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(54) Title: METHOD FOR GENERATING AND CONSUMING A FILE AND APPARATUS THEREOF AND COMPUTER READABLE MEDIUM

FIG. 1
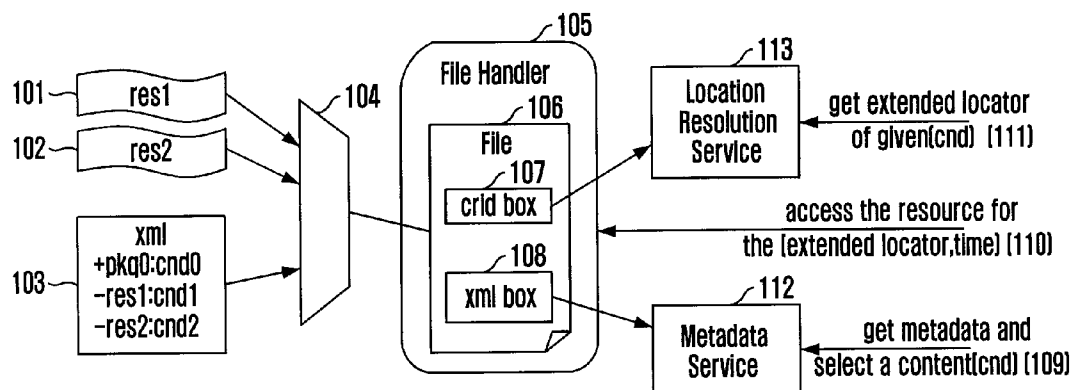
(57) Abstract: Provided are file generating and consuming methods and apparatuses, and a computer-readable recording medium. The method for generating a file includes: generating matching relationship information between a content identifier of a content and location information of the content; and generating a file including metadata for the content and the matching relationship information.

DESCRIPTION

METHOD FOR GENERATING AND CONSUMING A FILE AND APPARATUS
THEREOF AND COMPUTER READABLE MEDIUM

5 **TECHNICAL FIELD**

The present invention relates to methods for generating and consuming a file, apparatuses therefor, and a computer-readable recording medium.

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BACKGROUND ART

15 According to conventional technology, a content identifier of each metadata should be sought for individually and transformed into a locator capable of finding the location of the content within a file, when metadata using a content identifier (ID) are stored with 20 contents. This is the case where a content identifier like TV-Anytime is used in a file format such as an International Organization for Standardization (ISO) file.

With the conventional technology, metadata should be updated when the location of the content within a file 25 is not accurately figured out or whenever the location of a content changes. This is inconvenient. Moreover, in case of metadata standard where a content identifier, such as contents reference identifier (CRID), should be necessarily used in a metadata schema like TV-Anytime, 30 there is a problem in that a metadata document cannot be stored in a file without violating a schema grammar.

DISCLOSURE

TECHNICAL PROBLEM

35 In order to overcome the problem of the

1

conventional technology, the present invention stores matching relationship information between location information of a content and a content identifier together in a file, when metadata are stored in the file.

5   Other objects and advantages of the present invention can be understood by the following description, and become apparent with reference to the embodiments of the present invention. Also, it is obvious to those skilled in the art of the present invention that the

10   objects and advantages of the present invention can be realized by the means as claimed and combinations thereof.

TECHNICAL SOLUTION

15   In accordance with an aspect of the present invention, there is provided a method for generating a file, including: generating matching relationship information between a content identifier of a content and location information of the content; and generating a

20   file including metadata for the content and the matching relationship information.

         In accordance with another aspect of the present invention, there is provided an apparatus for generating a file, including: an information generator for

25   generating matching relationship information between a content identifier of a content and location information of the content; and a file generator for generating a file including metadata for the content and the matching relationship information.

30   In accordance with another aspect of the present invention, there is provided a method for consuming a file, including: selecting a content identifier of a content from metadata of the content; acquiring location information of the content corresponding to the content

35   identifier by using matching relationship information

2

between the content identifier of the content and location information of the content; and acquiring the content based on the location information, wherein the metadata and the matching relationship information are

5   included in a file.

In accordance with another aspect of the present invention, there is provided an apparatus for consuming a file, including: a location resolution unit for selecting a content identifier of a content from metadata of the

10 content and acquiring location information of the content corresponding to the content identifier by using matching relationship information between the content identifier of the content and location information of the content; and a content acquisition unit for acquiring the content

15 based on the location information, wherein the metadata and the matching relationship information are included in a file.

In accordance with another aspect of the present invention, there is provided a computer-readable

20 recording medium, which defines a format to generate a file including metadata on a content and matching relationship information between a content identifier of the content and location information of the content, and stores a file capable of acquiring the content

25 corresponding to the content identifier based on the matching relationship information.

The advantages, features and aspects of the invention will become apparent from the following description of the embodiments with reference to the

30 accompanying drawings, which is set forth hereinafter. Accordingly, the technological concept of the present invention can be easily implemented by those of ordinary skill in the art to which the present invention pertains. Also, when it is considered that detailed description on

35 a related art may obscure a point of the present

invention, the description will not be provided herein. Hereinafter, specific embodiments of the present invention will be described in detail with reference to the accompanying drawings.

5

ADVANTAGEOUS EFFECTS

The technology of the present invention can separately process authoring metadata and generating a file from each other.

10   Also, when the location of a content is changed, the technology of the present invention can cope with the change by simply modifying a table without updating the metadata.

15   ### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block view illustrating a file format structure and a process of generating and consuming a file in accordance with an embodiment of the present invention.

20   Fig. 2 exemplarily illustrates information transmitted to a file handler in accordance with an embodiment of the present invention.

Fig. 3 exemplifies information included in matching relationship information in accordance with an

25   embodiment of the present invention.

BEST MODE

Hereafter, specific embodiments of the present invention will be described in detail with reference to

30   the accompanying drawings.

In the specific embodiments of the present invention, when a content and metadata for the content are stored together in a file, matching relationship information is stored together in the file. The matching

35   relationship information is information mapping a content

identifier for a content to be stored to a locator for positioning the content in the file. The matching relationship information included in the file is used to determine location the location of the content stored in

5   the file. This is referred to as location resolution. Therefore, it is possible to access to the content in the file by using a content identifier.

However, even when a content is not stored in a file, matching relationship information in the file may

10   include current location information of a content corresponding to a content identifier. Therefore, the present invention is not limited to a case that a content is stored in a file together.

In the embodiments of the present invention, it is

15   assumed that a file format is an International Organization for Standardization (ISO) base media file format, and metadata are TV-Anytime metadata, and a content identifier used in the TV-Anytime metadata is CRID.

20   First, the core concept of the ISO base media file format will be briefly described. An ISO base media file is formed of objects called boxes, and all data are described in the boxes. A box object includes size information and type information. Size represents the

25   size of data included in a box in a byte number. Type denotes a box identifier formed of four letters. Therefore, it is possible to easily search for the location of a box including desired information by the size information and the type information. A box

30   includes a moov box and an mdat box. The moov box and the mdat box include metadata and media data, respectively. Metadata do not include media data and it is referred to for description.

An ISO base media file includes a moov type box

35   having metadata for media stream and an mdat type box

having actual media data. An ISO base media file format defines a track and a sample. Track represents temporal flow of media and it is formed of sample and sample description. Sample denotes a small unit such as a frame of video. Sample description defines information on how samples are to be decoded. The kinds of tracks are divided into video track, audio track and hint track. Video track and audio track include metadata for video and audio, respectively. Hint track describes information on how a streaming server will perform streaming or packetizing on video and audio samples when the ISO base media file is streamed through streaming protocol. When the video and audio samples are restored, the hint track may be disregarded.

Fig. 1 is a block view illustrating a file format structure and a process of generating and consuming a file in accordance with an embodiment of the present invention. Referring to Fig. 1, a collector 104 collects resources res1 and res2 101 and 102 and metadata 103, which constitute a content. The resources 101 and 102 and the metadata 103 collected by the collector 104 are inputted to a file handler 105. The metadata 103 may be represented in an Extensible Markup Language (XML).

In Fig. 1, when the resources 101 and 102 and the metadata 103 are delivered to the file handler 105, a Content Reference Identifier (CRID), which is a content identifier, and a Uniform Resource Locator (URL), which indicates the location where the content is stored, are transmitted together to supplement the operation of the file handler 105.

The resources 101 and 102 and the metadata 103 transmitted to the file handler 105 are stored in an 'mdat' box (not shown) and an 'xml' box 108 of the ISO base media file format, respectively. Herein, the file handler 105 generates matching relationship information

between the content identifier CRID and an item
identifier, a track identifier or a byte position of a
resource (which is a content), as shown in Fig. 3. Also,
it may generate matching relationship information between
5   a content identifier CRID and a URL, which represents a
location where a content is stored. In this case, the
URL may include information on a world wide web (Web)
address.

The matching relationship information may be
10   generated in an information generator of a file
generating apparatus. The generated matching
relationship information is stored in a 'crid' box 107.
The matching relationship information may be formed in
the form of a matching table showing relationship among
15   CRID, an item identifier, a track identifier, or a byte
position of a resource (which is a content). When
matching relationship information is generated between
CRID and an item identifier or a track identifier, the
location of the resource is indirectly indicated. When
20   matching relationship information is generated between
CRID and the byte position of the resource (which is the
content), the location of the resource is directly
indicated.

The file handler 105 generates an 'xml' box 108
25   including the metadata 103 and a 'crid' box 107 including
a content described by the metadata 103 and the resources
101 and 102 contained by the content as one file 106, and
stores and manages the file 106. A file generator of the
file generating apparatus may generate the file 106. The
30   file generating apparatus may be a terminal or a server,
and the generated file 106 may be stored in and managed
by the terminal or the server. Information in the 'crid'
box 107 can be transmitted to a location resolution
service entity 113 based on TV-Anytime. Information in
35   the 'xml' box 108 can be transmitted to a metadata

service entity 112 and used for consumption of the file
106.

When the content or the resources 101 and 102
included in the content are positioned in the file 106,
5   the file 106 can include the 'crid' box 107 having the
matching relationship information and the 'xml' box 108
having the metadata, as described above. The file may be
generated through a process of packaging the 'crid' box
107 and the 'xml' box 108. The generated file 106 may be
10   stored in and managed by a terminal or a server.

The followings are exemplar syntax that can be
stored in the 'crid' box 107.

```
aligned(8) class CridBox extends Box ('uuid', 'crid') {
15       int i;
         unsigned int(16) item_count;
         unsigned int(16) track_count;
         for (i=0; i<item_count; i++) {
unsigned int(16) item_ID;        // item_ID associated with the CRID
20               unsigned int(16) str_len;        // byte length of the
CRID string
                 byte[str_len] CRID_string;       // CRID string
         }
         for (i=0; i<track_count; i++) {
25   unsigned int(32) track_ID;        // track_ID associated with the
CRID
                 unsigned int(16) str_len;        // byte length of the
CRID string
                 byte[str_len] CRID_string;       // CRID string
30       }
     }
```

Herein, item_count specifies the number of item_ID
pairs and CRID to be stored, and track_count specifies
35   the number of track_ID pairs and CRID to be stored. Also,

8

str_len specifies byte length of a CRID string. CRID_string specifies actually stored CRID string. In addition, item_ID is a value of item_ID related to its paired CRID string, and track_ID is a value of track_ID related to its paired CRID string.

Hereafter, consumption of the generated file 106 will be described.

In the first place, a user acquires metadata included in the 'xml' box 108 and selects a desired content identifier (CRID) (see 109). Herein, the information in the 'xml' box 108 is transmitted to the metadata service entity 112 based on TV-Anytime, and the user acquires metadata from the metadata service entity 112 based on TV-Anytime and selects a desired content identifier. The metadata service entity 112 based on TV-Anytime may be included in a terminal or a server that generates the file 106, or it may be managed by a separate object.

The selected content identifier is transformed into a locator indicating the location of a content or a resource included in the content (see 111). The locator indicating the location of the resource can be acquired or transformed by using the matching relationship information included in the 'crid' box 107. Also, the information in the 'crid' box 107 is transmitted to the location resolution service entity 113 based on TV-Anytime, and a locator indicating the location of a content or a resource included in the content corresponding to the content identifier selected by using the matching relationship information. The locator can be generally represented as a Uniform Resource Identifier (URI), but it is possible to use a scheme such as Moving Picture Experts Group (MPEG) 21 Part 17 Fragment Identification scheme to identify a plurality of contents or resources existing in the file 106. Location

9

resolution is carried out in a location resolution unit
of a file consuming apparatus.

The acquired locator includes actual physical
location information, such as location of the file 106,
5   an item identifier (item_ID), a track identifier
(track_ID) or byte position which corresponds to a
specific content within the file 106. The user can
access to the specific content or resource within the
file 106 by using the information (see 110). Accessing
10   to a specific content or resource by using the acquired
locator can be performed in a content acquisition unit of
the file consuming apparatus. The file consuming
apparatus is a device for consuming a content, such as a
terminal.

15   To take a usage example, when a user wants to see
information describing a media being shown in a Digital
Multimedia Broadcasting-Application Format (DMB-AF)
player, the player searches the 'crid' box 107 of the
DMB-AF file for an CRID associated with a media track or
20   an item. The player searches TV-Anytime metadata, and
displays descriptions related to the CRID.

When TV-Anytime metadata included in the DMB-AF
file are used, the player suggests content descriptions
to the user and the user browses metadata by using
25   Graphic User Interface (GUI) of the player and selects a
content the user wants to consume. The player searches
the 'crid' box to find out an item identifier or a track
identifier related to the CRID of the selected content.

The method of the present invention described
30   above can be realized as a program and stored in a
computer-readable recording medium such as CD-ROM, RAM,
ROM, floppy disks, hard disks, magneto-optical disks and
the like. Since the process can be easily implemented by
those skilled in the art to which the present invention
35   pertains, further description will not be provided herein.

10

While the present invention has been described with respect to the specific embodiments, it will be apparent to those skilled in the art that various changes and modifications may be made without departing from the

5   spirit and scope of the invention as defined in the following claims.

MODE FOR THE INVENTION

Following description exemplifies only the
10   principles of the present invention. Even if they are not described or illustrated clearly in the present specification, one of ordinary skill in the art can embody the principles of the present invention and invent various apparatuses within the concept and scope of the
15   present invention. The use of the conditional terms and embodiments presented in the present specification are intended only to make the concept of the present invention understood, and they are not limited to the embodiments and conditions mentioned in the specification.
20   Also, all the detailed description on the principles, viewpoints and embodiments and particular embodiments of the present invention should be understood to include structural and functional equivalents to them. The equivalents include not only currently known equivalents
25   but also those to be developed in future, that is, all devices invented to perform the same function, regardless of their structures.

For example, block diagrams of the present invention should be understood to show a conceptual viewpoint of an
30   exemplary circuit that embodies the principles of the present invention. Similarly, all the flowcharts, state conversion diagrams, pseudo codes and the like can be expressed substantially in a computer-readable media, and whether or not a computer or a processor is described

distinctively, they should be understood to express various processes operated by a computer or a processor.

Functions of various devices illustrated in the drawings including a functional block expressed as a processor or a similar concept can be provided not only by using hardware dedicated to the functions, but also by using hardware capable of running proper software for the functions. When a function is provided by a processor, the function may be provided by a single dedicated processor, single shared processor, or a plurality of individual processors, part of which can be shared.

The apparent use of a term, 'processor', 'control' or similar concept, should not be understood to exclusively refer to a piece of hardware capable of running software, but should be understood to include a digital signal processor (DSP), hardware, and ROM, RAM and non-volatile memory for storing software, implicatively. Other known and commonly used hardware may be included therein, too.

In the claims of the present specification, an element expressed as a means for performing a function described in the detailed description is intended to include all methods for performing the function including all formats of software, such as combinations of circuits for performing the intended function, firmware/microcode and the like.

To perform the intended function, the element is cooperated with a proper circuit for performing the software. The present invention defined by claims includes diverse means for performing particular functions, and the means are connected with each other in a method requested in the claims. Therefore, any means that can provide the function should be understood to be an equivalent to what is figured out from the present specification.

The objects, features and advantages of the present invention described above may be apparent from the following detailed description. Accordingly, those skilled in the art to which the present invention pertains can easily implement the technological concept of the present invention. Also, when it is considered that detailed description of a related art may obscure a point of the present invention, the description will not be provided. Hereafter, the present invention will be described in detail with reference to the accompanying drawings.

According to the present invention, when metadata using a content identifier (ID) of a content is stored in a file, matching relationship information between the content identifier and location information of the content is stored together in the file to directly or indirectly inform the content identifier used in the metadata and the location where the content is stored. In this case, the file includes the metadata and the matching relationship information. The content may include resources, and the matching relationship information may include a locator. The metadata and the matching relationship information may be generated as files through a packaging process. The matching relationship information includes the content identifier and the location information of the content in the form of a mapping table.

Meanwhile, when metadata using a content identifier is stored in a file along with a content, matching relationship information having information on the relationship between a content identifier and location information of the content are stored in the file to directly or indirectly inform the content identifier used in the metadata and the location where the content is stored. In this case, the file includes

13

the content, the metadata, and the matching relationship information.

The present invention may be applied to general metadata identifying a content by using a URI. Metadata
5 mentioned in the present specification include metadata used in TV-Anytime, MPEG-21 Digital Item Declaration (DID), Rights Expression Language (REL), Intellectual Property Management and Protection (IPMP) and the like.

Hereafter, a structure of a file format,
10 generation of a file, and consumption of a file will be described in accordance with the present invention.

<Structure of File Format>

A computer-readable recording medium of the
15 present invention defines a format to generate a file including metadata on a content and matching relationship information between a content identifier of the content and location information of the content, and stores a file that can acquire the content corresponding to the
20 content identifier based on the matching relationship information. The file may be generated by using a method of packaging metadata and matching relationship information. A content may include resources and metadata may include a content identifier. The content
25 identifier may be a Contents Reference Identifier (CRID) or a Universal Unique Identifier (UUID). When the content is positioned out of the file, the file includes metadata and matching relationship information. The matching relationship information stores information on a
30 content identifier and location information of a content corresponding to the content identifier in a mapped form. Herein, the location information of the content may include current location information of the content, and it may be stored in the form of a Uniform Resource
35 Locator (URL).

If the matching relationship information is stored in a file along with the metadata for a content, a process of finding a content identifier existing in the metadata individually and transforming the content

5 identifier into a locator whose form is identifiable in the file can be omitted. Also, even though the location of the content is changed, the method of the present invention can cope with the change by simply modifying a table, discarding a difficulty of updating the metadata

10 one by one.

The file may further include the content. In this case, a method of packaging the content, metadata, and matching relationship information into one file is used to generate the file. Location information may include

15 an item identifier (item_ID) or a track identifier (track_ID) of an ISO base media file format for a content. In case where an item identifier (item_ID) or a track identifier (track_ID) is used, the location of the content can be identified indirectly.

20 When the file includes the content, the location information may include byte position information for the content. Byte position information is used to directly identify the location of the content or resources included in the file. Byte position information may

25 include offset information for specifying the starting position of a corresponding content or resource and length information for specifying the length from the starting position.

Therefore, it is possible to store a metadata

30 document following a schema grammar in a file along with a content in conformity to the metadata standard where a content identifier should be used in metadata schema.

The matching relationship information stores a mapping table including a content identifier and an item

35 identifier, a track identifier, or byte position

information.

<Generation of File>

A file generation method of the present invention
includes generating matching relationship information
between a content identifier of a content and location
information of the content and generating a file
including metadata for the content and the matching
relationship information. Herein, the location
information may include current location information of
the content.

Meanwhile, the file may further include the
content. In this case, the location information may
include an item identifier or a track identifier of an
ISO base media file format for the content. Also, the
location information may include byte position
information for the content.

The generation of the file may be performed in a
terminal or a server.

A file generating apparatus of the present
invention includes information generator for generating
matching relationship information between a content
identifier of a content and location information of the
content and a file generator for generating a file
including metadata for the content and the matching
relationship information. Herein, the location
information may include current location information of
the content.

Meanwhile, the file may further include the
content. In this case, the location information may
include an item identifier or a track identifier of an
ISO base media file format for the content. Also, the
location information may include byte position
information for the content.

Since details related to the generation of a file

16

have been explained in the <Structure of File Format> part, they will not be described herein.

<Consumption of File>

5   A file consuming method of the present invention includes selecting a content identifier of a content from metadata of the content, acquiring location information of the content corresponding to the content identifier by using matching relationship information between the

10   content identifier of the content and location information of the content, and acquiring the content based on the location information. The metadata and the matching relationship information are included in a file. Herein, the location information may include current

15   location information of the content.

Meanwhile, the file may further include the content. A method of identifying the content included in the file, such as MPEG-21 Part 17 Fragment Identification scheme, may be used to acquire the location information

20   of the content. In this case, the location information may include an item identifier or a track identifier of an ISO base media file format for the content. Also, the location information may include byte position information for the content.

25   A file consuming apparatus of the present invention includes a location resolution unit for selecting a content identifier of a content from metadata of the content and acquiring location information of the content corresponding to the content identifier by using

30   matching relationship information between the content identifier of the content and location information of the content, and a content acquisition unit for acquiring the content based on the location information. The metadata and the matching relationship information are included in

35   a file. Herein, the location information may include

current location information of the content.

Meanwhile, the file may further include the content. A method of identifying the content included in the file, such as MPEG-21 Part 17 Fragment Identification scheme, may be used to acquire the location information of the content. In this case, the location information may include an item identifier or a track identifier of an ISO base media file format for the content. Also, the location information may include byte position information for the content.

Since and details related to the consumption of a file have been explained in the <Structure of File Format> part, they will not be described herein.

INDUSTRIAL APPLICABILITY

The present invention is used for generation and consumption of a file that can detect the location of a content by using metadata using a content identifier.

WHAT IS CLAIMED IS

    1.   A method for generating a file, comprising:
    generating matching relationship information between a content identifier of a content and location information of the content; and
    generating a file including metadata for the content and the matching relationship information.

    2.   The method of claim 1, wherein the location information includes current location information of the content.

    3.   The method of claim 1, wherein the file further includes the content.

    4.   The method of claim 3, wherein the location information includes an item identifier or a track identifier of an International Organization for Standardization (ISO) Base Media File Format for the content.

    5.   The method of claim 3, wherein the location information includes byte position information for the content.

    6.   An apparatus for generating a file, comprising:
    an information generator for generating matching relationship information between a content identifier of a content and location information of the content; and
    a file generator for generating a file including metadata for the content and the matching relationship information.

7.   The method of claim 6, wherein the location information includes current location information of the content.

8.   The method of claim 6, wherein the file further includes the content.

9.   The method of claim 8, wherein the location information includes an item identifier or a track identifier of an International Organization for Standardization (ISO) Base Media File Format for the content.

10.   The method of claim 8, wherein the location information includes byte position information for the content.

11.   A method for consuming a file, comprising:
selecting a content identifier of a content from metadata of the content;
acquiring location information of the content corresponding to the content identifier by using matching relationship information between the content identifier of the content and location information of the content; and
acquiring the content based on the location information,
wherein the metadata and the matching relationship information are included in a file.

12.   The method of claim 11, wherein the location information includes current location information of the content.

13.   The method of claim 11, wherein the file further includes the content, and

a method of identifying the content included in the file is used to acquire the location information of the content.

14.   The method of claim 13, wherein the location information includes an item identifier or a track identifier of an International Organization for Standardization (ISO) Base Media File Format for the content.

15.   The method of claim 13, wherein the location information includes byte position information for the content.

16.   An apparatus for consuming a file, comprising:

a location resolution unit for selecting a content identifier of a content from metadata of the content and acquiring location information of the content corresponding to the content identifier by using matching relationship information between the content identifier of the content and location information of the content; and

a content acquisition unit for acquiring the content based on the location information, wherein the metadata and the matching relationship information are included in a file.

17.   The apparatus of claim 16, wherein the location information includes current location information of the content.

18.   The apparatus of claim 16, wherein the file further includes the content, and

the location resolution unit uses a method of identifying the content included in the file.

19.   The apparatus of claim 18, wherein the location information includes an item identifier or a track identifier of an International Organization for Standardization (ISO) Base Media File Format for the content.

20.   The apparatus of claim 18, wherein the location information includes byte position information for the content.

21.   A computer-readable recording medium, which defines a format to generate a file including metadata on a content and matching relationship information between a content identifier of the content and location information of the content, and stores a file capable of acquiring the content corresponding to the content identifier based on the matching relationship information.

22.   The computer-readable recording medium of claim 21, wherein the location information includes current location information of the content.

23.   The computer-readable recording medium of claim 21, wherein the file further includes the content.

24.   The computer-readable recording medium of claim 21, wherein the location information includes an item identifier or a track identifier of an International Organization for Standardization (ISO) Base Media File Format for the content.

23

25. The computer-readable recording medium of claim 21, wherein the location information includes byte position information for the content.
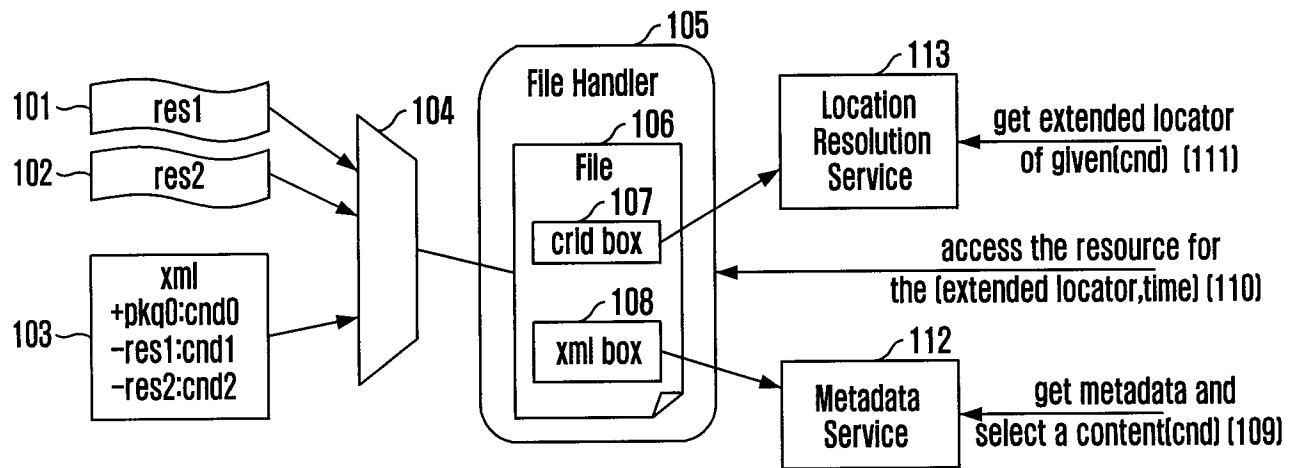
FIG. 1

FIG. 2

CRID	URL
crid1	file://C:myFolder/image.jpg
crid2	./resource/video.mp4
...	...

FIG. 3

CRID	Item_ID
crid1	1
crid2	2
. . .	. . .

CRID	track_ID
crid1	1
crid2	2
. . .	. . .

CRID	offset	length
crid1	100	1024
crid2	1124	512000
. . .	. . .	. . .

A.   CLASSIFICATION OF SUBJECT MATTER

G06Q 50/00(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)
IPC8 G06Q 50/00C0

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)
e-KIPASS "content identifier, content location, matching relationship information, metadata, xml, content reference identifier"

C.   DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 1020050008436 A (ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE) 21 January 2005 See abstract; figures 1-4; pages 2-4; claims 1-16	1-25
Y	KR 1020020093933 A (KONINKLIJKE PHILIPS ELECTRONICS N.V.) 16 December 2002 See abstract; figures 1-2; pages 2-3; claims 1-24	1-25
A	US 06466970 B1 (International Business Machines Corporation) 15 October 2002 See abstract; figures 1-5; columns 1-4; claims 1-18	1-25
A	US 06151624 A (RealNames Corporation) 21 November 2000 See abstract; figures 1-3; columns 1-5; claims 1-3	1-25

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

Date of the actual completion of the international search	Date of mailing of the international search report
23 MARCH 2009 (23.03.2009)	**23 MARCH 2009 (23.03.2009)**
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 KYE, Won Ho Telephone No. 82-42-481-8375

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

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