(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 August 2006 (03.08.2006)

PCT

(10) International Publication Number
WO 2006/080664 A1

(51) International Patent Classification:
H04N 7/08 (2006.01)

(21) International Application Number:
PCT/KR2005/003226

(22) International Filing Date:
29 September 2005 (29.09.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10-2004-0101770
6 December 2004 (06.12.2004) KR
10-2005-0032914
20 April 2005 (20.04.2005) KR

(71) Applicants *(for all designated States except US)*: **ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE** [KR/KR]; 161, gajeong-dong, Yuseong-gu, Daejon 305-350 (KR). **NET & TV INC.** [KR/KR]; #802 Hanseo Bldg., 1582-6, Seocho-dong, Seocho-gu, Seoul 137-875 (KR).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **JOUNG, Ye-Sun** [KR/KR]; #204, 116-2, Sinseong-dong, Yuseong-gu, Daejeon 305-804 (KR). **CHEONG, Won-Sik** [KR/KR]; #208-1101 Expoapt., Jeonmin-dong, Yuseong-gu, Daejeon 305-761 (KR). **CHA, Ji-Hun** [KR/KR]; #110-504 Daerim Durae Apt., 152-1, Sinseong-dong, Yuseong-gu, Daejeon 305-720 (KR). **KIM, Kyu-Heon** [KR/KR]; #201-904 Saemmeori Apt., Dunsan-dong, Seo-gu, Daejeon 302-777 (KR). **LIM, Young-Kwon** [KR/KR]; #309-1506 Green Apt., Songgang-dong, Yuseong-gu, Daejeon 305-751 (KR).

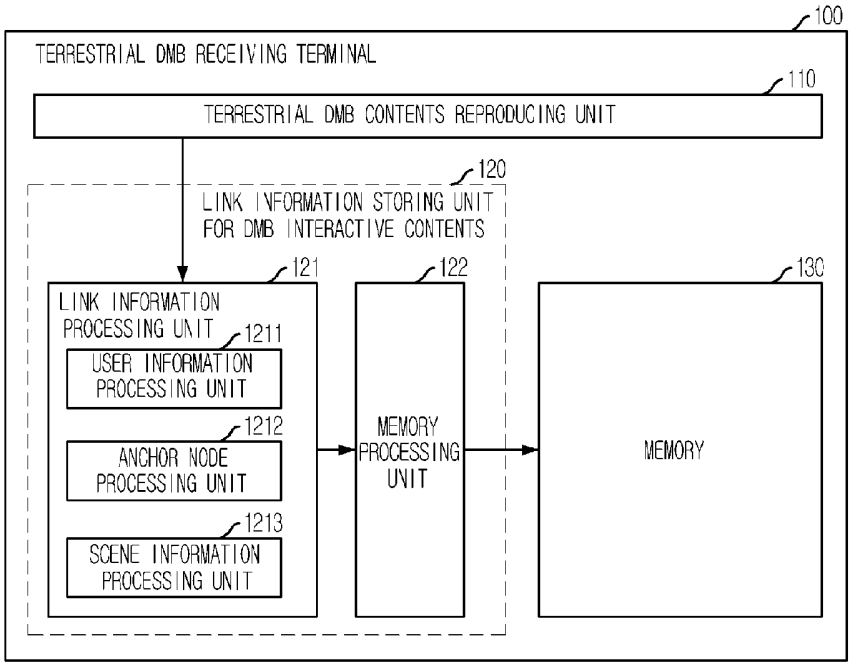
(74) Agent: **SHINSUNG PATENT FIRM**; 2-3f, Line Bldg., 823-30, Yeoksam-dong, Kangnam-ku, Seoul 135-080 (KR).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: APPARATUS AND METHOD FOR STORING LINK INFORMATION OF DMB INTERACTIVE CONTENTS AND DMB RECEIVING TERMINAL SYSTEM USING THE SAME



(57) Abstract: Provided is an apparatus and method for storing link information of DMB interactive contents and a DMB receiving terminal system using the same. The apparatus includes: a link information processing unit for extracting link information of digital multimedia broadcasting (DMB) interactive contents which is being produced in a DMB receiving terminal system; and a storing processing unit for storing the extracted link information in a storing medium.

WO 2006/080664 A1

European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

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

Description

APPARATUS AND METHOD FOR STORING LINK INFORMATION OF DMB INTERACTIVE CONTENTS AND DMB RECEIVING TERMINAL SYSTEM USING THE SAME

Technical Field

[1] The present invention relates to an apparatus and method for storing link information of DMB interactive contents and a DMB receiving terminal system using the same, and more particular to an apparatus and method for extracting link information such as a URL of digital multimedia broadcasting (DMB) interactive contents received through a DMB network and additionally storing the extracted link information in order to overcome a limitation of a screen size of a DMB receiving terminal system and rapidly/easily access corresponding documents or data using the stored link information, and a DMB receiving terminal system using the same.

[2]

Background Art

[3] MPEG-4 scene descriptions, which configure terrestrial DMB interactive contents, are described as a binary format for scene (BIFS). The BIFS is developed based on a virtual reality modeling language (VRML). Scenes are expressed as a set of various nodes arranged in a tree structure, and the update of the scenes by a user s operation is achieved through a root as like as VRML. The BIFS is distinguished from the VRML in a view that the BIFS includes not only nodes defined at VRML but also nodes supporting video and audio defined in MPEG-4 standard, nodes for expressing 2-dimensional (2D) scenes and nodes for embodying MPEG-4 functions. Furthermore, an anchor node is included as a node describing a dual link.

[4] A terrestrial DMB interactive service provides a way of selecting and viewing data or documents related to predetermined contents by selecting link information included in the predetermined contents to a user. However, it is very difficult to display corresponding link information while watching a terrestrial DMB program in a terrestrial DMB terminal without distributing the displayed DMB program since a conventional terrestrial DMB terminal has a limited screen size. Such a difficulty seriously decreases satisfaction of a user.

[5]

Disclosure of Invention

Technical Problem

[6] It is, therefore, an object of the present invention to provide an apparatus and

method for extracting link information of DMB interactive contents received and being reproduced in a DMB receiving terminal system, and independently storing the extracted link information of DMB interactive contents.

[7] It is another object of the present invention to provide a DMB receiving terminal system for extracting link information of DMB interactive contents while reproducing the DMB interactive contents received through a DMB network, and independently storing the extracted link information.

[8]

Technical Solution

[9] In accordance with one aspect of the present invention, there is provided an apparatus for storing link information of DMB interactive contents, the apparatus including: a link information processing unit for extracting link information of digital multimedia broadcasting (DMB) interactive contents which is being produced in a DMB receiving terminal system; and a storing processing unit for storing the extracted link information in a storing medium.

[10] In accordance with another aspect of the present invention, there is provided a method for storing link information of DMB interactive contents in a digital multimedia broadcasting (DMB) receiving terminal system, the method includes the steps of: a) extracting link information of the DMB interactive contents by reproducing the DMB interactive contents; and b) storing the extracted link information in a storing medium.

[11] In accordance with further another aspect of the present invention, there is provided a digital multimedia broadcasting (DMB) receiving terminal system, including: a DMB contents reproducing unit for receiving DMB interactive contents transmitted through a broadcasting network and reproducing the received DMB interactive contents; and a link information storing unit for extracting link information of DMB interactive contents which are being reproduced in the DMB contents reproducing unit.

[12]

Advantageous Effects

[13] An apparatus and method for storing link information of DMB interactive contents and a DMB receiving terminal system using the same according to the present invention extracts link information of DMB interactive contents which is being reproduced DMB interactive contents received through a DMB network and additionally stores the extracted link information. Accordingly, a usability of link information limited by a screen size of a DMB receiving terminal system is overcome. That is, the link information can be used without disturbing viewing of terrestrial DMB broadcasting program.

[14] Furthermore, predetermined documents or data can be rapidly and easily accessed using the stored link information according to the present invention.

[15] Therefore, a terrestrial DMB interactive contents service can be effectively provided to a user.

[16]

Brief Description of the Drawings

[17] The above and other objects and features of the present invention will become apparent from the following description of the preferred embodiments given in conjunction with the accompanying drawings, in which:

[18] Fig. 1 is a block diagram illustrating an apparatus for storing link information of DMB interactive contents and a DMB receiving terminal system using the same in accordance with a preferred embodiment of the present invention;

[19] Fig. 2 is a block diagram showing a user interface of link information in a user information processing unit shown in Fig. 1;

[20] Fig. 3 shows a method of extracting link information in an anchor node processing unit shown in Fig. 1; and

[21] Fig. 4 shows a method of extracting link information in a scene information processing unit shown in Fig. 1.

[22]

Best Mode for Carrying Out the Invention

[23] Other objects and aspects of the invention will become apparent from the following description of the embodiments with reference to the accompanying drawings, which is set forth hereinafter.

[24] Fig. 1 is a block diagram illustrating an apparatus for storing link information of DMB interactive contents and a DMB receiving terminal system using the same in accordance with a preferred embodiment of the present invention. Hereinafter, a method of storing link information according to the present invention will be also described with reference to Fig. 1.

[25] As shown in Fig. 1, a DMB receiving terminal system 100 for storing link information of DMB interactive contents includes a terrestrial DMB contents reproducing unit 110; a link information storing unit 120 for storing link information of DMB interactive contents; and a memory (storing unit) 130.

[26] The terrestrial DMB contents reproducing unit 110 receives DMB interactive contents transmitted through a broadcasting network and reproduces the received DMB interactive contents. The link information storing unit 120 extracts link information of DMB interactive contents while the DMB contents reproducing unit 110 is reproducing the DMB interactive contents, and independently stores the extracted link

information.

[27] Hereinafter, the link informant storing unit 120 will be described in detail.

[28] The link information storing unit 120 stores link information included in DMB interactive contents, which are reproduced by the terrestrial DMB contents reproducing unit, in the memory 130. That is, the link information storing unit 120 stores the link information included in corresponding contents by creating additional files or directories while viewing terrestrial DMB broadcasting programs using the terrestrial DMB receiving terminal system 100 in order to use the stored link information without disturbing to view the DMB broadcasting program.

[29] As show in Fig. 1, the link information storing unit 120 includes a link information processing unit 121 and a memory processing unit 122.

[30] The link information processing unit 121 extracts link information of DMB interactive contents while the terrestrial DMB contents reproducing unit 110 reproducing the DMB interactive contents. In order to extract the link information, the link information processing unit 121 includes a user information processing unit 1211, an anchor node processing unit 1212 and a scene information processing unit 1213. The user information processing unit 1211 will be described with reference to Fig. 2, the anchor node processing unit 1212 will be described with reference to Fig. 3, and the scene information processing unit 1213 will be described with reference to Fig. 4 in detail.

[31] The link information processing unit 121 may extracts all of link information of the reproducing DMB interactive contents, or may extracts parts of link information selected by a user through a user interface.

[32] Meanwhile, the memory processing unit 122 stores the extracted link information in the memory 130. Herein, the memory processing unit 122 creates files or directories to store the extracted link information.

[33] Fig. 2 is a block diagram showing a user interface of link information in a user information processing unit shown in Fig. 1.

[34] The user information processing unit 1211 receives description information for link information of terrestrial DMB contents through the link information user interface 21. The description information received from the user includes a title/name of link information and a memo related to a link created by a user. The received description information can be extended.

[35] The memory processing unit 122 describes corresponding link information according to the inputted description information, and stores the described link information in the memory 130. For example, if a title of predetermined link information is inputted from a user, the input title is stored in the corresponding link information. Accordingly, the stored link information can be conveniently used later.

[36] Fig. 3 shows a method of extracting link information in an anchor node processing unit shown in Fig. 1. That is, Fig. 3 shows operations performed by the anchor node processing unit 1212 in the link information processing unit 121.

[37] The anchor node processing unit 1212 extracts MPEG-4 scene description information 300 for each of link information in a scene description tree of terrestrial DMB contents which is being reproduced by the terrestrial DMB contents reproducing unit 110. That is, the anchor node processing unit 1212 extracts a uniform resource location (URL) 301, a description 302 and a parameter value 303 among anchor nodes for each of link information in the scene description tree of the DMB interactive contents.

[38] Fig. 4 shows a method of extracting link information in a scene information processing unit shown in Fig. 1. That is, Fig. 4 shows operations performed by the scene information processing unit 1213 of the link information processing unit 121.

[39] The scene information processing unit 1213 extracts MPEG-4 scene description information 400 for each of link information in a scene description tree of terrestrial DMB contents which is being reproduced by the terrestrial DMB contents reproducing unit 110. That is, the scene information processing unit 1213 extracts scene information included not only in anchor nodes but also in child nodes of corresponding anchor node from the scene description tree of the DMB interactive contents.

[40] The above described method according to the present invention can be embodied as a program and stored 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 the computer system. The computer readable recording medium includes a read-only memory (ROM), a random-access memory (RAM), a CD-ROM, a floppy disk, a hard disk and an optical magnetic disk.

[41] The present application contains subject matter related to Korean patent application No. 2004-0101770 and 2005-0032914, filed with the Korean Intellectual Property office on December 6, 2004, and April 20, 2005, respectively, the entire contents of which is incorporated herein by reference.

[42] While the present invention has been described with respect to certain preferred embodiments, it will be apparent to those skilled in the art that various changes and modifications may be made without departing from the scope of the invention as defined in the following claims.

Claims

[1] An apparatus for storing link information of DMB interactive contents, the apparatus comprising:
a link information processing means for extracting link information of digital multimedia broadcasting (DMB) interactive contents which is being produced in a DMB receiving terminal system; and
a storing processing means for storing the extracted link information in a storing medium.

[2] The apparatus as recited in claim 1, wherein the link information processing means includes:
an anchor node processing means for extracting a uniform resource location (URL), a description and a parameter value among properties configuring an anchor node for each of link information from a scene description tree of the DMB interactive contents; and
a scene processing unit for extracting scene information included in an anchor node and child nodes of the anchor node for each of link information from the scene description tree of the DMB interactive contents.

[3] The apparatus as recited in claim 2, wherein the link information processing means further includes a user information processing means for receiving description information of the extracted link information through a link information user interface from a user, and the storing processing means stores corresponding link information according to the input description information at the storing medium.

[4] The apparatus as recited in claim 3, wherein the description information includes a title/name of link information and a memo related to corresponding link information created by a user.

[5] The apparatus as recited in claim 1, wherein the link information processing means extracts predetermined link information selected among the link information of the DMB interactive contents through a user interface by a user.

[6] The apparatus as recited in claim 5, wherein the storing processing means creates files or directories in the storing medium and stores the extracted link information in the created files or directories.

[7] A method for storing link information of DMB interactive contents in a digital multimedia broadcasting (DMB) receiving terminal system, the method comprising the steps of:
a) extracting link information of the DMB interactive contents by reproducing the DMB interactive contents; and

b) storing the extracted link information in a storing medium.

[8] The method as recited in claim 7, further comprising the step of receiving description information for the extracted link information from a user, and describing the stored link information according to the received description information.

[9] The method as recited in claim 7, wherein in the step a), predetermined link information are selected among the link information of the DMB interactive contents by a user through a user interface and the selected link information are extracted.

[10] The method as recited in claim 7, wherein the step a) includes the steps of:
a-1) extracting a uniform resource location (URL), a description and a parameter value among properties configuring an anchor node for each of link information in a scene description tree of the DMB interactive contents; and
a-2) extracting scene information included in an anchor node and child nodes of the anchor node for each of link information from the scene description tree of the DMB interactive contents.

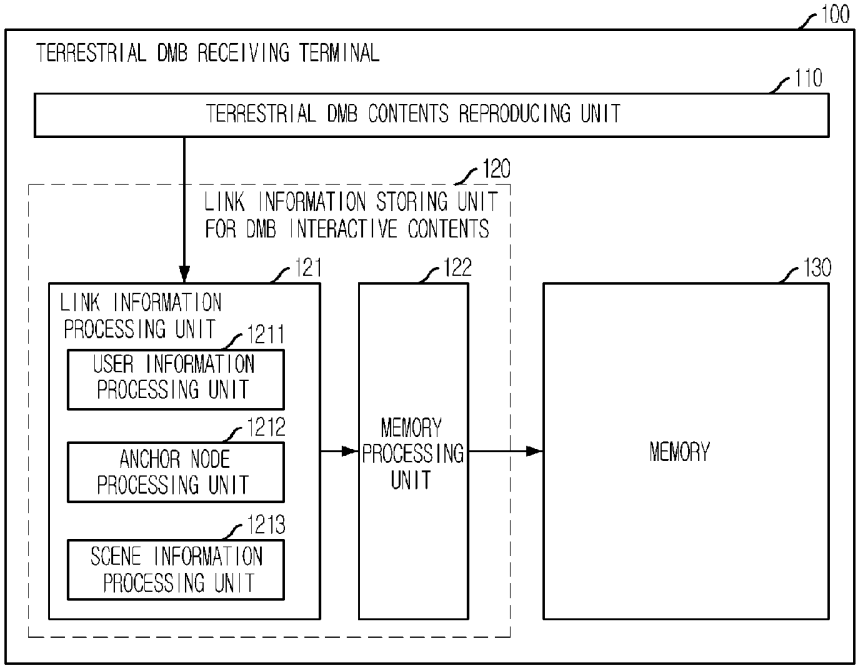
[11] The method as recited in claim 10, wherein in the step b), the extracted link information are stored as a file or a directory.

[12] A digital multimedia broadcasting (DMB) receiving terminal system, comprising:
a DMB contents reproducing means for receiving DMB interactive contents transmitted through a broadcasting network and reproducing the received DMB interactive contents; and
a link information storing means for extracting link information of DMB interactive contents which are being reproduced in the DMB contents reproducing means.

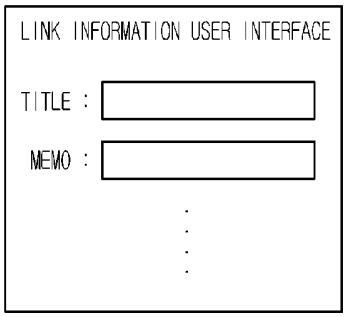
[13] The DMB receiving terminal system as recited in claim 12, further comprising a storing medium for storing the extracted link information.

[14] The DMB receiving terminal system as recited in claim 13, wherein the link information storing means includes:
a link information processing means for extracting link information of DMB interactive contents which are being reproduced by the DMB contents reproducing means; and
a storing processing means for storing the extracted link information.

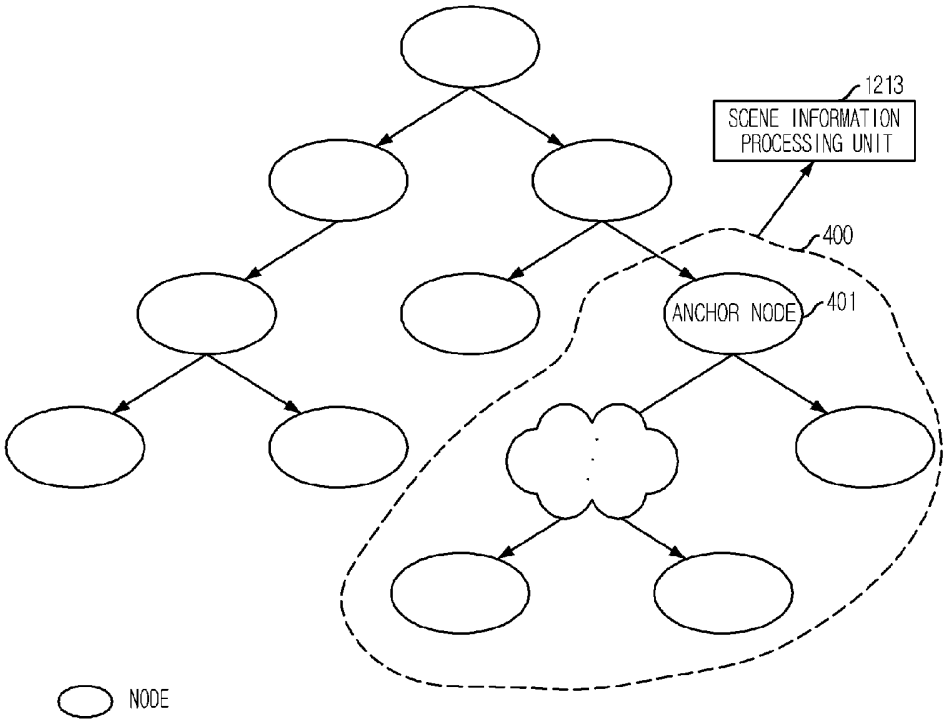
[Fig. 1]


100
TERRESTRIAL DMB RECEIVING TERMINAL
110
TERRESTRIAL DMB CONTENTS REPRODUCING UNIT
120
LINK INFORMATION STORING UNIT FOR DMB INTERACTIVE CONTENTS
121
LINK INFORMATION PROCESSING UNIT
1211
USER INFORMATION PROCESSING UNIT
1212
ANCHOR NODE PROCESSING UNIT
1213
SCENE INFORMATION PROCESSING UNIT
122
MEMORY PROCESSING UNIT
130
MEMORY

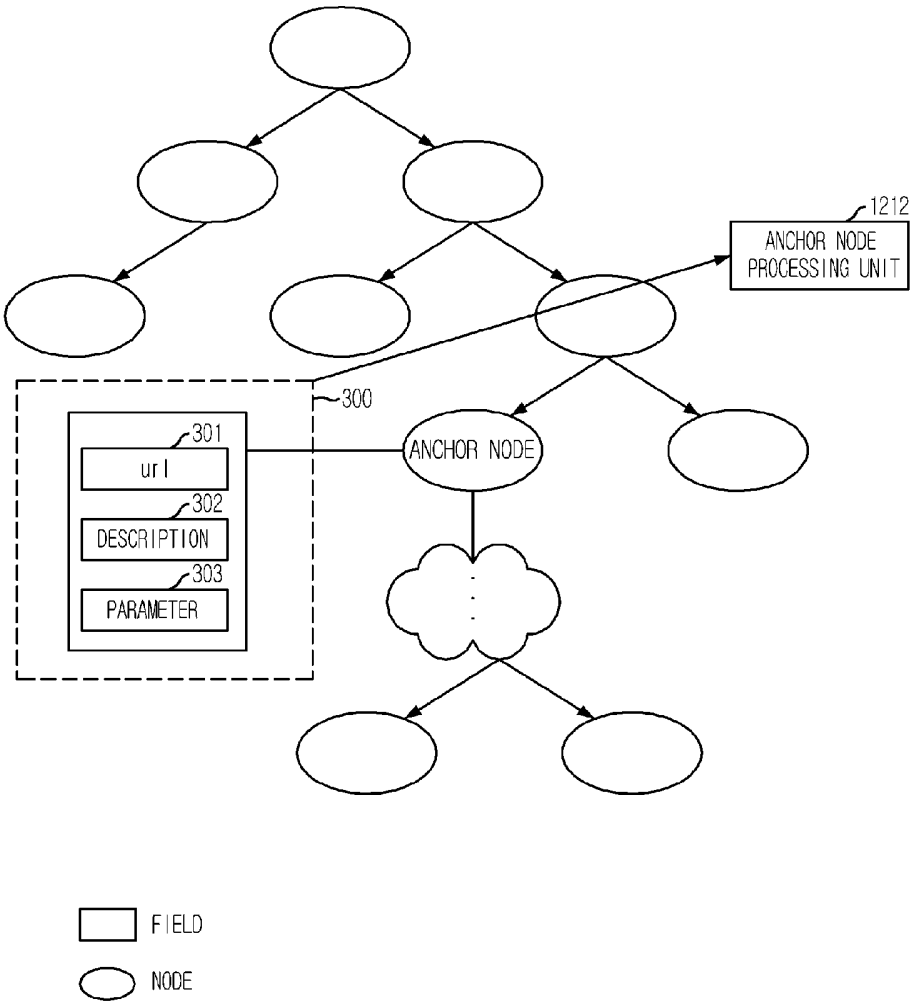
[Fig. 2]


LINK INFORMATION USER INTERFACE
TITLE :
MEMO :

[Fig. 3]


1213
SCENE INFORMATION PROCESSING UNIT
400
ANCHOR NODE
401
NODE

[Fig. 4]


1212
ANCHOR NODE PROCESSING UNIT
300
301
url
302
DESCRIPTION
303
PARAMETER
ANCHOR NODE
FIELD
NODE

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2005/003226

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)

IPC8 H04N, H04J

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

Korean Patents and Applications for invention since 1975

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

eKIPASS, "DMB, interactive content, link, storing"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR 2005-19630 A (ETRI) 2005-03-03 abstract, fig 3a	1-14
A	US 2005-55714 A1 (LG Electronics, Inc.) 2005-03-10 abstract, fig 4	1-14
A	JP 2005-6336 A (LG Electronics, Inc.) 2005-01-06) abstract, fig 2	1-14

☐ 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

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"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

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Date of the actual completion of the international search	Date of mailing of the international search report
09 JANUARY 2006 (09.01.2006)	**10 JANUARY 2006 (10.01.2006)**

Name and mailing address of the ISA/KR	Authorized officer
Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea	JANG, Hyun Geun
Facsimile No. 82-42-472-7140	Telephone No. 82-42-481-5775

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/KR2005/003226

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