information into the media data according to

15 the start and end signals. More specifically, in case of a coding process according to a transmission technique standard in MPEG-2 transport stream (TS), the media encoder 100 adds the content start signal, the content end signal, and synchronized meta

20 information to an MPEG-2 TS packet header area. That is, the meta information, the content start signal, and the content end signal are inserted into an area of private_data_byte in a field of adaptation_field of an area of Transport Packet header.

25   Alternatively, in case of a coding process according to a transmission technique standard in

MPEG-4 sync layer (SL), the media encoder 100 adds the meta information on the content to object descriptor (OD) information of the MPEG-4 SP. That is, Object Content Information Descriptor that is
5   the meta information may be described in InitialObjectDescriptor, ObjectDescriptor, and ES_Descriptor which are included in the MPEG-4 OD. Accordingly, in a case where the meta information is desired to be added in association with the content,
10   the media encoder 100 adds the meta information by using a command such as ObjectDescriptorUpdate or ES_DescriptorUpdate. Alternatively, in a case where the meta information is desired to be removed, the media encoder 100 removes the meta information by
15   using a command such as ObjectDescriptorRemove or ES_DescriptorRemove. In addition, since InitialObjectDescriptor may be included in an IOD_Descriptor of a PMT of the MPEG-2 TS, it is possible to transmit the media data by using this.
20   As described above, the coded media data is provided to the transmission device 108. The transmission device 108 broadcasts the coded media data.

As described above, the system for transmitting
25   the media data according to the embodiment codes and transmits the media data. When coding the media

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data, the media data is broadcasted after marking start and end points of the content by adding the meta information including start information and end information of the content which are input from the

5 content start/end signal generator 104 into a predetermined area of the media data.

The structure of the receiver that receives and processes the media data will be described with reference to FIG. 3.

10 The receiver includes a control unit 200, a memory unit 202, a receiving module 204, a media decoder 206, a storage medium 208, a user interface 210, and a media output device 212.

The control unit 200 entirely controls the

15 receiver. In addition, the control unit 200 temporarily stores the media data that is received from an outside for a time shift according to an exemplary embodiment in a temporary storage area of the storage medium 208 in units of content. The

20 media data that is temporarily stored in the temporary storage area according to a request of the user through the user interface 210 moves to a normal storage area in units of contents. Specifically, the control unit 200 can increase

25 convenience of usage by assigning titles of the media data which are normally stored according to

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title information of the meta information included
in the media data.

The memory unit 202 stores various types of
information including a processing program of the
control unit 200. Specifically, according to the
exemplary embodiment of the present invention, the
memory unit includes a temporary storage flag of
content and a record command flag of content. The
receiving module 204 receives the coded media data
that is transmitted by the transmission system and
provides the received media data to the media
decoder 206. The media decoder 206 recovers original
media data, that is, video data, audio data, and
meta data by decoding the coded media data and
provides the recovered media data to the control
unit 200. The media data processing and outputting
unit 212 outputs video and audio data which are
media data through a display device and an audio
output device by processing media data according to
a control of the control unit 200. Specifically, in
a case where the media data is coded, the media data
processing and outputting device 212 decodes the
media data and outputs the decoded media data. The
user interface 210 provides various commands or
information from the user to the control unit 200.
The storage medium 208 that includes a temporary

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storage area and a normal storage area temporarily or normally stores the media data.

Now, the operation of the receiver will be described with reference to FIG. 4. The operation of the receiver will be described by classifying a case where content is received from a middle part of the content and a case where the content is received from a start part of the content.

First, the case where the content is received from the middle part of the content will be described. When media data is received, the control unit 200 of the receiver receives the media data (operation 300). The control unit 200 checks whether the meta information of the content is detected or whether the temporary storage flag of the content is set to 1 whenever media data is input (operation 302).

If the meta information of the content is not detected or if the temporary storage flag of the content is not set to 1, the control unit 200 determines that the media data is received from the middle part of the content and outputs the media data through the media output device 212 (operation 312). Here, in a case where the media data is coded, a decoding procedure is added. In a case where the content is received from the middle part of the

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content, the content is not stored so as to effectively use the temporary storage area of the storage medium 210.

Now, the case where the content is received from the start part of the content will be described. When media data is received, the control unit 200 of the receiver receives the media data (operation 300). It is checked whether the meta information of the content is detected or whether the temporary storage flag of the content is set to 1 whenever media data is input (operation 302). If the meta information of the content is detected or if the temporary storage flag of the content is set to 1, the control unit 200 checks whether start information of the content is included in the meta information of the content (operation 304). If the start information of the content is included in the meta information of the content, the control unit 200 sets the record command flag of the content to 0, initializes the temporary storage area of the storage medium 210, and sets the temporary storage flag of the content to 1 (operations 306 to 308). The control unit 200 temporarily stores media data and meta information in the temporary storage area of the storage medium 210 and outputs the media data through the media output device 212 (operation 312).

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As described above, the control unit 200 checks whether end information of the content is included in the received meta information while temporarily storing the media data and the meta information (operation 314). If the end information of the content is included in the received meta information, the control unit 200 checks whether the record command flag of the content is set to 1 (operation 316). Here, the record command flag of the content is set to 1 or the setting of the record command flag of the content is canceled according to a record command event or a record cancel command event of the content. When the record command flag of the content is set to 1, the control unit 200 moves the media data and the meta information which are stored in the temporary storage area of the storage medium 208 to the normal storage area and normally stores the media data and the meta information (operations 318 and 320). Specifically, the control unit 200 maximizes convenience of usage by assigning a title of the content included in the meta information to a file name of the media data of the normally stored content. Unlike the aforementioned description, if the record command flag of the content is set to 0, the control unit 200 cancels temporary storage of media data and sets

the temporary storage flag of the content to 0 (operation 322).

As described above, in the present invention, it is possible to store a part of content which is broadcasted before the record command is input by temporarily storing the media data of the content from the start part to the end part of the content and normally storing the temporarily stored content when the content is requested to be recorded through the user interface 210 wile the content is being received.

While the present 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 present invention as defined by the appended claims.

【Industrial Applicability】

The technique according to the present invention may be widely used for a transmission system and a receiver for transmitting and receiving multimedia.

【CLAIMS】

【Claim 1】

A method of processing media data, the method comprising:

5   (a) coding the media data by inserting start information into a predetermined position that is previously determined when a start signal of content is input and inserting end information into a predetermined position that is previously determined

10   when an end signal of the content is input; and

(b) transmitting the coded media data.

【Claim 2】

The method of claim 1, wherein the start and end signals of the content are input from an outside

15   or automatically generated when the media data of the content starts or ends.

【Claim 3】

The method of claim 1, wherein the start information and the end information, which is meta

20   information, is inserted into an area of private_data_byte in a field of adaptation_field of an area of MPEG-2 transport steam (TS) packet header in a coding process according to a transmission technique standard in MPEG-2 TS and inserted into

25   one of InitialObjectDescriptor, ObjectDescriptor, and ES_Descriptor which are included in an object

descriptor (OD) of MPEG-4 SP in a coding process according to a transmission technique standard in MPEG-4 sync layer (SL).

【Claim 4】

A method of processing media data that is coded by inserting start information into a start part of content and inserting end information into an end part of the content, the method comprising:

(a) checking whether the start information is included by decoding the media data;

(b) temporarily storing the received media data until media data including the end information is received if the start information is included; and

(c) normally storing the temporarily stored media data when a record command of a user is received while the media data is being temporarily stored.

【Claim 5】

The method of claim 4,

wherein meta information on the content is added to the media data and stored, and

wherein when the media data is normally stored, a file name is assigned to the meta information.

【Claim 6】

The method of claim 4, further comprising (d) deleting the temporarily stored media data when the

record command of the user is not received while the
media data is being temporarily stored.

【Claim 7】

A transmission system comprising:

5   a meta information output unit outputting meta
information including start and end information of
content;

a content start and end signal generator
generating the start and end information of the
10   content;

a media encoder coding the media data by
inserting start information into a predetermined
position that is previously determined when a start
signal of content is input and inserting end
15   information into a predetermined position that is
previously determined when an end signal of the
content is input; and

a transmission device transmitting the coded
media data.

20   【Claim 8】

The transmission system of claim 7, wherein the
content start and end signal generator receives the
start and end signals of the content from an outside
and output the received start and end signals, or
25   automatically generates the start and end signals of
the content when the media data of the content

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starts or ends.

【Claim 9】

The transmission system of claim 7, wherein the start information and the end information, which is meta information, is inserted into an area of private_data_byte in a field of adaptation_field of an area of MPEG-2 transport steam (TS) packet header in a coding process according to a transmission technique standard in MPEG-2 TS and inserted into one of InitialObjectDescriptor, ObjectDescriptor, and ES_Descriptor which are included in an object descriptor (OD) of MPEG-4 SP in a coding process according to a transmission technique standard in MPEG-4 sync layer (SL).

【Claim 10】

A receiver for processing media data that is coded by inserting start information into a start part of content and inserting end information into an end part of the content, the receiver comprising:

a receiving module receiving the coded media data;

a media decoder decoding the media data;

a storage medium including a temporary storage area and a normal storage area;

a user interface receiving a command from a user; and

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a control unit checking whether the start information is included by decoding the media data, temporarily storing the received media data until media data including the end information is received

5   if the start information is included, and normally storing the temporarily stored media data when a record command of a user is received while the media data is being temporarily stored.

【Claim 11】

10   The receiver of claim 10,

wherein meta information on the content is added to the media data and stored, and

wherein the control unit assigns a file name to the meta information, when the media data is

15   normally stored.

【Claim 12】

The receiver of claim 10, wherein the control unit deletes the temporarily stored media data when the record command of the user is not received while

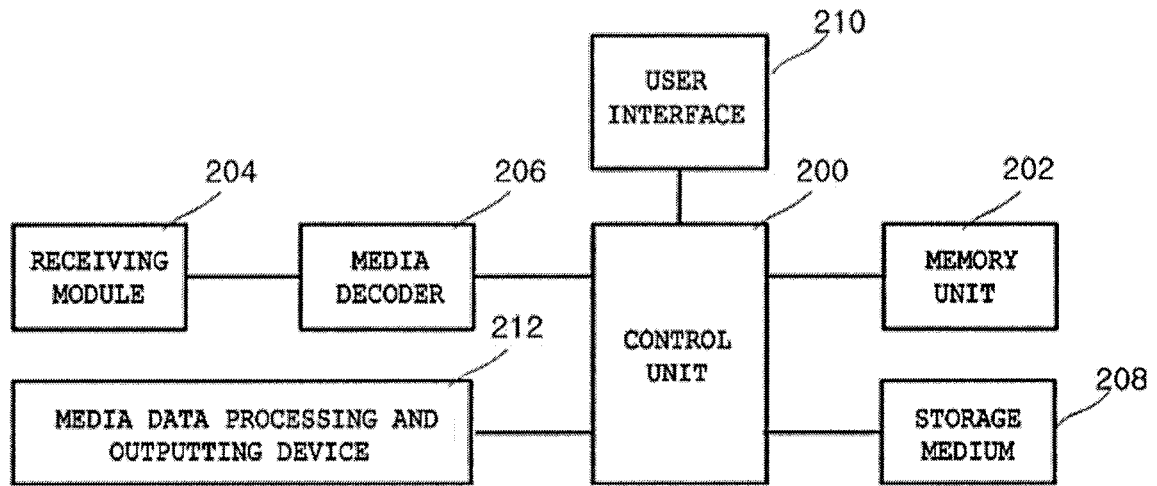20   the media data is being temporarily stored.
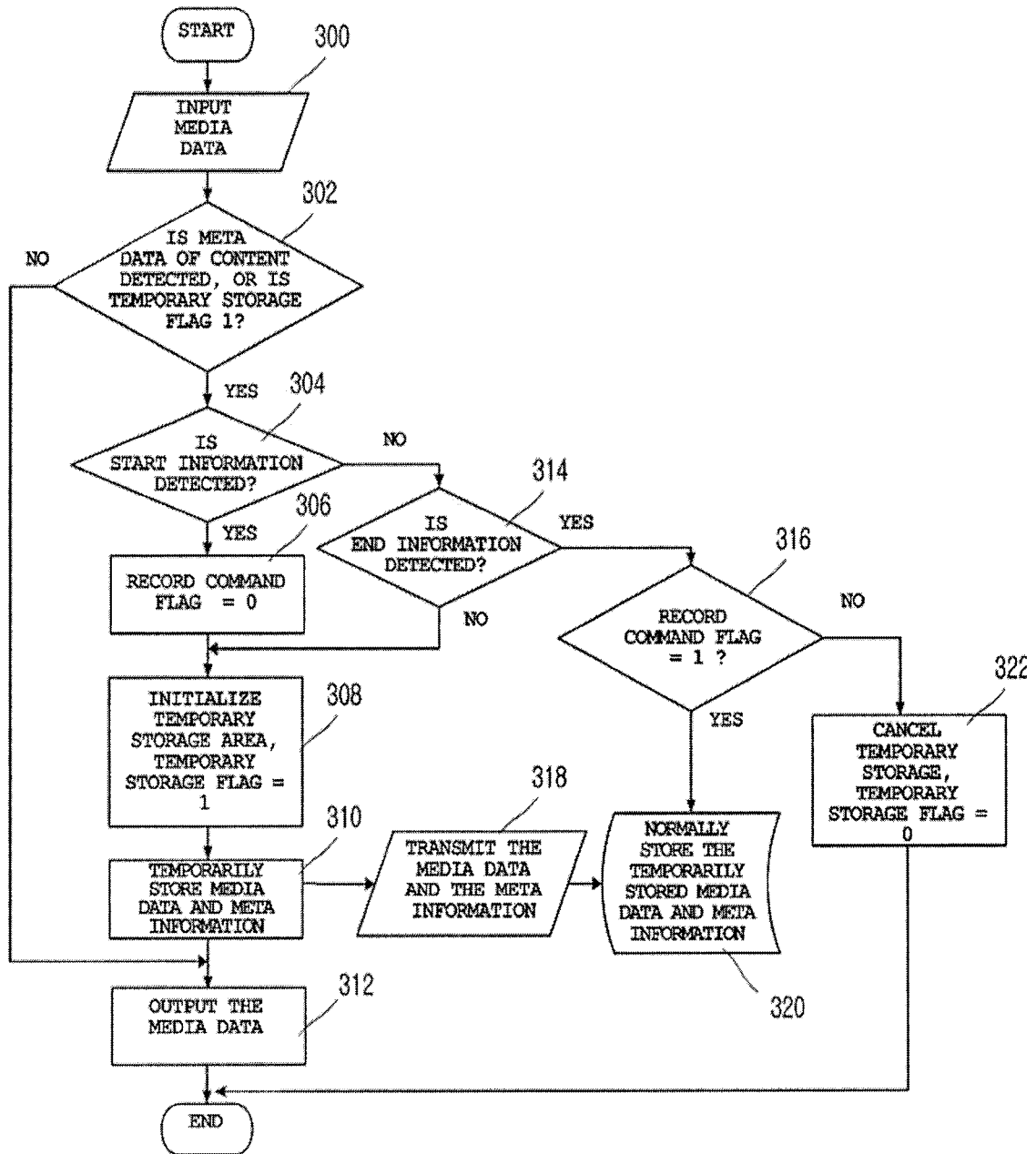
[Fig. 1]
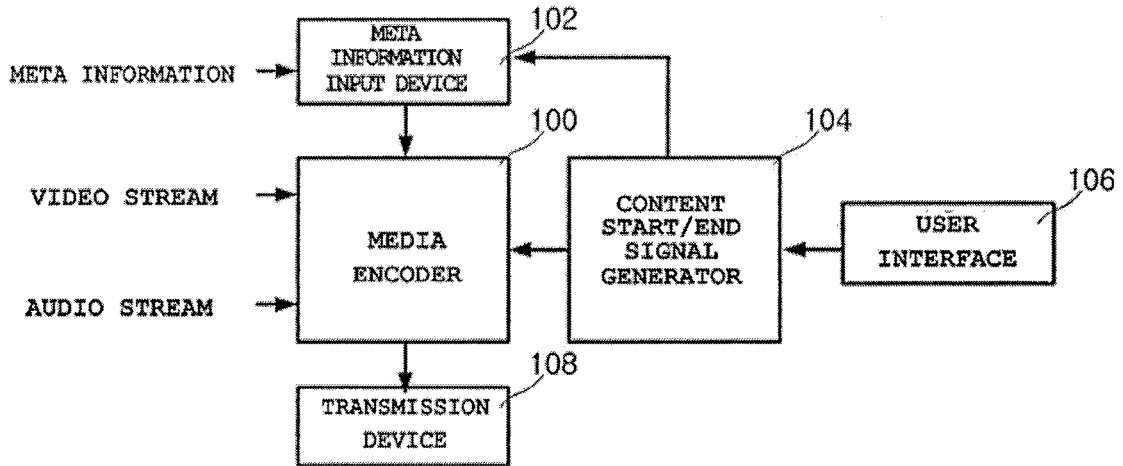
[Fig. 2]

FIELD NAME	DATA TYPE (bits)	MEANIG OF FIELD
MetaDataStartCode	m	IDENTIFIER FOR RECOGNIZING SPECIFIC META INFORMATION WITH A LENGTH OF M BITS
MetaDataLength	n	INDICATOR OF ENTIRE LENGTH OF META INFORMATION
MetaDataField_1	p	META INFORMATION
...	...	META INFORMATION
MetaDataField_k	r	META INFORMATION

[Fig. 3]

[Fig. 4]

A.   CLASSIFICATION OF SUBJECT MATTER

H04N 7/08(2006.01)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 H04N

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): "media data, start, end, coding, decoding, meta information"

C.   DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 2006-0039482 A1 (SAMSUNG ELECTRONICS CO., LTD.) 23 February 2006 See abstract; paragraphs [0032]-[0050].	1-12
A	WO 2004-054271 A2 (KONINKLIJKE PHILIPS ELECTRONICS N.V.) 24 June 2004 See abstract; page 6, line 9 - page 7, line 30.	1-12
A	US 2003-0121045 A1 (LG ELECTRONICS INC.) 26 June 2003 See abstract; paragraphs [0031]-[0060].	1-12

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

* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art "&" document member of the same patent family

Date of the actual completion of the international search 29 SEPTEMBER 2008 (29.09.2008)	Date of mailing of the international search report **29 SEPTEMBER 2008 (29.09.2008)**
Name and mailing address of the ISA/KR Korean Intellectual Property Office Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer KIM, Heung Soo Telephone No. 82-42-481-5764

Form PCT/ISA/210 (second sheet) (July 2008)

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