The projected patent number and issue date are specified above.

**Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)**
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 1204 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

**APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):**

Seung-Kwan IA, Seoul, KOREA, REPUBLIC OF;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.
**PART B - FEE(S) TRANSMITTAL**

Complete and send this form, together with applicable fee(s), to: **Mail**

Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

or **Fax**
(571)-273-8858

**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address and, if the block 1, by (a) specifying a new correspondence address, and/or (b) indicating a separate “FEE ADDRESS” for maintenance fee notifications.

**CURRENT CORRESPONDENCE ADDRESS (Note: Use block 1 for any change of address)**

KED & ASSOCIATES, LLP
P.O. Box 8638
 Reston, VA 20195

**APPLICATION NO.** | **FILING DATE** | **FIRST NAMED INVENTOR** | **ATTORNEY DOCKET NO.** | **CONFIRMATION NO.**
---|---|---|---|---
11/874,770 | 10/18/2007 | Seung-Kwan HA | EZ-0002 | 3177

**TITLE OF INVENTION:** PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

**APPLICATION TYPE** | **ENTITY STATUS** | **ISSUE FEE DUE** | **PUBLICATION FEE DUE** | **PREV. PAID ISSUE FEE** | **TOTAL FEE(S) DUE** | **DATE DUE**
---|---|---|---|---|---|---
nonprovisional | UNDISCOUNTED | $960 | $0 | $0 | $960 | 09/24/2014

**EXAMINER** | **ART UNIT** | **CLASS-SUBCLASS**
---|---|---
SALCE, JASON P | 2421 | 725-052000

1. Change of correspondence address or indication of “Fee Address” (37 CFR 1.363).
   - Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
   - “Fee Address” indication (or “Fee Address” Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
   - The names of up to 3 registered patent attorneys or agents OR, alternatively,
   - The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. KED & ASSOCIATES, LLP

2. 

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

**PLEASE NOTE:** Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

HUMAX CO., LTD.

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

SEONGNAM-SI, GYEONGGI-DO, REPUBLIC OF KOREA

Please check the appropriate assignee category or categories (will not be printed on the patent):

- Individual
- Corporation or other private group entity
- Government

4a. The following fee(s) are submitted:

- Issue Fee
- Publication Fee (No small entity discount permitted)
- Advance Order - # of Copies

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- A check is enclosed.
- Payment by credit card.
- The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 16-0607 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

- Applicant certifying micro entity status. See 37 CFR 1.29
- Applicant asserting small entity status. See 37 CFR 1.27
- Applicant changing to regular undiscounted fee status.

**NOTE:** Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

**NOTE:** If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

**NOTE:** Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

Authorized Signature

David C. OREN

Typed or printed name

Date September 2, 2014

Registration No. 38,694
## Electronic Patent Application Fee Transmittal

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**Title of Invention:** PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

**First Named Inventor/Applicant Name:** Seung-Kwan HA

**Filer:** Daniel Y.J. Kim/Radmila Percy

**Attorney Docket Number:** EZ-0002

**Filed as Large Entity**

### Utility under 35 USC 111(a) Filing Fees

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**Warnings:**

**Information:**

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.
NOCTIVE OF ALLOWANCE AND FEE(S) DUE

EXAMINER
SALCE, JASON P
ART UNIT 2421
PAPER NUMBER
DATE MAILED: 06/24/2014

APPLICATION NO. FILING DATE FIRST NAMED INVENTOR ATTORNEY DOCKET NO. CONFIRMATION NO.
11/874,770 10/18/2007 Seung-Kwan HA EZ-0002 3177

TITLE OF INVENTION: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

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THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

Page 1 of 3

PTOL-85 (Rev. 02/11)
PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail
Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax
(571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

3-4610 7590 06/24/2014
KED & ASSOCIATES, LLP
P.O. Box 8638
Reston, VA 20195

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

| (Depositor's name) |
| (Signature) |
| (Date) |

APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY Docket NO. | CONFIRMATION NO. |
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TITLE OF INVENTION: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

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1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.563).
   - Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
   - "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
   1. The names of up to 3 registered patent attorneys or agents OR, alternatively.
   2. The names of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

3. ASSIGNEE: NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)
   PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

   (A) NAME OF ASSIGNEE
   (B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent):
- Individual
- Corporation or other private group entity
- Government

4a. The following fee(s) are submitted:
   - Issue Fee
   - Publication Fee (No small entity discount permitted)
   - Advance Order - # of Copies

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)
   - A check is enclosed.
   - Payment by credit card. Form PTO-2038 is attached.
   - The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)
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NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

Authorized Signature ______________________________________________________ Date ________________
Typed or printed name ______________________________________________________ Registration No. __________________________

Page 2 of 3

PTOL-85 Part B (10-13) Approved for use through 10/31/2013.

OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.
OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number’s legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.
**Notice of Allowability**

---

**Application No.**
11/874,770

**Applicant(s)**
HA, SEUNG-KWAN

**Examiner**
Jason Salce

**Art Unit**
2421

---

**The MAILING DATE of this communication appears on the cover sheet with the correspondence address**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☑️ This communication is responsive to **5/30/2014**.
   - A declaration(s)/affidavit(s) under 37 CFR 1.130(b) was/were filed on _______.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☐ The allowed claim(s) is/are **1,2,4-11,13-19,21-25 and 28-31**. As a result of the allowed claim(s), you may be eligible to benefit from the Patent Prosecution Highway program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to PPHfeedback@uspto.gov.

4. ☑️ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   - **Certified copies:**
     - a) ☑️ All
     - b) ☐ Some
     - c) ☐ None of the:
       1. ☑️ Certified copies of the priority documents have been received.
       2. ☐ Certified copies of the priority documents have been received in Application No. ______.
       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: ______.

   Applicant has THREE MONTHS FROM THE “MAILING DATE” of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ CORRECTED DRAWINGS (as “replacement sheets”) must be submitted.
   - Including changes required by the attached Examiner’s Amendment / Comment or in the Office action of Paper No./Mail Date ______.
   - Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner’s comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

---

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ______

3. ☐ Examiner’s Comment Regarding Requirement for Deposit of Biological Material

4. ☐ Interview Summary (PTO-413), Paper No./Mail Date ______.

---

/Jason Salce/
Primary Examiner, Art Unit 2421

June 12, 2014
DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

Allowable Subject Matter

Claims 1-2, 4-11, 13-19, 21-25 and 28-31 are allowed.

The following is an examiner’s statement of reasons for allowance:

Referring to independent claim 1, the prior art of record fails to anticipate or render obvious the combined elements/steps of “a linker to link image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and the information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein the information data includes a textual description of the stored image data” in conjunction with “the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data” in further conjunction with “wherein the linker links the image data and the information data, respectively, to the channel list data by providing a tag into a portion of the channel list data generated by the channel list generator and including a link point connected to the tag in the stored image data and the stored information data, the tag being information that
indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag", as recited in the claims.

Referring to independent claims 10, 19 and 24, see the reasons for allowance of claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Salce whose telephone number is (571)272-7301. The examiner can normally be reached on M-F 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Salce/
Primary Examiner, Art Unit 2421

June 12, 2014
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**SEARCH NOTES**

Inventor search complete: HA

EAST: all databases, "broadcast list", channel list", "generation or creation", information, display, tag, "transport stream information", recording information", " frequency or symbol rate or polar signal or FEC", RFID, data, "including or containing", @ad<20061226

Google: Forward error correction

3/23/2010 MAK

/JASON SALCE/
Primary Examiner Art Unit 2421
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(Primary Examiner)

Assistant Examiner

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Total Claims Allowed:

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(Primary Examiner)  
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:  Seung-Kwan HA

Serial No.: 11/874,770  Group Art Unit: 2426
Confirmation No.: 3177  Examiner: Mary Anne KAY
Filed: October 18, 2007  Customer No.: 34610

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

AMENDMENT AFTER FINAL REJECTION
UNDER 37 C.F.R. §1.116

U.S. Patent and Trademark Office
Customer Window, Mail Stop AF
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

In reply to the Office Action dated March 10, 2014, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims.

Remarks begin after the listing of the claims.
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A device for providing information of image data stored in a digital image display apparatus, the device comprising:

   a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data, the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus; and

   a linker to link image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and the information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein the information data includes a textual description of the stored image data, wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

   the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data,
wherein the linker links the image data and the information data, respectively, to the channel list data by providing a tag into a portion of the channel list data generated by the channel list data generator and including a link point connected to the tag in the stored image data and the stored information data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag.

2. (Previously Presented) The device of claim 1, wherein the channel list generator renews stored channel list data when a new receivable broadcast channel is found.

3. (Canceled)

4. (Original) The device of claim 1, wherein the device for providing information is included in the digital image display apparatus.

5. (Previously Presented) The device of claim 1, wherein the digital image display apparatus comprises:
   
   a broadcast receiving unit to receive broadcast data;

   an input unit to output an input signal corresponding to an inputted key;

   a processor to generate a control signal for controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;
a display unit to output video data of the received broadcast data;
a sound output unit to output audio data of the received broadcast data;
a storing unit to store the broadcast data; and
a broadcast processing unit.

6. (Previously Presented) The device of claim 5, wherein the broadcast processing unit comprises:
   a demodulator to remove a carrier wave from the broadcast data and demodulate the broadcast data, from which the carrier wave is removed, into a digital data stream;
   a transfer stream (TS) parser to parse the broadcast data into audio data and video data;
   a video element stream (ES) buffer to temporally store the parsed video data in order to output it through the display unit; and
   an audio element stream (ES) buffer to temporally store the parsed audio data in order to output it through the display unit.

7. (Original) The device of claim 1, wherein the information data includes transport stream information and recording information of the image data.
8. (Original) The device of claim 7, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

9. (Original) The device of claim 7, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

10. (Previously Presented) A method for providing information of image data stored in a digital image display apparatus, the method comprising:

   generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus; and

   linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein linking the image data and the information data includes providing a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data, the tag being information that indicates a program is
tagged, and the link point being information that indicates a point that is linked with the tag, wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data,

the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

11. (Previously Presented) The method of claim 10, wherein, in generating the channel list data, the channel list data is generated by renewing stored channel list data when a new receivable broadcast channel is found.

12. (Canceled)

13. (Previously Presented) The method of claim 10, wherein said linking includes storing the channel list data linked with the image data and the information data, respectively.
14. (Original) The method of claim 10, wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.

15. (Previously Presented) The method of claim 10, wherein the information data includes transport stream information and recording information of the image data.

16. (Original) The method of claim 15, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

17. (Original) The method of claim 15, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

18. (Original) The method of claim 10, wherein providing information of the image data by using the information data is performed by:

   receiving a selecting signal of image data and information data;
searching for the selected image data; and

searching for information data linked with the found image data.

19. (Currently Amended) A non-transitory computer readable medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the non-transitory computer readable medium being readable by the digital image display apparatus, the program comprising:

generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus; and

linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein linking the image data and the information data includes providing a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag, wherein:
the channel list data is outputted through the digital image display apparatus to
display link information of the image data and the information data, and
the stored information data corresponding to the image data is displayed as a
result of the stored information data being linked with the image data when the image data is
selected from the channel list data,
wherein the channel list data is electronic program guide (EPG) data for an
electronic program guide to be displayed on the digital image display apparatus, and wherein
the information data includes a textual description of the stored image data.

20. (Canceled)

21. (Previously Presented) The non-transitory computer readable medium of
claim 19, wherein the textual description of the image data describes at least one of a genre
of the stored image data or a person or character in the stored image data.

22. (Previously Presented) The non-transitory computer readable medium of
claim 19, wherein the information data further provides an indication of a broadcast time of
the stored image data.
23. (Previously Presented) The non-transitory computer readable medium of claim 19, wherein the information data further provides an indication of a broadcast service used to broadcast the stored image data.

24. (Currently Amended) A device for providing information of image data stored in a digital image display apparatus, the device comprising:

   a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data; and

   a linker to link image data and information data, respectively, with the channel list data, wherein the image data is included in broadcast data and is stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag, wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

   the information data corresponding to the image data is displayed as a result of the information data being linked with the image data when the image data is selected from the channel list data, and
the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data,

wherein the linker links the image data and the information data, respectively, to the channel list data by providing a tag into a portion of the channel list data generated by the channel list generator and including a link point connected to the tag in the stored image data and the stored information data, and

the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag.

25. (Previously Presented) The device of claim 24, wherein:

the image data and the information data are included in broadcast data, and

the broadcast data and the information data are stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data.

26-27. (Canceled)

28. (Previously Presented) The device of claim 24, wherein the textual description of the image data describes at least one of a genre of the stored image data or a person or character in the stored image data.
29. (Previously Presented) The device of claim 24, wherein the information data further provides an indication of a broadcast time of the stored image data.

30. (Previously Presented) The device of claim 24, wherein the information data further provides an indication of a broadcast service used to broadcast the stored image data.

31. (Previously Presented) The device of claim 24, wherein the digital image display apparatus comprises:

   a broadcast receiving unit to receive broadcast data;

   an input unit to output an input signal corresponding to an inputted key;

   a processor to generate a control signal for controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;

   a display unit to output video data of the received broadcast data;

   a sound output unit to output audio data of the received broadcast data;

   a storing unit to store the broadcast data; and

   a broadcast processing unit.
REMARKS

Claims 1-2, 4-11, 13-19, 21-25 and 28-31 are pending in this application. By this Amendment, claims 1, 19 and 24 are amended. Various amendments may be made for clarity, and may be unrelated to issues of patentability.

Entry of the amendments is proper under 37 C.F.R. §1.116 because the amendments: (1) place the application in condition for allowance; (2) do not raise any new issues requiring further search and/or consideration; and/or (3) place the application in better form for appeal, should an appeal be necessary. More specifically, the above amendments merely clarify previously claimed subject matter, and include suggestions made in the Office Action. Entry is thus proper under 37 C.F.R. §1.116.

Applicant gratefully acknowledges the Office Action’s indication that claims 10, 11 and 13-18 are allowed and that claims 2, 4-9, 21-23, 25 and 28-31 would be allowable if rewritten to overcome the rejection under 35 U.S.C. §112, first and second paragraphs.

The Office Action rejects claim 1 under 35 U.S.C. §112(a) or 35 U.S.C. §112 (preAIA), first paragraph, for failing to comply with the written description requirement. The Office Action also rejects claims 19 and 24 under 35 U.S.C. §112(b) or 35 U.S.C. §112, second paragraph. It is respectfully submitted that the above amendments obviate the grounds for the rejections. For example, each of claims 1, 19 and 24 includes features as suggested in the Office Action. Withdrawal of the rejections is respectfully requested.

For at least the reasons set forth above, each of independent claims 1, 10, 19 and 24 defines patentable subject matter. Each of the dependent claims depends from one of the
independent claims and therefore defines patentable subject matter at least for this reason. In addition, the dependent claims recite features that further and independently distinguish over the applied references.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-2, 4-11, 13-19, 21-25 and 28-31 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
ED & ASSOCIATES, LLP

David C. Oren
Registration No. 38,694

Correspondence Address:
P.O. Box 8638
Reston, VA 20195
703 766-3777 DCO/kah
Please direct all correspondence to Customer Number 34610
**Electronic Acknowledgement Receipt**

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<td>Seung-Kwan HA</td>
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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/OE/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

EXPEDITED PROCEDURE
UNDER 37 C.F.R. § 1.116

Seung-Kwan HA

Serial No.: 11/874,770

Filed: October 18, 2007

Confirmation No.: 3177

For PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

U.S. Patent and Trademark Office
Customer Window, MAIL STOP AF
Randolph Building
401 Dulany Street
Alexandria, VA  22314

Dear Sir:

Transmitted herewith is an Amendment and/or Reply in the above identified application.

☑ No additional fee is required.
☐ Also attached:

The fee has been calculated as shown below:

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If multiple claims newly presented, add $780.00 $0.00
Fee for extension of time $0.00

☑ TOTAL FEE DUE $0.00

The Commissioner is hereby authorized to charge payment of any fees associated with this communication or credit any overpayment, to Deposit Account No. 16-0607, including any filing fees under 37 C.F.R. §1.16 for presentation of extra claims and any patent application processing fees under 37 C.F.R. §1.17.

Respectfully submitted,
KED & ASSOCIATES, LLP

David C. Oren
Registration No. 38,694

Correspondence Address:
P.O. Box 8638
Reston, VA  20195
(703) 766-3777  DCO/ka
Date: May 30, 2014

Please direct all correspondence to Customer Number 34610
**APPLICATION AS FILED – PART I**

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If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(e).

**APPLICATION AS AMENDED – PART II**

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**FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(g))**

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**FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(g))**

**TOTAL ADD'L FEE** 0

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**If the "Highest Number Previously Paid For" in this space is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

**FACTORY NAME**

**LINING NAME**

**SIGNATURE**

/EVELYN NIMMONS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.
Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.
Office Action Summary

--- The MAILING DATE of this communication appears on the cover sheet with the correspondence address ---

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☑ Responsive to communication(s) filed on 11/12/2013.
- A declaration(s)/affidavit(s) under 37 CFR 1.130(b) was/were filed on _____.

2a) ☑ This action is FINAL. 2b) ☐ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5) ☑ Claim(s) 1,2,4-11,13-19,21-25 and 28-31 is/are pending in the application.
- 5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) ☐ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1,2,4-11,13-19,21-25 and 28-31 is/are rejected.

8) ☐ Claim(s) _____ is/are objected to.

9) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the Patent Prosecution Highway program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:
- a) ☐ All  b) ☐ Some**  c) ☐ None of the:
- 1. ☐ Certified copies of the priority documents have been received.
- 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
- 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
   Paper No(s)/Mail Date ______.
3) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date ______.
4) ☐ Other: ______.

Office Action Summary  Part of Paper No./Mail Date 20140307
DETAILED ACTION

The present application is being examined under the pre-AIA first to invent provisions.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

(a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor or a joint inventor, or for pre-AIA the inventor(s), at the time the application was filed, had possession of the claimed invention.

Referring to claim 1, the last paragraph of the claim recites “a tag into a portion of the channel list data generated by the channel list data”. Paragraph 0077 of Applicant’s specification states that “The link unit 184 inserts a tag into a portion of the channel list
data, generated by the channel list generating unit 182". Therefore, the channel list data does not generate a tag, the channel list generating unit generates the tag. The Examiner recommends amending "generated by the channel list data" with "generated by the channel list generator".

The following is a quotation of 35 U.S.C. 112(b):

(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 19 and 24 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

Claims 19 and 24 recite the limitation "the tag being". There is insufficient antecedent basis for this limitation in the claim. No previous recitation of "a tag" is found in the claims. The Examiner recommends adding the limitations found in the last Paragraph of claim 1.

Allowable Subject Matter

Claims 10-11 and 13-18 are allowed.
Claims 2, 4-9, 21-23, 25 and 28-31 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), 1st paragraph and 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Salce whose telephone number is (571)272-7301. The examiner can normally be reached on M-F 9am-6pm.
If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Salce/  
Primary Examiner, Art Unit 2421  

Jason Salce  
Primary Examiner  
Art Unit 2421  

March 6, 2014
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Seung-Kwan HA

Confirmation No.: 3177

Group Art Unit: 2426

Serial No.: 11/874,770

Examiner: Mary Anne KAY

Filed: October 18, 2007

Customer No.: 34610

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

AMENDMENT

U.S. Patent and Trademark Office
Customer Window, Mail Stop Amendment
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

In reply to the Office Action dated July 11, 2013, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims.

Remarks begin after the listing of the claims.
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A device for providing information of image data stored in a digital image display apparatus, the device comprising:

   a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data; the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus; and

   a linker to link image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and the information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein the information data includes a textual description of the stored image data, wherein:

      the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

      the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data,
wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data generated by the channel list data and including a link point connected to the tag in the stored image data and the stored information data, and the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag.

2. (Previously Presented) The device of claim 1, wherein the channel list generator renews stored channel list data when a new receivable broadcast channel is found.

3. (Canceled)

4. (Original) The device of claim 1, wherein the device for providing information is included in the digital image display apparatus.

5. (Previously Presented) The device of claim 1, wherein the digital image display apparatus comprises:

   a broadcast receiving unit to receive broadcast data;

   an input unit to output an input signal corresponding to an inputted key;
a processor to generate a control signal for controlling an operation of the
digital image display apparatus in accordance with the input signal outputted from the input
unit;

a display unit to output video data of the received broadcast data;

a sound output unit to output audio data of the received broadcast data;

a storing unit to store the broadcast data; and

a broadcast processing unit.

6. (Previously Presented) The device of claim 5, wherein the broadcast
processing unit comprises:

a demodulator to remove a carrier wave from the broadcast data and
demodulate the broadcast data, from which the carrier wave is removed, into a digital data
stream;

a transfer stream (TS) parser to parse the broadcast data into audio data and video
data;

a video element stream (ES) buffer to temporally store the parsed video data
in order to output it through the display unit; and

an audio element stream (ES) buffer to temporally store the parsed audio data
in order to output it through the display unit.

7. (Original) The device of claim 1, wherein the information data includes
transport stream information and recording information of the image data.
8. (Original) The device of claim 7, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

9. (Original) The device of claim 7, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

10. (Currently Amended) A method for providing information of image data stored in a digital image display apparatus, the method comprising:

   generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus; and

   linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein linking the image data and the information data includes providing a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data, the tag being information that indicates a program is
tagged, and the link point being information that indicates a point that is linked with the tag, wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data,

wherein linking the image data and the information data includes inserting a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data,

the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

11. (Previously Presented) The method of claim 10, wherein, in generating the channel list data, the channel list data is generated by renewing stored channel list data when a new receivable broadcast channel is found.

12. (Canceled)
13. (Previously Presented) The method of claim 10, wherein said linking includes storing the channel list data linked with the image data and the information data, respectively.

14. (Original) The method of claim 10, wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.

15. (Previously Presented) The method of claim 10, wherein the information data includes transport stream information and recording information of the image data.

16. (Original) The method of claim 15, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

17. (Original) The method of claim 15, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.
18. (Original) The method of claim 10, wherein providing information of the image data by using the information data is performed by:

receiving a selecting signal of image data and information data;

searching for the selected image data; and

searching for information data linked with the found image data.

19. (Currently Amended) A non-transitory computer readable medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the non-transitory computer readable medium being readable by the digital image display apparatus, the program comprising:

generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus; and

linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag, wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and
the stored information data corresponding to the image data is displayed as a
result of the stored information data being linked with the image data when the image data is
selected from the channel list data,

wherein, in linking the image data and the information data, a tag is inserted
into a portion of the channel list data and a link point connected to the tag is included in the
stored image data and the stored information data, the channel list data is electronic program
guide (EPG) data for an electronic program guide to be displayed on the digital image
display apparatus, and wherein the information data includes a textual description of the
stored image data.

20. (Canceled)

21. (Previously Presented) The non-transitory computer readable medium of
claim 19, wherein the textual description of the image data describes at least one of a genre
of the stored image data or a person or character in the stored image data.

22. (Previously Presented) The non-transitory computer readable medium of
claim 19, wherein the information data further provides an indication of a broadcast time of
the stored image data.
23. (Previously Presented) The non-transitory computer readable medium of claim 19, wherein the information data further provides an indication of a broadcast service used to broadcast the stored image data.

24. (Currently Amended) A device for providing information of image data stored in a digital image display apparatus, the device comprising:

   a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data; and

   a linker to link image data and information data, respectively, with the channel list data, wherein the image data is included in broadcast data and is stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag, wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

   the information data corresponding to the image data is displayed as a result of the information data being linked with the image data when the image data is selected from the channel list data, and

   wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including
a link point connected to the tag in the stored image data and the stored information data; and

the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

25. (Previously Presented) The device of claim 24, wherein:

the image data and the information data are included in broadcast data, and

the broadcast data and the information data are stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data.

26-27. (Canceled)

28. (Previously Presented) The device of claim 24, wherein the textual description of the image data describes at least one of a genre of the stored image data or a person or character in the stored image data.

29. (Previously Presented) The device of claim 24, wherein the information data further provides an indication of a broadcast time of the stored image data.

30. (Previously Presented) The device of claim 24, wherein the information data further provides an indication of a broadcast service used to broadcast the stored image data.
31. (Previously Presented) The device of claim 24, wherein the digital image display apparatus comprises:

   a broadcast receiving unit to receive broadcast data;

   an input unit to output an input signal corresponding to an inputted key;

   a processor to generate a control signal for controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;

   a display unit to output video data of the received broadcast data;

   a sound output unit to output audio data of the received broadcast data;

   a storing unit to store the broadcast data; and

   a broadcast processing unit.
REMARKS

Claims 1-2, 4-11, 13-19, 21-25 and 28-31 are pending in this application. By this Amendment, claims 1, 10, 19 and 24 are amended. Various amendments may be made for clarity, and may be unrelated to issues of patentability.

The Office Action rejects claims 1, 2, 4, 7-9, 24, 25 and 28-30 under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. It is respectfully submitted that the above amendments obviate the grounds for rejections.

For example, independent claim 1 includes specific features such as providing a tag into a portion of a channel list data and including a link point connected to the tag in the stored image data and the stored information data. Independent claim 1 also includes features such as the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data. These features clearly show a transformation of underlying subject matter to a different state or thing.

Independent claim 1 also recites a channel list generator to generate channel list data, the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus. These features are statutory elements. Independent claim 24 includes similar features. In view of the above, the claims are directed to proper subject matter. Withdrawal of the rejections is respectfully requested.

The Office Action rejects claims under 35 U.S.C. §103(a) over U.S. Patent Publication 2005/0210501 to Zigmond et al. (hereafter Zigmond) in view of newly-cited

Independent claim 1 recites a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data, the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus. Independent claim 1 also recites a linker to link image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and the information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein the information data includes a textual description of the stored image data. Independent claim 1 also recites that the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data, wherein the linker links the image data and the information data, respectively, to the channel list data by providing a tag into a portion of the channel list data generated by the channel list data and including a link point connected
to the tag in the stored image data and the stored information data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag.

The applied references do not teach or suggest all the features of independent claim 1. More specifically, Zigmond and Kimura do not teach or suggest the linker links the image data and the information data, respectively, to the channel list data by providing a tag into a portion of the channel list data generated by the channel list data and including a link point connected to the tag in the stored image data and the stored information data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag, as recited in independent claim 1. Kimura’s FIG. 11A does not teach or suggest these features relating to a tag or a link point. Zigmond’s FIGs. 2 and 11-12 also do not teach or suggest these features.

For at least these reasons, Zigmond and Kimura do not teach or suggest all the features of independent claim 1. The other applied references do not teach or suggest the missing features of independent claim 1. Independent claim 1 therefore defines patentable subject matter.

Independent claim 10 recites generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus, and linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a
program corresponding to the image data, wherein linking the image data and the information data includes providing a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag. Independent claim 10 also recites the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data. Independent claim 10 also recites the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

For at least similar reasons as set forth above, the applied references do not teach or suggest all the features of independent claim 10. More specifically, Zigmond, Kimura and the other applied references do not teach or suggest linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein linking the image data and the information data includes providing a tag into a portion of the channel list data and a link point connected to
the tag is included in the stored image data and the stored information data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag, as recited in independent claim 10. Accordingly, independent claim 10 defines patentable subject matter.

Independent claim 19 recites generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus, and linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag. Independent claim 19 also recites that the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data, wherein the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

For at least similar reasons as set forth above, the applied references do not teach or suggest all the features of independent claim 19. More specifically, Zigmond, Kimura and the
other applied references do not teach or suggest linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag, as recited in independent claim 19. Accordingly, independent claim 19 defines patentable subject matter.

Independent claim 24 recites a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data, and a linker to link image data and information data, respectively, with the channel list data, wherein the image data is included in broadcast data and is stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag. Independent claim 24 also recites that the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and the information data corresponding to the image data is displayed as a result of the information data being linked with the image data when the image data is selected from the channel list data, and the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display.
apparatus, and wherein the information data includes a textual description of the stored image data.

For at least similar reasons as set forth above, the applied references do not teach or suggest all the features of independent claim 24. More specifically, Zigmond, Wood and the other applied references do not teach or suggest a linker to link image data and information data, respectively, with the channel list data, wherein the image data is included in broadcast data and is stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, the tag being information that indicates a program is tagged, and the link point being information that indicates a point that is linked with the tag, as recited in independent claim 24. Accordingly, independent claim 24 defines patentable subject matter.

For at least the reasons set forth above, each of independent claims 1, 10, 19 and 24 defines patentable subject matter. Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this reason. In addition, the dependent claims recite features that further and independently distinguish over the applied references.

**CONCLUSION**

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-2, 4-11, 13-19, 21-25 and 28-31 are earnestly solicited. If the Examiner believes that any additional
changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
KED & ASSOCIATES, LLP

David C. Oren
Registration No. 38,694

Correspondence Address:
P.O. Box 8638
Reston, VA 20195
703 766-3777 DCO/kah

Date: November 12, 2013
Please direct all correspondence to Customer Number 34610
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**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Seung-Kwan HA

Serial No: 11/874,770

Filed: October 18, 2007

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

U.S. Patent and Trademark Office
Customer Window, MAIL STOP AMENDMENT
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Dear Sir:

Transmitted herewith is an Amendment and/or Reply in the above identified application.

☒ No additional fee is required.
☐ Also attached:

The fee has been calculated as shown below:

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If multiple claims newly presented, add $780.00 $0.00
Fee for extension of time $0.00
TOTAL FEE DUE $0.00

☒ The Commissioner is hereby authorized to charge payment of any fees associated with this communication or credit any overpayment, to Deposit Account No. 16-0607, including any filing fees under 37 C.F.R. §1.16 for presentation of extra claims and any patent application processing fees under 37 C.F.R. §1.17.

Respectfully submitted,

KSD & ASSOCIATES, LLP

David C. Oten
Registration No. 38,694

Correspondence Address:
P.O. Box 8638
Reston, VA 20195
(703) 766-3777 DCO/ah
Date: November 123, 2013

Please direct all correspondence to Customer Number 34610
Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.
Office Action Summary

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication. Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☑ Responsive to communication(s) filed on 13 May 2013.
   □ A declaration(s)/affidavit(s) under 37 CFR 1.130(b) was/were filed on _____.

2a) □ This action is FINAL. 2b) ☑ This action is non-final.

3) □ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4) □ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5) ☑ Claim(s) 1, 2, 4-11, 13-19, 21-25 and 28-31 is/are pending in the application.
   5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6) □ Claim(s) _____ is/are allowed.

7) ☑ Claim(s) 1, 2, 4-11, 13-19, 21-25 and 28-31 is/are rejected.

8) □ Claim(s) _____ is/are objected to.

9) □ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the Patent Prosecution Highway program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10) □ The specification is objected to by the Examiner.

11) ☑ The drawing(s) filed on 18 October 2007 is/are: a) ☑ accepted or b) □ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12) ☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☑ All  b) □ Some  c) □ None of the:
   1. ☑ Certified copies of the priority documents have been received.
   2. □ Certified copies of the priority documents have been received in Application No. _____.
   3. □ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Interim copies:

a) □ All  b) □ Some  c) □ None of the: Interim copies of the priority documents have been received.

Attachment(s)

1) ☑ Notice of References Cited (PTO-892)
2) □ Information Disclosure Statement(s) (PTO-SB/08)  
   Paper No(s)/Mail Date __________
3) □ Interview Summary (PTO-413)
   Paper No(s)/Mail Date __________
4) □ Other: __________
DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered May 13, 2013 for the patent application 11/874770 filed on October 16, 2007.

Status of Claims

2. Claims 1-2, 4-11, 13-19, 21-25 and 28-31 are pending in this application.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-2, 4, 7-9, 24-25 and 28-30 are rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter because the claimed invention does not fall within at least one of the four categories of patent eligible subject matter recited in 35 U.S.C. 101 (process, machine, manufacture, or composition of matter). Claims 1-2, 4-9, 24-25 and 28-30 are directed to a device claim that only comprises of software elements (a channel list generator, a linker), and software is not a statutory element.
35 USC § 112, Sixth Paragraph Interpretation

35 U.S.C. 112 Sixth Paragraph reads as follows:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

4. Claim limitation “unit to” has been interpreted under 35 U.S.C. 112(f) or 35 U.S.C. 112 (pre-AIA), sixth paragraph, because it uses a non-structural term “unit to” coupled with functional language as shown in Table 1 below without reciting sufficient structure to achieve the function.

Since this claim limitation invokes 35 U.S.C. 112(f) or 35 U.S.C. 112 (pre-AIA), sixth paragraph, claims 5 and 31 are interpreted to cover the corresponding structure described in the specification that achieves the claimed function, and equivalents thereof.

A review of the specification shows that the corresponding structure described in the specification for the 35 U.S.C. 112(f) or 35 U.S.C. 112 (pre-AIA), sixth paragraph limitation is shown in Table 1.

If applicant wishes to provide further explanation or dispute the examiner's interpretation of the corresponding structure, applicant must identify the corresponding structure with reference to the specification by page and line number, and to the drawing, if any, by reference characters in response to this Office action.
If applicant does not wish to have the claim limitation treated under 35 U.S.C. 112(f) or 35 U.S.C. 112 (pre-AIA), sixth paragraph, applicant may amend the claim so that it will clearly not invoke 35 U.S.C. 112(f) or 35 U.S.C. 112 (pre-AIA), sixth paragraph, or present a sufficient showing that the claim recites sufficient structure, material, or acts for performing the claimed function to preclude application of 35 U.S.C. 112(f) or 35 U.S.C. 112 (pre-AIA), sixth paragraph.


<table>
<thead>
<tr>
<th>Claim No.</th>
<th>Limitation</th>
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<tr>
<td>5, 31</td>
<td>broadcast receiving unit to receive</td>
<td>Page 13, lines 2-8, set top box, Fig. 1</td>
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<tr>
<td>5, 31</td>
<td>input unit to output</td>
<td>Page 13, lines 18-20, includes numerical keys and various functional keys; Examiner interprets that this is the remote control associated with the television</td>
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<tr>
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<td>display unit to output</td>
<td>Page 16, lines 13-16, a television</td>
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Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 4-5, 10, 13-14, 19, 21-25 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zigmond et al. (U.S. PGPub 2005/0210501 A1, referred to as Zigmond) in view of Kimura et al. (U.S. Patent 5,646,796, referred to as Kimura).

Claim 1

Zigmond teaches:

A device for providing information of image data stored in a digital image display apparatus (¶ 0002, A client device includes, for example, a set-top box, a digital satellite receiver, a cable box, a digital video recorder (DVR), and a television with a built-in receiver), the device comprising:
a channel list generator to search for a broadcast channel received through the
digital image display apparatus (Fig. 2, ¶ 0031, Program guide application
208 may generate a program guide that identifies programs that are
scheduled to be broadcast on particular channels at particular times.; ¶
0034, If the record time is in the future, the device automatically tunes to
the appropriate channel and begin recording at the designated time) and
to generate channel list data (¶ 0029, FIG. 2 illustrates an example display
device 204 and an example client device 202 capable of generating a
listing of recorded programs for display on the display device.; ¶ 0030,
Program guide application 208 generates a recorded program guide 212
that can be displayed on display device 204); and
the image data and the information data being included in broadcast data (¶
0019, The systems and methods discussed herein are described with
reference to an environment in which content (and metadata associated
with the content) is distributed to client devices via a data communication
network),
the broadcast data and information data being stored in the digital image display
apparatus (¶ 0020, Example client devices include personal computers,
DVD players, digital video recorders (DVRs), set top boxes, cable boxes,
satellite receivers, televisions, game consoles, and the like) in response to
a broadcast data storing signal received for recording a program
corresponding to the image data (¶ 0033, Initially, a request is received to
record a program (block 302). For example, the request may be generated by a viewer through an electronic program guide (EPG) presented to the viewer through a client device; ¶ 0034, If the record time is in the future, the device automatically tunes to the appropriate channel and begin recording at the designated time), the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus (Fig. 2, ¶ 0032, Recorded program guide 212 displays information associated with five previously recorded programs in a grid arrangement.), and wherein the information data includes a textual description of the stored image data (Fig. 12, ¶ 0051, Metadata 1202 includes a title of the program, a broadcast channel, the date and time of the program's broadcast, a brief description of the program, a few keywords associated with the program and a short comment regarding the program. Metadata 1202 may be stored in a database, a content server, a client device, or any other device. The metadata can be stored in any format using any data structure.; Examiner interprets that the metadata is in textual form).

Zigmond does not explicitly disclose:

a linker to link image data and information data, respectively, with the channel list data,

wherein:
the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data, wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data, and

Kimura teaches:

a linker to link image data and information data, respectively, with the channel list data (Fig. 12A, C8:1-11, *Each topic data includes a "topic header", which indicates the type of the topic data, followed by "position data", which identifies the tape position. Only topic data for the topic "TOC" (also referred to as "TOC data") contains "position data", whereby all other topic data has the same data structure without "position data"),

wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data (Fig. 11A, C6:62-C7:15, a menu is displayed on a video monitor at the request of the user, the displayed menu lists all of the topics recorded on the track on the magnetic tape currently positioned to be played back by the video
tape recorder. Each topic has a topic number, known as a "topic tag", which is used to distinguish and identify topics.), and the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data (Fig. 11A, C7:16-26, When the menu is displayed to a user, all of the topics except the topic "menu" are displayed; and the user may select one of the displayed topics. When a topic is selected, the video tape recorder of the present invention reproduces only that area of the track where the topic data for the selected topic is located and the topic data for the selected topic is then displayed to a user), wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data (Fig. 11A, C7:2-15, FIG. 11A illustrates an example of a menu generated from the data recorded in a track on the magnetic tape. As shown, the topics stored on this particular track include "menu", "TOC", "cast", "staff" and "lyrics", wherein each topic has an assigned topic tag for identifying the topic. The menu data (the topic data for the topic "menu") includes a record area for each of the topics which identifies the specific area in the track where topic data for a
respective topic is located.; Examiner interprets that the link point is the record area for each of the topics),

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Zigmond with the supplemental data positioning as taught by Kimura for the purpose of providing a technique in related art for recording and reproducing topic and table of content data with the video and audio data in order to provide easy selection of a recorded program or topic from the record medium.

Claim 4

Zigmond teaches:

wherein the device for providing information is included in the digital image display apparatus (Fig. 13 element 1326 Program Guide Application, ¶ 0058, A program guide application 1326 that executes on processor(s) 1308 is also stored in non-volatile memory 1316 and is implemented to generate a program guide for display.).

Claims 5, 31

Zigmond teaches:

wherein the digital image display apparatus comprises:

a broadcast receiving unit, to receive broadcast data (Fig. 13, Client Device 1302, ¶ 0055, Client device 1302 includes one or more tuners 1306 which are representative of one or more in-band tuners that tune to various
frequencies or channels to receive television signals, as well as an out-of-band tuner that tunes to the broadcast channel over which program data is broadcast to client device 1302);
an input unit, to output an input signal corresponding to an inputted key (Fig. 13, ¶ 0059, Input devices can include a wireless keyboard or another handheld input device 1336 such as a personal digital assistant (PDA), handheld computer, wireless phone, or the like);
a processor, to generate a control signal controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit (Fig. 2, ¶ 0029, Client device 202 includes one or more processors 206. Processor(s) 206 include, for example, microprocessors and controllers, which process various instructions to control the operation of client device 202 and to communicate with other devices.);
a display unit, to output video data of the received broadcast data (Fig. 2, ¶ 0030, Program guide application 208 generates a recorded program guide 212 that can be displayed on display device 204);
a sound output unit, to output audio data of the received broadcast data (Fig. 13, ¶ 0062, Client device 1302 also includes an audio and/or video output 1340 that provides the audio, video, and/or display signals to television 1304 or to other devices that process and/or display, or otherwise render, the audio and video data);
a storing unit, to store the broadcast data (Fig. 13, ¶ 0056, Client device 1302 can be implemented with one or more memory components, examples of which include a random access memory (RAM) 1310, mass storage media 1312, a disk drive 1314, and a non-volatile memory 1316 (e.g., ROM, Flash, EPROM, EEPROM, etc.).); and

a broadcast processing unit (Fig. 13, ¶ 0060, Client device 1302 also includes a content processor 1338 which can include a video decoder and/or additional processors to receive, process, and decode broadcast video signals and program data).

Claim 10

Zigmond teaches:

A method for providing information of image data stored in a digital image display apparatus, the method comprising:

generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus (Fig. 2, ¶ 0031, Program guide application 208 may generate a program guide that identifies programs that are scheduled to be broadcast on particular channels at particular times.; ¶ 0034, If the record time is in the future, the device automatically tunes to the appropriate channel and begin recording at the designated time; ¶ 0029, FIG. 2 illustrates an example display device 204 and an example client device 202 capable of generating a listing of recorded programs for display on the display device.; ¶ 0030, Program guide
application 208 generates a recorded program guide 212 that can be displayed on display device 204) and

the image data and the information data being included in broadcast data (¶ 0019, The systems and methods discussed herein are described with reference to an environment in which content (and metadata associated with the content) is distributed to client devices via a data communication network),

the broadcast data and information data being stored in the digital image display apparatus (¶ 0020, Example client devices include personal computers, DVD players, digital video recorders (DVRs), set top boxes, cable boxes, satellite receivers, televisions, game consoles, and the like) in response to a broadcast data storing signal received for recording a program corresponding to the image data (¶ 0033, Initially, a request is received to record a program (block 302). For example, the request may be generated by a viewer through an electronic program guide (EPG) presented to the viewer through a client device; ¶ 0034, If the record time is in the future, the device automatically tunes to the appropriate channel and begin recording at the designated time),

the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus (Fig. 2, ¶ 0032, Recorded program guide 212 displays information associated with five previously recorded programs in a grid arrangement.), and
wherein the information data includes a textual description of the stored image data (Fig. 12, ¶ 0051, Metadata 1202 includes a title of the program, a broadcast channel, the date and time of the program’s broadcast, a brief description of the program, a few keywords associated with the program and a short comment regarding the program. Metadata 1202 may be stored in a database, a content server, a client device, or any other device. The metadata can be stored in any format using any data structure.: Examiner interprets that the metadata is in textual form).

**Zigmond** does not explicitly disclose:

linking image data and information data, respectively, with the channel list data, wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data, wherein linking the image data and the information data includes inserting a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data.

**Kimura** teaches:

linking image data and information data, respectively, with the channel list data a linker to link image data and information data, respectively, with the
channel list data (Fig. 12A, C8:1-11, Each topic data includes a "topic header", which indicates the type of the topic data, followed by "position data", which identifies the tape position. Only topic data for the topic "TOC" (also referred to as "TOC data") contains "position data", whereby all other topic data has the same data structure without "position data"),

wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data (Fig. 11A, C6:62-C7:15, a menu is displayed on a video monitor at the request of the user, the displayed menu lists all of the topics recorded on the track on the magnetic tape currently positioned to be played back by the video tape recorder. Each topic has a topic number, known as a "topic tag", which is used to distinguish and identify topics.), and

the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data (Fig. 11A, C7:16-26, When the menu is displayed to a user, all of the topics except the topic "menu" are displayed; and the user may select one of the displayed topics. When a topic is selected, the video tape recorder of the present invention reproduces only that area of the track where the topic data for the selected topic is located and the topic data for the selected topic is then displayed to a user),
wherein linking the image data and the information data includes inserting a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data (Fig. 11A, C7:2-15, FIG. 11A illustrates an example of a menu generated from the data recorded in a track on the magnetic tape. As shown, the topics stored on this particular track include "menu", "TOC", "cast", "staff" and "lyrics", wherein each topic has an assigned topic tag for identifying the topic. The menu data (the topic data for the topic "menu") includes a record area for each of the topics which identifies the specific area in the track where topic data for a respective topic is located.; Examiner interprets that the link point is the record area for each of the topics).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Zigmond with the supplemental data positioning as taught by Kimura for the purpose of providing a technique in related art for recording and reproducing topic and table of content data with the video and audio data in order to provide easy selection of a recorded program or topic from the record medium.

**Claim 13**

Zigmond does not explicitly disclose:
storing the channel list data linked with the image data and the information data, respectively.

**Kimura** teaches:

storing the channel list data linked with the image data and the information data, respectively (C1:66-C2:7, *Recording digital video and audio data in tracks on a record medium operates to receive topic data with the digital video and audio data, produce menu data in accordance with identifying topics represented by the topic data. The video, audio and menu data are recorded in respective video, audio and sub-code areas, and the topic data is recorded in auxiliary areas of the video and audio areas.*).

**Claim 14**

**Zigmond** does not explicitly disclose:

wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.

**Kimura** teaches:

wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data (C5:60-C6:10, *Examples of fundamental auxiliary data stored in the AAUX main area of each track include the source of the recorded signal*).
(e.g. channel number), the type of tuner which receives the signal that is recorded, the recording date (including time zone, day, week, month and year), and the recording time (hour, minute, second, frame number).; Fig. 12A, C8:1-11, Each topic data includes a "topic header", which indicates the type of the topic data, followed by "position data", which identifies the tape position. Only topic data for the topic "TOC" (also referred to as "TOC data") contains "position data", whereby all other topic data has the same data structure without "position data").

Claim 19

Claim 19, which discloses a non-transitory computer readable medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the non-transitory computer readable medium being readable by the digital image display apparatus, is analyzed with respect to the citations in the rejection of similar claim 1. The following additional limitations are also disclosed:

Zigmond teaches:

A non-transitory computer readable medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the non-transitory computer readable medium being readable by the digital image display apparatus (¶ 0030, Program guide application
208 executes on processor(s) 206 and can be stored as computer-executable instructions in non-volatile memory (not shown) or client device 202).

Claims 21, 28

Zigmond teaches:

wherein the textual description of the image data describes at least one of a genre of the stored image data or a person or character in the stored image data (Fig. 12, ¶ 0052, The program was a basketball game that had two overtime sessions, which caused the program to run longer than scheduled).)

Claims 22, 29

Zigmond teaches:

wherein the information data further provides an indication of a broadcast time of the stored image data (Fig. 12, “Date: March 8, 2004”, Start:”, “End：“).

Claims 23, 30

Zigmond teaches:

wherein the information data further provides an indication of a broadcast service used to broadcast the stored image data (Fig. 12, “Channel:”).

Claim 24

Claim 24, which discloses a device for providing information of image data stored in a digital image display apparatus, is analyzed with respect to the citations in the rejection of similar claim 1.
Claim 25

**Zigmond** teaches:

the image data and the information data are included in broadcast data (¶ 0019, The systems and methods discussed herein are described with reference to an environment in which content (and metadata associated with the content) is distributed to client devices via a data communication network; EN: Examiner interprets the distributed content and metadata over the communication network as being broadcast), and

the broadcast data and the information data are stored in the digital image display apparatus (¶ 0020, Example client devices include personal computers, DVD players, digital video recorders (DVRs), set top boxes, cable boxes, satellite receivers, televisions, game consoles, and the like) in response to a broadcast data storing signal received for recording a program corresponding to the image data (¶ 0033, Initially, a request is received to record a program (block 302). For example, the request may be generated by a viewer through an electronic program guide (EPG) presented to the viewer through a client device; ¶ 0034, If the record time is in the future, the device automatically tunes to the appropriate channel and begin recording at the designated time).

7. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zigmond** in view of **Kimura** in further view of Park (U.S. PGPub 2007/0094681 A1, referred to as **Park**).
Claims 2, 11

Zigmond in view of Kimura does not explicitly disclose:

wherein the channel list generator renews stored channel list data when a new receivable broadcast channel is found.

Park teaches:

wherein the channel list generator renews stored channel list data when a new receivable broadcast channel is found (¶ 0042, The User Interface generator 160 generates a UI signal according to control of controller 170. When the UI generator 160 is controlled by the controller 170 to display the channel list, it generates a channel list which indicates a new channel is added to the channel list.).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Zigmond in view of Kimura with the stored channel list data as taught by Park for the purpose of providing a technique in related art for maintaining an up-to-date listing of the channels available for the viewer.

8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zigmond in view of Kimura in further view of Boudreau et al. (U.S. PGPub 2004/0117858 A1, referred to as Boudreau).

Claim 6

Zigmond in view of Kimura does not explicitly disclose:
a demodulator to remove a carrier wave from the broadcast data and demodulate the broadcast data, from which the carrier wave is removed, into a digital data stream;

a transfer stream (TS) parser to parse the broadcast data into audio data and video data;

a video element stream (ES) buffer, to temporally store the parsed video data in order to output it through the display unit; and

an audio element stream (ES) buffer, to temporally store the parsed audio data in order to output it through the display unit.

**Boudreau** teaches:

a demodulator to remove a carrier wave from the broadcast data and demodulate the broadcast data, from which the carrier wave is removed, into a digital data stream (*Fig. 7A, elements 714, 716, ¶ 0060, The components of the signal processing system 714 are capable of QAM demodulation, forward error correction, and demultiplexing of MPEG-2 transport streams, and parsing of elementary streams and packetized elementary streams*);

a transfer stream (TS) parser to parse the broadcast data into audio data and video data (*Fig. 7A, ¶ 0059, The demux/parse system 718 can include MPEG-2 transport demultiplexing. When tuned to carrier frequencies carrying a digital transmission signal, the demux/parse system 718 enables the separation of packets of data, corresponding to the*
compressed streams of information belonging to the desired content
instances, for further processing.);

a video element stream (ES) buffer, to temporally store storing the parsed video
data in order to output it through the display unit (Fig. 7A, ¶ 0060, The
packetized compressed streams can be also output by the signal
processing system 714, buffered to the video, audio, and/or XPORT
buffers 735-737, and presented as input to the media engine 729 for
decompression by the video decompression engine 733 and the audio
decompression engine 732); and

an audio element stream (ES) buffer, to temporally store storing the parsed audio
data in order to output it through the display unit (Fig. 7A, ¶ 0060, The
packetized compressed streams can be also output by the signal
processing system 714, buffered to the video, audio, and/or XPORT
buffers 735-737, and presented as input to the media engine 729 for
decompression by the video decompression engine 733 and the audio
decompression engine 732).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the
invention was made to modify the teachings of Zigmond in view of Kimura with
the demodulation and buffering as taught by Boudreau for the purpose of
providing a technique in related art for efficiently processing a digital broadcast
signal for viewing by a user.
9. Claims 7-9 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zigmond in view of Kimura in further view of Smyth et al. (U.S. PGPub 2002/0007492 A1, referred to as Smyth).

**Claims 7, 15**

Zigmond does not explicitly disclose:

wherein the information data includes transport stream information and recording information of the image data.

Kimura teaches:

wherein the information data includes recording information of the image data

(C5:60-C6:10, Examples of fundamental auxiliary data stored in the AAUX main area of each track include the source of the recorded signal (e.g. channel number), the type of tuner which receives the signal that is recorded, the recording date (including time zone, day, week, month and year), and the recording time (hour, minute, second, frame number).

Rationale:

See claim 1 for rationale for combining Zigmond and Kimura.

Zigmond in view of Kimura does not explicitly disclose:

wherein the information data includes transport stream information of the image data.

Smyth teaches:

wherein the information data includes transport stream information of the image data (¶ 0029, each digital video modulator contains four modulators that
modulate each transport stream into a 64-ary QAM signal with block interleaving and forward error correction.).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Zigmond in view of Kimura with the transport stream information as taught by Smyth for the purpose of providing a technique in related art for providing faster detection of transmission errors and conservation of bandwidth by less frequent retransmissions.

Claims 8, 16

Zigmond in view of Kimura does not explicitly disclose:

wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

Smyth teaches:

wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information (¶ 0029, each digital video modulator contains four modulators that modulate each transport stream into a 64-ary QAM signal with block interleaving and forward error correction.).
**Claims 9, 17**

Zigmond in further view of Smyth does not explicitly disclose:

wherein the recording information comprises at least one from the group

**consisting of** channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

Kimura teaches:

wherein the recording information comprises at least one from the group

**consisting of** channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information (*C5:60-C6:10, Examples of fundamental auxiliary data stored in the AAUX main area of each track include the source of the recorded signal (e.g. channel number), the type of tuner which receives the signal that is recorded, the recording date (including time zone, day, week, month and year), and the recording time (hour, minute, second, frame number).*).


**Claim 18**

Zigmond in view of Kimura does not explicitly disclose:
wherein providing information of the image data by using the information data is performed by:

receiving a selecting signal of image data and information data;

searching for the selected image data; and

searching for information data linked with the found image data.

Wood teaches:

wherein providing information of the image data by using the information data is performed by:

receiving a selecting signal of image data and information data (Fig. 10, Friends recorded 11/17, ¶ 0041, In addition to storing the video data for a show selected for recording, the system also stores the meta data associated with the show from the channel guide, e.g., names of actors and actresses, director, ratings information, textual descriptions of the show, etc. This information may then be recalled by the user at any time in order to assist in making a decision of whether the watch the particular recorded show.; ¶ 0057, At any time, the user may preview shows which will be recorded based on the criteria information provided.; EN: Examiner interprets that when user selects a title in the program guide, the title becomes the “tag” and the system matches the title to the stored information for display or playback);

searching for the selected image data (Fig. 10, Friends recorded 11/17, ¶ 0041, In addition to storing the video data for a show selected for recording, the
system also stores the meta data associated with the show from the channel guide, e.g., names of actors and actresses, director, ratings information, textual descriptions of the show, etc. This information may then be recalled by the user at any time in order to assist in making a decision of whether the watch the particular recorded show.; ¶ 0057, At any time, the user may preview shows which will be recorded based on the criteria information provided.; EN: Examiner interprets that when user selects a title in the program guide, the title becomes the “tag” and the system matches the title to the stored information for display or playback); and searching for information data linked with the found image data (Fig. 10, Friends recorded 11/17, ¶ 0041, In addition to storing the video data for a show selected for recording, the system also stores the meta data associated with the show from the channel guide, e.g., names of actors and actresses, director, ratings information, textual descriptions of the show, etc. This information may then be recalled by the user at any time in order to assist in making a decision of whether the watch the particular recorded show.; ¶ 0057, At any time, the user may preview shows which will be recorded based on the criteria information provided.; EN: Examiner interprets that when user selects a title in the program guide, the title becomes the “tag” and the system matches the title to the stored information for display or playback).
Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Zigmond in view of Kimura with the link information as taught by Wood for the purpose of providing a technique in related art for an integrated channel guide allowing a user to control recording and storage of television signals into personal channels for later playback and viewing.

Response to Arguments

11. The rejection of claim 19 under 35 U.S.C. 101 is withdrawn because of the addition of “non-transitory” to the claim.

12. The objection to the specification is withdrawn because of corrections to the specification received with this amendment.

13. In reference to Applicant’s argument:

The Office Action rejects claims 1-9 and 19-30 under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. It is respectfully submitted that the above amendments obviate the grounds for rejections.

For example, independent claim 1 includes specific features such as inserting a tag into a portion of a channel list data and including a link point connected to the tag in the stored image data and the stored information data. Independent claim 1 also includes features such as the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data. These features clearly show a transformation of underlying subject matter to a different state or thing. Independent claim 24 includes similar features.

Examiner’s Response:
Applicant's arguments have been fully considered but they are not persuasive.

Examiner respectfully fails to find that the EPG and textual description show a transformation of underlying subject matter to a different state or thing as described for “process” in MPEP § 2106 (I)(i), “A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.” Inserting a tag and describing textual data are enhancements and do not change the state of the channel.

The data could be displayed without these enhancements. Since claims 3, 20 and 26-27 have been deleted and claims 21-23 moved to claim 19, the 35 U.S.C.§ 101 rejection of claims 1-2, 4-9, 24-25 and 28-30 is not withdrawn. Examiner suggests adding further definition of the “device” as being a hardware item such as a digital image display apparatus per Fig. 1 or a set-top box per Specification page 2 line 2.

14. In reference to Applicant’s argument:

Zigmond and Wood do not teach or suggest all the features of amended independent claims 1, 10, 19 and 24.

Zigmond and Wood merely display recorded programs. This does not relate to providing image data and information data through a link for image data generated through recording among programs included in an EPG. Wood discloses storing the meta data of the recorded program that can be displayed later by operation of the user.

Examiner’s Response:

Applicant's arguments are persuasive. The rejections of claims 1, 10, 19 and 24 are withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Zigmond and Kimura.
Conclusion

15. Claims 1-2, 4-11, 13-19, 21-25 and 28-31 are rejected.

Correspondence Information

16. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to MARY ANNE KAY whose telephone number is (571)270-5677, FAX (571)270-6677, e-mail mary.kay@uspto.gov. The Examiner can normally be reached on Monday -Thursday and every other Friday, 8:00 AM - 5:00 PM, EST.

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the Applicant. Without a written authorization by Applicant recorded in the Applicant’s file, the USPTO will not respond via e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is an example authorization which may be used by the Applicant:

Notwithstanding the lack of security with Internet Communications, I hereby authorize the USPTO to communicate with me concerning any subject matter related to the instant application by e-mail. I understand that a copy of such communications related to formal submissions will be made of record in the applications file.
If attempts to reach the examiner by telephone are unsuccessful, the Examiner’s supervisor, Nasser M. Goodarzi can be reached on (571)272-4195. Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

Receptionist,

Customer Service Window,

Randolph Building,

401 Dulany Street,

Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571)273-8300 (for formal communications intended for entry).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).
Application/Control Number: 11/874,770
Art Unit: 2426

/Mary Anne Kay/
Examiner

/NASSER GOODARZI/
Supervisory Patent Examiner, Art Unit 2426
# Notice of References Cited

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**FOREIGN PATENT DOCUMENTS**

**NON-PATENT DOCUMENTS**

Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)*

Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.
**BIB DATA SHEET**

**CONFIRMATION NO. 3177**

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**APPLICANTS**
Seung-Kwan HA, Seoul, KOREA, REPUBLIC OF;

**CONTINUING DATA ***********************

**FOREIGN APPLICATIONS *******************

** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **
11/01/2007

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Foreign Priority claimed Yes No
35 USC 119(a-d) conditions met Yes No
Met after Allowance

Address
KED & ASSOCIATES, LLP
P.O. Box 8638
Reston, VA 20195
UNITED STATES

**TITLE**
PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

**FILING FEE RECEIVED**
1900

FEES: Authority has been given in Paper No. ________ to charge/credit DEPOSIT ACCOUNT No. ________ for following:

- All Fees
- 1.16 Fees (Filing)
- 1.17 Fees (Processing Ext. of time)
- 1.18 Fees (Issue)
- Other __________
- Credit

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U.S. Patent and Trademark Office

Part of Paper No.: 20130605
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## INTERFERENCE SEARCH

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Seung-Kwan HA

Confirmation No.: 3177

Group Art Unit: 2426

Examiner: Mary Anne KAY

Serial No.: 11/874,770

Filed: October 18, 2007

Customer No.: 34610

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

AMENDMENT

U.S. Patent and Trademark Office
Customer Window, Mail Stop Amendment
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

In reply to the Office Action dated February 12, 2013, please amend the above-identified application as follows:

Amendments to the Specification are reflected in this paper.

Amendments to the Claims are reflected in the listing of claims.

Remarks begin after the listing of the claims.
AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph on page 1, lines 9-13 with the following amended paragraph:

The present invention relates to a device and a method for providing information of image data stored in a digital image display apparatus and a non-transitory recording medium recorded with a program for realizing the same, more specifically to a device and a method capable of providing a variety of additional information of image data, stored in a digital image display apparatus, through a channel list, and a non-transitory recording medium recorded with a program for realizing the same.

Please replace the paragraphs on page 4, lines 2-11 with the following amended paragraphs:

The present invention provides a device and a method for providing information of image data stored in a digital image display apparatus and a non-transitory recording medium recorded with a program for realizing the same that can supply information of a recorded broadcast, which is stored image data, to a user without user’s searching through the stored image data.

The present invention also provides a device and a method for providing information of image data stored in a digital image display apparatus and a non-transitory recording medium recorded with a program for realizing the same that can allow a user to
receive various additional services provided through a digital broadcast in spite of having already recorded the digital broadcast.

*Please replace the paragraphs on page 7, line 9-page 8, line 5 with the following amended paragraphs:*

Another aspect of the present invention features a *non-transitory* recording medium recorded with a program for executing a method for providing a recorded image in a digital image display apparatus.

According to an embodiment of the present invention, there is provided a *non-transitory* recording medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the *non-transitory* recorded medium being readable by the digital image display apparatus, including generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus and; and linking image data and information data, respectively, with the channel list data, the image data and the information data being included in the broadcast data, the broadcast data being stored in the digital image display apparatus according to a broadcast selecting signal and a broadcast data storing signal, whereas the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and provides information of the image data by using the information data linked with the channel list data.
Please replace the paragraph on page 11, lines 8-9 with the following amended paragraph:

[[[ ]]]For instance, the first element can be named the second element, and vice versa, without departing the scope of claims of the present invention.

Please replace the paragraphs on page 22, lines 5-12 with the following amended paragraphs:

FIG. 7 is a flow chart illustrating an example of a process of displaying image data, the genre of which is a movie, of stored image data, and a list of channels, through which each image data is broadcasted, by using channel list data generated in accordance with an embodiment of the present invention.

FIG. 7 is a flow chart illustrating an example of a process of displaying an image datum, the genre of which is a movie, of stored image data and a list of channels, which each image data is broadcasted through, by using channel list data generated in accordance with an embodiment of the present invention.
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A device for providing information of image data stored in a digital image display apparatus, the device comprising:

   a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data; and

   a linker to link image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and the information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

   the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data,

   wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including
a link point connected to the tag in the stored image data and the stored information data, and

the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

2. (Currently Amended) The device of claim 1, wherein the channel list generator renews stored channel list data [[if]]when a new receivable broadcast channel is found.

3. (Canceled)

4. (Original) The device of claim 1, wherein the device for providing information is included in the digital image display apparatus.

5. (Currently Amended) The device of claim 1, wherein the digital image display apparatus comprises:

a broadcast receiving unit, receiving to receive broadcast data;

an input unit, outputting to output an input signal corresponding to an inputted key;

a processor, generating to generate a control signal for controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;
a display unit, outputting video data of the received broadcast data;
a sound output unit, outputting audio data of the received broadcast data;
a storing unit, storing the broadcast data; and
a broadcast processing unit.

6. (Currently Amended) The device of claim 5, wherein the broadcast data processing unit comprises:
a demodulator to remove a carrier wave from the broadcast data and demodulating the broadcast data, from which the carrier wave is removed, into a digital data stream;
a transfer stream (TS) parser to parse the broadcast data into audio data and video data;
a video element stream (ES) buffer, temporarily storing the parsed video data in order to output it through the display unit; and
an audio element stream (ES) buffer, temporarily storing the parsed audio data in order to output it through the display unit.

7. (Original) The device of claim 1, wherein the information data includes transport stream information and recording information of the image data.
8. (Original) The device of claim 7, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

9. (Original) The device of claim 7, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

10. (Currently Amended) A method for providing information of image data stored in a digital image display apparatus, the method comprising:

   generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus; and

   linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and
the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data,

wherein linking the image data and the information data includes inserting a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data,

the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

11. (Currently Amended) The method of claim 10, wherein, in generating the channel list data, the channel list data is generated by renewing stored channel list data when a new receivable broadcast channel is found.

12. (Canceled)

13. (Currently Amended) The method of claim 10, wherein said linking further comprises storing the channel list data linked with the image data and the information data, respectively.
14. (Original) The method of claim 10, wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.

15. (Previously Presented) The method of claim 10, wherein the information data includes transport stream information and recording information of the image data.

16. (Original) The method of claim 15, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

17. (Original) The method of claim 15, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

18. (Original) The method of claim 10, wherein providing information of the image data by using the information data is performed by:

   receiving a selecting signal of image data and information data;
searching for the selected image data; and

searching for information data linked with the found image data.

19. (Currently Amended) A recording non-transitory computer readable medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the recorded non-transitory computer readable medium being readable by the digital image display apparatus, the program comprising:

   generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus; and

   linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

   the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data,
wherein, in linking the image data and the information data, a tag is inserted into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data.

the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

20. (Canceled)

21. (Currently Amended) The device—non-transitory computer readable medium of claim [[20]]19, wherein the textual description of the image data describes at least one of a genre of the stored image data or a person or character in the stored image data.

22. (Currently Amended) The device—non-transitory computer readable medium of claim [[20]]19, wherein the information data further provides an indication of a broadcast time of the stored image data.

23. (Currently Amended) The device—non-transitory computer readable medium of claim [[20]]19, wherein the information data further provides an indication of a broadcast service used to broadcast the stored image data.
24. (Currently Amended) A device for providing information of image data stored in a digital image display apparatus, the device comprising:

a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data; and

a linker to link image data and information data, respectively, with the channel list data, wherein the image data is included in broadcast data and is stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

the information data corresponding to the image data is displayed as a result of the information data being linked with the image data when the image data is selected from the channel list data,

wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data, and

the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.
25. (Previously Presented) The device of claim 24, wherein:

the image data and the information data are included in broadcast data, and

the broadcast data and the information data are stored in the digital image
display apparatus in response to a broadcast data storing signal received for recording a
program corresponding to the image data.

26-27. (Canceled)

28. (Currently Amended) The device of claim [[27]]24, wherein the textual
description of the image data describes at least one of a genre of the stored image data or a
person or character in the stored image data.

29. (Currently Amended) The device of claim [[27]]24, wherein the information
data further provides an indication of a broadcast time of the stored image data.

30. (Currently Amended) The device of claim [[27]]24, wherein the information
data further provides an indication of a broadcast service used to broadcast the stored image
data.
31. (New) The device of claim 24, wherein the digital image display apparatus comprises:

a broadcast receiving unit to receive broadcast data;

an input unit to output an input signal corresponding to an inputted key;

a processor to generate a control signal for controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;

a display unit to output video data of the received broadcast data;

a sound output unit to output audio data of the received broadcast data;

a storing unit to store the broadcast data; and

a broadcast processing unit.
REMARKS

Claims 1-2, 4-11, 13-19, 21-25 and 28-31 are pending in this application. By this Amendment, the specification and claims 1, 2, 5, 6, 10, 11, 13, 19, 21-24 and 28-30 are amended, claims 3, 12, 20, 26 and 27 are canceled without prejudice or disclaimer and new claim 31 is added. Various amendments are made for clarity and are unrelated to issues of patentability.

The Office Action objects to the specification because of informalities. It is respectfully submitted that the above amendments obviate the grounds for objection. Withdrawal of the objection is respectfully requested.

The Office Action rejects claims 1-9 and 19-30 under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. It is respectfully submitted that the above amendments obviate the grounds for rejections.

For example, independent claim 1 includes specific features such as inserting a tag into a portion of a channel list data and including a link point connected to the tag in the stored image data and the stored information data. Independent claim 1 also includes features such as the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data. These features clearly show a transformation of underlying subject matter to a different state or thing. Independent claim 24 includes similar features.
Further, dependent claims 5-6 and 31 clearly relate to specific features of an apparatus.

Additionally, independent claim 19 is amended to recite --non-transitory-- as suggested in the Office Action.

In view of the above, the claims are directed to proper subject matter. Withdrawal of the rejections is respectfully requested.


Independent claim 1 recites a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data, and a linker to link image data and information data, respectively, with the channel list data, the
image data and the information data being included in broadcast data, the broadcast data and
the information data being stored in the digital image display apparatus in response to a
broadcast data storing signal received for recording a program corresponding to the image
data. Independent claim 1 also recites that the channel list data is outputted through the
digital image display apparatus to display link information of the image data and the
information data, and the stored information data corresponding to the image data is
displayed as a result of the stored information data being linked with the image data when
the image data is selected from the channel list data. Independent claim 1 also recites that the
linker links the image data and the information data, respectively, to the channel list data by
inserting a tag into a portion of the channel list data and including a link point connected to
the tag in the stored image data and the stored information data, and the channel list data is
electronic program guide (EPG) data for an electronic program guide to be displayed on the
digital image display apparatus, and wherein the information data includes a textual
description of the stored image data.

The applied references do not teach or suggest all the features of independent claim
1. More specifically, the Office Action (on page 9) states that Zigmond does not teach the
features of dependent claim 3. The Office Action then cites Wood's paragraphs [0041] and
[0057]. Paragraph [0041] states in part the following:

[0041] In addition to storing the video data for a show selected for recording, the
system also stores the meta data associated with the show from the channel guide.... This
information may then be recalled by the user at any time in order to assist in making a
decision of whether the watch the particular recorded show.
Wood discloses storing the meta data of the recorded program that can be displayed later by operation of the user.

Zigmond and Wood merely display recorded programs. This does not relate to providing image data and information data through a link for image data generated through recording among programs included in an EPG.

In at least one non-limiting example, the present specification describes that the user to check the program through the EPG, to check presence of image data stored for the program, and to additionally check the information data for the image data. In other words, the user may check for the stored image data while selecting a program to watch through the EPG and view the stored image data.

Zigmond and Wood do not teach or suggest the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data, and the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data, as recited in independent claim 1.

For at least these reasons, Zigmond and Wood do not teach or suggest all the features of independent claim 1. The other applied references do not teach or suggest the
missing features of independent claim 1. Independent claim 1 therefore defines patentable subject matter.

Independent claim 10 recites generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus, and linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data. Independent claim 10 also recites that the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data. Still further, independent claim 10 recites that linking the image data and the information data includes inserting a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data, the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

For at least similar reasons as set forth above, the applied references do not teach or suggest all the features of independent claim 10. More specifically, Zigmond, Wood and the
other applied references do not teach or suggest that linking the image data and the information data includes inserting a tag into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data, the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data. Accordingly, independent claim 10 defines patentable subject matter.

Independent claim 19 recites generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus, and linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data. Independent claim 19 also recites that the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data. Independent claim 19 also recites that in linking the image data and information data, a tag is inserted into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data, the channel list data is electronic program guide
(EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

For at least similar reasons as set forth above, the applied references do not teach or suggest all the features of independent claim 19. More specifically, Zigmond, Wood and the other applied references do not teach or suggest that in linking the image data and information data, a tag is inserted into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data, the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data. Accordingly, independent claim 19 defines patentable subject matter.

Independent claim 24 recites a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data, and a linker to link image data and information data, respectively, with the channel list data, wherein the image data is included in broadcast data and is stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data. Independent claim 24 also recites that the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and the information data corresponding to the
image data is displayed as a result of the information data being linked with the image data when the image data is selected from the channel list data. Independent claim 24 also recites that the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data, and the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

For at least similar reasons as set forth above, the applied references do not teach or suggest all the features of independent claim 24. More specifically, Zigmond, Wood and the other applied references do not teach or suggest that the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data, and the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data. Accordingly, independent claim 24 defines patentable subject matter.

For at least the reasons set forth above, each of independent claims 1, 10, 19 and 24 defines patentable subject matter. Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this reason.
In addition, the dependent claims recite features that further and independently distinguish over the applied references.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1-2, 4-11, 13-19, 21-25 and 28-31 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
KED & ASSOCIATES, LLP

David C. Oren
Registration No. 38,694

Correspondence Address:
P.O. Box 8638
Reston, VA 20195
703 766-3777 DCO/leh
Date: May 13, 2013
Please direct all correspondence to Customer Number 34610
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<td>PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS</td>
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<td>First Named Inventor/Applicant Name:</td>
<td>Seung-Kwan HA</td>
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<td>David Carlton Oren/Kathy Humphries</td>
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<td>David Carlton Oren</td>
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**Payment information:**
Submitted with Payment: no

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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Seung-Kwan HA

Confirmation No.: 3177

Group Art Unit: 2426

Examiner: Mary Anne KAY

Serial No: 11/874,770

Customer No.: 34610

Filed: October 18, 2007

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

U.S. Patent and Trademark Office
Customer Window, MAIL STOP AMENDMENT
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Dear Sir:

Transmitted herewith is an Amendment and/or Reply in the above identified application.

✓ No additional fee is required.

☐ Also attached:

The fee has been calculated as shown below:

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If multiple claims newly presented, add $780.00 $0.00

Fee for extension of time $0.00

TOTAL FEE DUE $0.00

✓ The Commissioner is hereby authorized to charge payment of any fees associated with this communication or credit any overpayment, to Deposit Account No. 16-0607, including any filing fees under 37 C.F.R. §1.16 for presentation of extra claims and any patent application processing fees under 37 C.F.R. § 1.17.

Respectfully submitted,
KED & ASSOCIATES, LLP

David C. Oren
Registration No. 38,694

Correspondence Address:
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(703) 766-3777 DCO/kah
Date: May 13, 2013

Please direct all correspondence to Customer Number 34610
# PATENT APPLICATION FEE DETERMINATION RECORD

## Application as Filed – Part I

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## Application as Amended – Part II

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*** If the "Highest Number Previously Paid For" in this SPACE is less than 3, enter "3."
Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.
Office Action Summary

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<td>HA, SEUNG-KWAN</td>
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Examiner | Art Unit
---------|----------
MARY A. KAY | 2426

--- The MAILING DATE of this communication appears on the cover sheet with the correspondence address ---

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) □ Responsive to communication(s) filed on 09 February 2011.
2a) □ This action is FINAL. 2b) ☑ This action is non-final.
3) □ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
4) □ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

5) ☑ Claim(s) 1-30 is/are pending in the application.
   5a) Of the above claim(s) ______ is/are withdrawn from consideration.
6) □ Claim(s) ______ is/are allowed.
7) ☑ Claim(s) 1-30 is/are rejected.
8) □ Claim(s) ______ is/are objected to.
9) □ Claim(s) ______ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the Patent Prosecution Highway program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

**Application Papers**

10) □ The specification is objected to by the Examiner.
11) ☑ The drawing(s) filed on 18 October 2007 is/are: a) ☑ accepted or b) □ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

**Priority under 35 U.S.C. § 119**

12) ☑ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☑ All  b) ☐ Some * c) ☐ None of:
   1. ☑ Certified copies of the priority documents have been received.
   2. □ Certified copies of the priority documents have been received in Application No. ______.
   3. □ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☑ Notice of References Cited (PTO-892)
2) □ Information Disclosure Statement(s) (PTO/SB/08)
3) □ Interview Summary (PTO-413)
4) □ Other: ______.

   Paper No(s)/Mail Date ______.

   Paper No(s)/Mail Date ______.
DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. This Office Action is in response to an AMENDMENT entered February 9, 2011 for the patent application 11/874770 filed on October 16, 2007.

Status of Claims

2. Claims 1-30 are pending in this application.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-9 and 20-30 are rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter because the claimed invention does not fall within at least one of the four categories of patent eligible subject matter recited
in 35 U.S.C. 101 (process, machine, manufacture, or composition of matter). Claims 1-9 and 20-30 are directed to a device claim that only comprises of software elements (a channel list generator, a linker), and software is not a statutory element.

4. Claim 19 is rejected under 35 USC 101 since the claims are directed to non-statutory subject matter. Claim 19 recites “a recording medium tangibly embodying a program of instructions executable by a digital image display apparatus”, “the recorded medium being readable by the digital image display apparatus” that includes a computer readable medium which appears to cover both transitory and non-transitory embodiments (Applicant’s specification page 7 lines 12-17 only describes “recording medium tangibly embodying a program of instructions”). In accordance with statutory requirements “medium” is not limited to be of a hardware character since “recording medium” is not defined as hardware in the Applicant’s disclosure.

The United States Patent and Trademark Office (USPTO) is required to give claims their broadest reasonable interpretation consistent with the specification during proceedings before the USPTO. See In re Zletz, 893 F.2d 319 (Fed. Cir. 1989) (during patent examination the pending claims must be interpreted as broadly as their terms reasonably allow). The broadest reasonable interpretation of a claim drawn to a computer readable medium (also called machine readable medium and other such variations) typically covers forms of non-transitory tangible media and transitory propagating signals per se in view of the ordinary and customary meaning of computer readable media, particularly when the specification is silent. See MPEP 2111.01.
When the broadest reasonable interpretation of a claim covers a signal per se, the claim must be rejected under 35 U.S.C. § 101 as covering non-statutory subject matter. See In re Nuijten, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007) (transitory embodiments are not directed to statutory subject matter) and Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101, Aug. 24, 2009; p. 2.

The Examiner suggests that the Applicant add limitation of "non-transitory computer readable medium", "non-transitory", "computer usable memory", or "computer readable device", (i.e. any variations thereof, where "media" or "medium" is replaced by "device" or "memory") or adding "wherein the medium is not a signal" to the claim(s) in order to properly render the claims in statutory form in view of their broadest reasonable interpretation in light of the originally filed specification.

**Specification**

5. The Specification received October 18, 2007 is objected to because at the following locations the terms as indicated should be modified to add the limitation of "non-transitory computer readable medium", "non-transitory", "computer usable memory", or "computer readable device", (i.e. any variations thereof, where "media" or "medium" is replaced by "device" or "memory") or adding "wherein the medium is not a signal" to provide a statutory antecedent to Claims 16-19:

- Page 1 lines 10-11, 13-14, “recording medium”
Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 3-5, 10, 12-14 and 18-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zigmond et al. (U.S. PGPub 2005/0210501 A1, referred to as Zigmond) in view of Wood et al. (U.S. PGPub 2003/0044165 A1, referred to as Wood).

Examiner’s Note (EN): Zigmond and Wood apply with the specific sections identified as follows. Paragraph 16. below applies.

Claim 1

Zigmond teaches:

A device for providing information of image data stored in a digital image display apparatus (¶0002, A client device includes, for example, a set-top box, a digital satellite receiver, a cable box, a digital video recorder (DVR), and a television with a built-in receiver), the device comprising:
a channel list generator to search for a broadcast channel received through the
digital image display apparatus (¶ 0034, *If the record time is in the future, the device automatically tunes to the appropriate channel and begin recording at the designated time*) and to generate channel list data (¶ 0029, FIG. 2 illustrates an example display device 204 and an example client device 202 capable of generating a listing of recorded programs for display on the display device.; ¶ 0030, Program guide application 208 generates a recorded program guide 212 that can be displayed on display device 204); and

a linker to link image data and information data, respectively, with the channel list data (¶ 0030, *Program guide application 208 generates a recorded program guide 212 that can be displayed on display device 204*), the image data and the information data being included in broadcast data (¶ 0019, *The systems and methods discussed herein are described with reference to an environment in which content (and metadata associated with the content) is distributed to client devices via a data communication network*), the broadcast data and information data being stored in the digital image display apparatus (¶ 0020, *Example client devices include personal computers, DVD players, digital video recorders (DVRs), set top boxes, cable boxes, satellite receivers, televisions, game consoles, and the like*) in response to a broadcast data storing signal received for recording a program corresponding to the image data (¶ 0033, *Initially, a
request is received to record a program (block 302). For example, the request may be generated by a viewer through an electronic program guide (EPG) presented to the viewer through a client device; ¶ 0034, If the record time is in the future, the device automatically tunes to the appropriate channel and begin recording at the designated time),

Rationale:

**Zigmond** does not explicitly disclose a linker to link image data and information data with the channel list data. However, the program guide application generates a listing of recorded programs for selection by the user and inherently links the channel list data to the location of the recorded image and data in order to allow the user access to the recorded program by selecting the channel list data. Thereby OFFICIAL NOTICE is taken.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a linker to link image data and information data with the channel list data to allow the user access to the recorded program by selecting the channel list data.

**Zigmond** does not explicitly disclose:

wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and
the stored information data corresponding to the image data is displayed as a
result of the stored information data being linked with the image data when
the image data is selected from the channel list data.

Wood teaches:

wherein:

the channel list data is outputted through the digital image display apparatus to
display link information of the image data and the information data (Fig.
10, elements “P100 Friends”, “P101 Tonight”, “P102 Science”, ¶ 0060, The
user may also specify a personal channel to store the recorded show in; ¶
0065, The various information from the channel guide (e.g., ratings,
actor/actress names, director names, keywords, awards given) may be
recorded in the personal channel), and

the stored information data corresponding to the image data is displayed as a
result of the stored information data being linked with the image data when
the image data is selected from the channel list data (Fig. 10, elements
“P100 Friends”, “P101 Tonight”, “P102 Science”, “Friends recorded
11/17”, ¶ 0060, The user may also specify a personal channel to store the
recorded show in; ¶ 0065, The various information from the channel guide
(e.g., ratings, actor/actress names, director names, keywords, awards
given) may be recorded in the personal channel).

Rationale:
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of *Zigmond* with the link information as taught by *Wood* for the purpose of providing a technique in related art for an integrated channel guide allowing a user to control recording and storage of television signals into personal channels for later playback and viewing.

**Claims 3, 12, 26**

*Zigmond* does not explicitly disclose:

wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of channel list data and including a link point connected to the tag in the stored image data and the stored information data.

*Wood* teaches:

wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of channel list data and including a link point connected to the tag in the stored image data and the stored information data (Fig. 10, *Friends recorded 11/17*, ¶ 0041, *In addition to storing the video data for a show selected for recording, the system also stores the meta data associated with the show from the channel guide, e.g., names of actors and actresses, director, ratings information, textual descriptions of the show, etc. This information may then be recalled by the user at any time in order to assist in making a decision of whether the watch the particular recorded show.*; ¶ 0057, At
any time, the user may preview shows which will be recorded based on the criteria information provided.; EN: Examiner interprets that when user selects a title in the program guide, the title becomes the “tag” and the system matches the title to the stored information for display or playback).

Claim 4

Zigmond teaches:

wherein the device for providing information is included in the digital image display apparatus (Fig. 13 element 1326 Program Guide Application, ¶ 0058, A program guide application 1326 that executes on processor(s) 1308 is also stored in non-volatile memory 1316 and is implemented to generate a program guide for display.).

Claim 5

Zigmond teaches:

wherein the digital image display apparatus comprises:

a broadcast receiving unit, receiving broadcast data (Fig. 13, Client Device 1302, ¶ 0055, Client device 1302 includes one or more tuners 1306 which are representative of one or more in-band tuners that tune to various frequencies or channels to receive television signals, as well as an out-of-band tuner that tunes to the broadcast channel over which program data is broadcast to client device 1302.);
an input unit, outputting an input signal corresponding to an inputted key (Fig. 13, ¶ 0059, Input devices can include a wireless keyboard or another
handheld input device 1336 such as a personal digital assistant (PDA),
handheld computer, wireless phone, or the like);
a processor, generating a control signal controlling an operation of the digital
image display apparatus in accordance with the input signal outputted
from the input unit (Fig. 2, ¶ 0029, Client device 202 includes one or more
processors 206. Processor(s) 206 include, for example, microprocessors
and controllers, which process various instructions to control the operation
of client device 202 and to communicate with other devices.);
a display unit, outputting video data of the received broadcast data (Fig. 2, ¶
0030, Program guide application 208 generates a recorded program guide
212 that can be displayed on display device 204.);
a sound output unit, outputting audio data of the received broadcast data (Fig.
13, ¶ 0062, Client device 1302 also includes an audio and/or video output
1340 that provides the audio, video, and/or display signals to television
1304 or to other devices that process and/or display, or otherwise render,
the audio and video data.);
a storing unit, storing the broadcast data (Fig. 13, ¶ 0056, Client device 1302 can
be implemented with one or more memory components, examples of
which include a random access memory (RAM) 1310, mass storage
media 1312, a disk drive 1314, and a non-volatile memory 1316 (e.g.,
ROM, Flash, EPROM, EEPROM, etc.).); and
a broadcast processing unit (Fig. 13, ¶ 0060, Client device 1302 also includes a content processor 1338 which can include a video decoder and/or additional processors to receive, process, and decode broadcast video signals and program data).

Claim 10

Claim 10, which discloses a method for providing information of image data stored in a digital image display apparatus, is analyzed with respect to the citations in the rejection of similar claim 1.

Claim 13

Zigmond teaches:

storing the channel list data linked with the image data and the information data, respectively (¶ 0029, Client device 202 may use memory device(s) 210 to store received programs, program schedule information, program metadata, configuration information, and the like; EN: Examiner interprets that the title link as described by Wood ¶ 0041 provides the link between program data and stored content and information).

Claim 14

Zigmond does not explicitly disclose:

wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.
Wood teaches:

wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data (Fig. 10, Friends recorded 11/17, ¶ 0041, In addition to storing the video data for a show selected for recording, the system also stores the meta data associated with the show from the channel guide, e.g., names of actors and actresses, director, ratings information, textual descriptions of the show, etc. This information may then be recalled by the user at any time in order to assist in making a decision of whether the watch the particular recorded show.; ¶ 0057, At any time, the user may preview shows which will be recorded based on the criteria information provided.;

EN: Examiner interprets that when user selects a title in the program guide, the title becomes the “tag” and the system matches the title to the stored information for display or playback).

Claim 18

Zigmond does not explicitly disclose:

wherein providing information of the image data by using the information data is performed by:

receiving a selecting signal of image data and information data;

searching for the selected image data; and

searching for information data linked with the found image data.
Wood teaches:

wherein providing information of the image data by using the information data is performed by:

receiving a selecting signal of image data and information data (Fig. 10, Friends recorded 11/17, ¶ 0041, In addition to storing the video data for a show selected for recording, the system also stores the meta data associated with the show from the channel guide, e.g., names of actors and actresses, director, ratings information, textual descriptions of the show, etc. This information may then be recalled by the user at any time in order to assist in making a decision of whether the watch the particular recorded show.; ¶ 0057, At any time, the user may preview shows which will be recorded based on the criteria information provided.; EN: Examiner interprets that when user selects a title in the program guide, the title becomes the “tag” and the system matches the title to the stored information for display or playback);

searching for the selected image data (Fig. 10, Friends recorded 11/17, ¶ 0041, In addition to storing the video data for a show selected for recording, the system also stores the meta data associated with the show from the channel guide, e.g., names of actors and actresses, director, ratings information, textual descriptions of the show, etc. This information may then be recalled by the user at any time in order to assist in making a decision of whether the watch the particular recorded show.; ¶ 0057, At
any time, the user may preview shows which will be recorded based on
the criteria information provided.; EN: Examiner interprets that when user
selects a title in the program guide, the title becomes the “tag” and the
system matches the title to the stored information for display or playback);
and

searching for information data linked with the found image data (Fig. 10, Friends
recorded 11/17, ¶ 0041, In addition to storing the video data for a show
selected for recording, the system also stores the meta data associated
with the show from the channel guide, e.g., names of actors and
actresses, director, ratings information, textual descriptions of the show,
etc. This information may then be recalled by the user at any time in order
to assist in making a decision of whether the watch the particular recorded
show.; ¶ 0057, At any time, the user may preview shows which will be
recorded based on the criteria information provided.; EN: Examiner
interprets that when user selects a title in the program guide, the title
becomes the “tag” and the system matches the title to the stored
information for display or playback).

Claim 19

Claim 19, which discloses a recording medium tangibly embodying a program of
instructions executable by a digital image display apparatus to execute a method
of providing information of image data stored in the image display apparatus, the
recorded medium being readable by the digital image display apparatus, is
analyzed with respect to the citations in the rejection of similar claim 1. The following additional limitations are also disclosed:

**Zigmond teaches:**

A recording medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the recorded medium being readable by the digital image display apparatus (¶ 0030, Program guide application 208 executes on processor(s) 206 and can be stored as computer-executable instructions in non-volatile memory (not shown) or client device 202).

**Claims 20, 27**

**Zigmond teaches:**

wherein the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus (Fig. 2, ¶ 0032, Recorded program guide 212 displays information associated with five previously recorded programs in a grid arrangement.), and

wherein the information data includes a textual description of the stored image data (Fig. 2, ¶ 0032, Information associated with previously recorded programs can be arranged in any manner, and may include textual information, graphical information, or any other information associated with the programs.).
Claims 21, 28

Zigmond teaches:

wherein the textual description of the image data describes at least one of a genre of the stored image data or a person or character in the stored image data (Fig. 12, ¶0052, The program was a basketball game that had two overtime sessions, which caused the program to run longer than scheduled.).

Claims 22, 29

Zigmond teaches:

wherein the information data further provides an indication of a broadcast time of the stored image data (Fig. 12, “Date: March 8, 2004”, Start:, “End:”).

Claims 23, 30

Zigmond teaches:

wherein the information data further provides an indication of a broadcast service used to broadcast the stored image data (Fig. 12, “Channel:”).

Claim 24

Claim 24, which discloses a device for providing information of image data stored in a digital image display apparatus, is analyzed with respect to the citations in the rejection of similar claim 1.

Claim 25

Zigmond teaches:
the image data and the information data are included in broadcast data (¶ 0019, The systems and methods discussed herein are described with reference to an environment in which content (and metadata associated with the content) is distributed to client devices via a data communication network; EN: Examiner interprets the distributed content and metadata over the communication network as being broadcast), and

the broadcast data and the information data are stored in the digital image display apparatus (¶ 0020, Example client devices include personal computers, DVD players, digital video recorders (DVRs), set top boxes, cable boxes, satellite receivers, televisions, game consoles, and the like) in response to a broadcast data storing signal received for recording a program corresponding to the image data (¶ 0033, Initially, a request is received to record a program (block 302). For example, the request may be generated by a viewer through an electronic program guide (EPG) presented to the viewer through a client device; ¶ 0034, If the record time is in the future, the device automatically tunes to the appropriate channel and begin recording at the designated time).

Claim Rejections - 35 USC § 103

8. Claims 2 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zigmond in view of Wood in further view of Park (U.S. PGPub 2007/0094681 A1, referred to as Park). Examiner's Note (EN): Zigmond and Wood and Park apply with the specific sections identified as follows. Paragraph 16. below applies.
Claims 2, 11

Zigmond in view of Wood does not explicitly disclose:

wherein the channel list generator renews stored channel list data if a new receivable broadcast channel is found.

Park teaches:

wherein the channel list generator renews stored channel list data if a new receivable broadcast channel is found (¶0042, The User Interface generator 160 generates a UI signal according to control of controller 170. When the UI generator 160 is controlled by the controller 170 to display the channel list, it generates a channel list which indicates a new channel is added to the channel list.).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Zigmond in view of Wood with the stored channel list data as taught by Park for the purpose of providing a technique in related art for maintaining an up-to-date listing of the channels available for the viewer.

Claim Rejections - 35 USC § 103

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zigmond in view of Wood in further view of Boudreau et al. (U.S. PGPub 2004/0117858 A1,
referred to as **Boudreau**). Examiner’s Note (EN): **Zigmond** and **Wood** and **Boudreau**
apply with the specific sections identified as follows. Paragraph 16. below applies.

**Claim 6**

**Zigmond** in view of **Wood** does not explicitly disclose:

- a demodulator to remove a carrier wave from the broadcast data and
demodulating the broadcast data, from which the carrier wave is removed, into a digital data stream;
- a transfer stream (TS) parser to parse the broadcast data into audio data and video data;
- a video element stream (ES) buffer, temporarily storing the parsed video data in order to output it through the display unit; and
- an audio element stream (ES) buffer, temporarily storing the parsed audio data in order to output it through the display unit.

**Boudreau** teaches:

- a demodulator to remove a carrier wave from the broadcast data and
demodulating the broadcast data, from which the carrier wave is removed, into a digital data stream (*Fig. 7A, elements 714, 716, ¶ 0060, The components of the signal processing system 714 are capable of QAM demodulation, forward error correction, and demultiplexing of MPEG-2 transport streams, and parsing of elementary streams and packetized elementary streams*);
a transfer stream (TS) parser to parse the broadcast data into audio data and video data (Fig. 7A, ¶ 0059, The demux/parse system 718 can include MPEG-2 transport demultiplexing. When tuned to carrier frequencies carrying a digital transmission signal, the demux/parse system 718 enables the separation of packets of data, corresponding to the compressed streams of information belonging to the desired content instances, for further processing.);

a video element stream (ES) buffer, temporarily storing the parsed video data in order to output it through the display unit (Fig. 7A, ¶ 0060, The packetized compressed streams can be also output by the signal processing system 714, buffered to the video, audio, and/or XPORT buffers 735-737, and presented as input to the media engine 729 for decompression by the video decompression engine 733 and the audio decompression engine 732); and

an audio element stream (ES) buffer, temporarily storing the parsed audio data in order to output it through the display unit (Fig. 7A, ¶ 0060, The packetized compressed streams can be also output by the signal processing system 714, buffered to the video, audio, and/or XPORT buffers 735-737, and presented as input to the media engine 729 for decompression by the video decompression engine 733 and the audio decompression engine 732).

Rationale:
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Zigmond in view of Wood with the demodulation and buffering as taught by Boudreau for the purpose of providing a technique in related art for efficiently processing a digital broadcast signal for viewing by a user.

Claim Rejections - 35 USC § 103

10. Claims 7-9 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zigmond in view of Wood in further view of Smyth et al. (U.S. PGPub 2002/0007492 A1, referred to as Smyth) in further view of Krieger et al. (U.S. PGPub 2004/0268403 A1, referred to as Krieger). Examiner’s Note (EN): Zigmond and Wood and Smyth and Krieger apply with the specific sections identified as follows. Paragraph 16. below applies.

Claims 7, 15

Zigmond in view of Wood does not explicitly disclose:

wherein the information data includes transport stream information and recording information of the image data.

Smyth teaches:

wherein the information data includes transport stream information of the image data (¶ 0029, each digital video modulator contains four modulators that modulate each transport stream into a 64-ary QAM signal with block interleaving and forward error correction.).

Rationale:
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Zigmond in view of Wood with the transport stream information as taught by Smyth for the purpose of providing a technique in related art for providing faster detection of transmission errors and conservation of bandwidth by less frequent retransmissions.

Zigmond in view of Wood in further view of Smyth does not explicitly disclose:

wherein the information data includes recording information of the image data.

Krieger teaches:

wherein the information data includes recording information of the image data

(Fig. 10, ¶ 0044, EN: Embedded TV tag has scheduled time and channel of the broadcast program).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Zigmond in view of Wood in further view of Smyth with the recording information as taught by Krieger for the purpose of providing a technique in related art providing an embedded TV tag that may be configured to enable a user to automatically schedule the associated program to be recorded.

Claims 8, 16

Zigmond in view of Wood in further view of Krieger does not explicitly disclose:

wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast
signal symbol rate information, polar signal information of a broadcast
signal and forward error correction (FEC) information.

Smyth teaches:

wherein the transport stream information comprises at least one from the group
consisting of frequency information of the broadcast data, broadcast
signal symbol rate information, polar signal information of a broadcast
signal and forward error correction (FEC) information (¶ 0029, each digital
video modulator contains four modulators that modulate each transport
stream into a 64-ary QAM signal with block interleaving and forward error
correction.).

Claims 9, 17

Zigmond in view of Wood in further view of Smyth does not explicitly disclose:

wherein the recording information comprises at least one from the group
consisting of channel information, information related to a start time and
an end time of storing the broadcast data, genre information of image data
and viewer-restriction information.

Krieger teaches:

wherein the recording information comprises at least one from the group
consisting of channel information, information related to a start time and
an end time of storing the broadcast data, genre information of image data
and viewer-restriction information (Fig. 10, ¶ 0044, EN: Embedded TV tag
has scheduled time and channel of the broadcast program).
Response to Arguments

11. In reference to Applicant’s argument:

    Krieger does not teach or suggest storing information data related to the
    program to be recorded as required by claim 1. Moreover, while Krieger
    discloses use of an embedded TV tag, that tag is used solely for the purpose of
    scheduling recording of the program, not for linking a stored program to stored
    information data relating to that program to be displayed based on use of a
    channel list.

    The management information of Tsumagari is not “displayed” as recited
    in claim 1.
    Moreover, the management information of Tsumagari is not displayed
    “as a result of the stored information data being linked with the image data when
    the image data is selected from the channel list data” as is further required by
    claim 1.

Examiner’s Response:

    Applicant's arguments are persuasive. The rejection of claim 1 is withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of

Zigmond and Wood.

12. In reference to Applicant’s argument:

    The Krieger tag is not inserted into a portion of channel list (e.g.,
    electronic program guide) data, not is this tag used to link image data to
    information data as described above. Moreover, the Krieger publication does not
    teach or suggest that a link point is connected to its tag as required by claim 3.

Examiner’s Response:

    Applicant's arguments are persuasive. The rejection of claim 3 is withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of

Zigmond and Wood.
Examination Considerations

13. The claims and only the claims form the metes and bounds of the invention.

"Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969) (MPEP p 2100-8, c 2, l 45-48; p 2100-9, c 1, l 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

14. Examiner’s Notes are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner’s Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

15. Unless otherwise annotated, Examiner’s statements are to be interpreted in reference to that of one of ordinary skill in the art. Statements made in reference to the condition of the disclosure constitute, on the face of it, the basis and such would be
obvious to one of ordinary skill in the art, establishing thereby an inherent prima facie statement.

16. Examiner's Opinion: ¶¶ 13.-15. apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

**Conclusion**

17. Claims 1-30 are rejected.

**Correspondence Information**

18. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to MARY ANNE KAY whose telephone number is (571)270-5677, FAX (571)270-6677, e-mail mary.kay@uspto.gov. The Examiner can normally be reached on Monday - Thursday and every other Friday, 8:00 AM - 5:00 PM, EST.

   As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the Applicant. Without a written authorization by Applicant recorded in the Applicant’s file, the USPTO will not respond via e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate
patent application. The following is an example authorization which may be used by the Applicant:

Notwithstanding the lack of security with Internet Communications, I hereby authorize the USPTO to communicate with me concerning any subject matter related to the instant application by e-mail. I understand that a copy of such communications related to formal submissions will be made of record in the applications file.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Nasser M. Goodarzi can be reached on (571)272-4195. Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

Receptionist,

Customer Service Window,

Randolph Building,

401 Dulany Street,

Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571)273-8300 (for formal communications intended for entry).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.
For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Mary Anne Kay/
Examiner

/Nasser Moazzami/
Supervisory Patent Examiner, Art Unit 2426
**Notice of References Cited**

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U.S. Patent and Trademark Office
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**APPLICANTS**
Seung-Kwan HA, Seoul, KOREA, REPUBLIC OF;

**CONTINUING DATA**

**FOREIGN APPLICATIONS**

**IF REQUIRED, FOREIGN FILING LICENSE GRANTED**
11/01/2007

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Foreign Priority claimed: Yes ☑ No ☐
35 USC 119(a-d) conditions met: Yes ☑ No ☐
Met after Allowance: ☐

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  KED & ASSOCIATES, LLP
  P.O. Box 8638
  Reston, VA 20195
  UNITED STATES

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**FILING FEE RECEIVED**
1900

FEES: Authority has been given in Paper No. __________ to charge/credit DEPOSIT ACCOUNT No. __________ for following:

- ☑ All Fees
- ☑ 1.16 Fees (Filing)
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</table>

All participants (applicant, applicant’s representative, PTO personnel):

(1) **MARY ANNE KAY**.  
(3) _____.

(2) **Samuel W. Ntiros, 39318 (Attorney)**.  
(4) _____.

Date of Interview: **2/4/2011**.

Type:
- a) ☑ Telephonic  
- □ Video Conference  
- □ Personal [copy given to:  
  1) □ applicant  
  2) □ applicant’s representative]

Exhibit shown or demonstration conducted:  
- d) □ Yes  
- e) ☑ No.

If Yes, brief description: _____.

Claim(s) discussed: **1**.

Identification of prior art discussed: See attached 11_874770_2-4-2011.pdf.

Agreement with respect to the claims:  
- f) □ was reached.  
- g) ☑ was not reached.  
- h) □ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See attached 11_874770_2-4-2011.pdf.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

---

/Joseph P. Hirl/
Supervisory Patent Examiner, Art Unit 2426
Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.
It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner’s responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No. placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) An identification of the claims discussed,
3) An identification of the specific prior art discussed,
4) An identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) A brief identification of the general thrust of the principal arguments presented to the examiner.
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) A general indication of any other pertinent matters discussed, and
7) If appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant’s record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner’s version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, “Interview Record OK” on the paper recording the substance of the interview along with the date and the examiner’s initials.
After Final Interview

Applicant’s remarks about claim 1 regarding the references Krieger et al. (U.S. PGPub 2004/0268403 A1) and Tsumagari et al. (U.S. PGPub 2003/0142962 A1) were explained in detail to the Examiner.

Applicant submitted that additional new claims would be presented on this application.
REQUEST FOR CONTINUED EXAMINATION (RCE)
TRANSMITTED UNDER 37 C.F.R. §1.114

DOCKET NUMBER: EZ-0002
Prior Appln Serial No.: 11/874,770
Filed: October 18, 2007
Inventor(s): Seung-Kwan HA
Confirmation No.: 3177
Group Art Unit: 2423
Examiner: Andrew Y. KOENIG

U.S. Patent and Trademark Office
Customer Service Window, Mail Stop RCE
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:


1. Submission required under 37 C.F.R. §1.114
   a. [ ] Previously submitted
      i. [ ] Consider the amendment(s)/reply under 37 C.F.R. §1.116 previously filed on ______
         (Any unentered amendment(s) referred to above will be entered).
      ii. [ ] Consider the arguments in the Appeal Brief or Reply Brief previously filed on ______
   b. [x] Enclosed
      i. [x] Amendment/Reply
      ii. [ ] Affidavit(s)/Declaration(s)
      iii. [ ] Information Disclosure Statement (IDS)

2. Fees [x] RCE fee required under 37 C.F.R. §1.17(e); Small Entity $405.00, other than small entity $810.00. The RCE fee under 37 C.F.R. §1.17(e) is required by 37 C.F.R. 1.114 when the RCE is filed.
   [ ] Extension of time fee (37 C.F.R. §§1.136 and 1.17)

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Payment by:

[ ] Please charge my Credit Card.

The Commissioner is hereby authorized to charge payment of any deficiency in the above fees associated with this communication or credit any overpayment to Deposit Account No. 16-0607. A duplicate copy is enclosed.

Respectfully submitted,
KED & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 39,318
Samuel W. Ntiro
Registration No. 39,318

Correspondence Address:
P.O. Box 8638
Reston, VA 20191
(703) 766-3777 DYK/SWN/kaf
Date: February 9, 2011
Please direct all correspondence to Customer Number 34610

Q:\Documents\2309-002\267238
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Seung-Kwan HA

Confirmation No: 3177

Group Art Unit: 2426

Serial No: 11/874,770

Examiner: Kay, M.

Filed: October 18, 2007

Customer No: 34610

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

SUBMISSION UNDER 37 CFR § 1.114

U.S. Patent and Trademark Office
Customer Window, Mail Stop RCE
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

The following amendments and remarks are submitted with a Request for Continued Examination (RCE), filed after issuance of the Final Office Action mailed on November 9, 2010, in connection with the above-identified application.

Amendments to the Claims are in the Listing of Claims beginning on page 2.

Remarks begin on page 11.
Listing of Claims

1. (Previously Presented) A device for providing information of image data stored in a digital image display apparatus, the device comprising:

   a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data; and

   a linker to link image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

   the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.

2. (Previously Presented) The device of claim 1, wherein the channel list generator renews stored channel list data if a new receivable broadcast channel is found.

3. (Previously Presented) The device of claim 1, wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a
portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data.

4. (Original) The device of claim 1, wherein the device for providing information is included in the digital image display apparatus.

5. (Original) The device of claim 1, wherein the digital image display apparatus comprises:
   a broadcast receiving unit, receiving broadcast data;
   an input unit, outputting an input signal corresponding to an inputted key;
   a processor, generating a control signal controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;
   a display unit, outputting video data of the received broadcast data;
   a sound output unit, outputting audio data of the received broadcast data;
   a storing unit, storing the broadcast data; and
   a broadcast processing unit.

6. (Previously Presented) The device of claim 5, wherein the broadcast data processing unit comprises:
   a demodulator to remove a carrier wave from the broadcast data and demodulating the broadcast data, from which the carrier wave is removed, into a digital data stream;
   a transfer stream (TS) parser to parse the broadcast data into audio data and video data;
a video element stream (ES) buffer, temporarily storing the parsed video data in order to output it through the display unit; and

an audio element stream (ES) buffer, temporarily storing the parsed audio data in order to output it through the display unit.

7. (Original) The device of claim 1, wherein the information data includes transport stream information and recording information of the image data.

8. (Original) The device of claim 7, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

9. (Original) The device of claim 7, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

10. (Previously Presented) A method for providing information of image data stored in a digital image display apparatus, the method comprising:

    generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus; and
linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.

11. (Currently Amended) The method of claim 10, wherein, in the generating the channel list data step, the channel list data is generated by renewing stored channel list data if a new receivable broadcast channel is found.

12. (Currently Amended) The method of claim 10, wherein, in the linking the image data and information data step, a tag is inserted into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data.

13. (Currently Amended) The method of claim 10, wherein the said linking step further comprises storing the channel list data linked with the image data and the information data, respectively.
14. (Original) The method of claim 10, wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.

15. (Previously Presented) The method of claim 10, wherein the information data includes transport stream information and recording information of the image data.

16. (Original) The method of claim 15, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

17. (Original) The method of claim 15, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

18. (Original) The method of claim 10, wherein providing information of the image data by using the information data is performed by:

   receiving a selecting signal of image data and information data;

   searching for the selected image data; and

   searching for information data linked with the found image data.
19. (Previously Presented) A recording medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the recorded medium being readable by the digital image display apparatus, the program comprising:

   generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus; and

   linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

   the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.

20. (New) The device of claim 1, wherein the channel list data is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.
21. (New) The device of claim 20, wherein the textual description of the image data describes at least one of a genre of the stored image data or a person or character in the stored image data.

22. (New) The device of claim 20, wherein the information data further provides an indication of a broadcast time of the stored image data.

23. (New) The device of claim 20, wherein the information data further provides an indication of a broadcast service used to broadcast the stored image data.

24. (New) A device for providing information of image data stored in a digital image display apparatus, the device comprising:

   a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data; and

   a linker to link image data and information data, respectively, with the channel list data, wherein the image data is included in broadcast data and is stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and
the information data corresponding to the image data is displayed as a result of the information data being linked with the image data when the image data is selected from the channel list data.

25. (New) The device of claim 24, wherein:

the image data and the information data are included in broadcast data, and

the broadcast data and the information data are stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data.

26. (New) The device of claim 25, wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data.

27. (New) The device of claim 26, wherein the channel list is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data.

28. (New) The device of claim 27, wherein the textual description of the image data describes at least one of a genre of the stored image data or a person or character in the stored image data.
29.  (New) The device of claim 27, wherein the information data further provides an indication of a broadcast time of the stored image data.

30.  (New) The device of claim 27, wherein the information data further provides an indication of a broadcast service used to broadcast the stored image data.
REMARKS

Claims 1-30 are pending.

Applicants would like to thank the Examiner for extending Applicants’ representative an interview to discuss the rejections in the Final Office Action. During the interview, differences between the claims and the cited references were discussed. At the end of the interview, the Examiner indicated that the decision concerning allowbility of the claims would be postponed until consideration of this paper. The issues discussed in the interview are summarized below.

Claims 1-6, 10-14, 18, and 19 were rejected under 35 USC § 103(a) for being obvious in view of a Park-Seok-Krieger-Tsumagari combination.

The Park publication discloses generating a channel list.

The Seok publication discloses displaying program information in a channel list when a cursor is pointed to a program in the list. However, the program is not stored in response to a signal (for example, from a user’s remote control) to record a program for later playback, nor is this information stored in the display device, nor is this information linked to the stored program for later display (e.g., when the stored program is to be replayed) as recited in claim 1.

A Park-Seok combination, therefore, does not have the following features of claim 1:

1) “a linker to link image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data.”
2) “the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data,” and

3) “the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.”

The Krieger publication discloses scheduling the recording of a program. (See Paragraph [44]). However, Krieger does not teach or suggest storing information data related to the program to be recorded as required by claim 1. Moreover, while Krieger discloses use of an embedded TV tag, that tag is used solely for the purpose of scheduling recording of the program, not for linking a stored program to stored information data relating to that program to be displayed based on use of a channel list.

Without storing information data associated with the recorded (stored) image data, it is respectfully submitted that the Krieger publication does not teach or suggest the underlined features in 1) - 3) of claim 1 noted above.

The Tsumagari publication discloses storing management data with a program. The stored management data is program stream information, and more specifically contains information indicative of the scanning technique (interlaced or progressive) used for displaying a high-definition version of the program. The information also identifies packets of the program data and timing information, all of which are used to stream and display the program. (See claims 1-4 of the Tsumagari publication)
Thus, while Tsumagari discloses storing management information corresponding to a recorded program, that management information is used to display the stream of the program on a television. The management information of Tsumagari is not “displayed” as recited in claim 1.

Moreover, the management information of Tsumagari is not displayed “as a result of the stored information data being linked with the image data when the image data is selected from the channel list data” as is further required by claim 1. Accordingly, the Tsumagari publication does not teach or suggest the features in 3) noted above.

The Tsumagari publication also does not teach or suggest the features in 2) noted above. That is, while the Tsumagari system stores management data in association with a stored program, that management data is not associated with a channel list as required by claim 1.

Also, this management data is not associated with link information which links the recorded program with the management information for purposes of displaying the management information. The management information of Tsumagari is never displayed, but rather is used to manage the transport stream of the program.

Thus, the Tsumagari publication does not teach or suggest that “the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data.”

Based on the foregoing differences, it is respectfully submitted that claim 1 is allowable over a Park-Seok-Kreiger-Tsumagari combination, i.e., this combination fails to include at least the following features: “the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data” and “the
stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data." Furtherance of claim 1 and its dependent claims to allowance is respectfully requested.

Dependent claim 3 recites that "the linker of claim 1 "links the image data and the information data, respectively, to the channel list data" and that this is performed "by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data." The Krieger publication discloses using a TV tag. However, as indicated in Paragraph [44], this tag is only used to automatically schedule the recording of a program.

The Krieger tag is not inserted into a portion of channel list (e.g., electronic program guide) data, not is this tag used to link image data to information data as described above. Moreover, the Krieger publication does not teach or suggest that a link point is connected to its tag as required by claim 3.

Applicants therefore submit that claim 3 is allowable, not only by virtue of its dependency from claim 1 but also based on the features separately recited therein.

Claims 10 and 19 recite features similar to those which patently distinguish claim 1 from the cited combination. Furtherance of these and their dependent claims to allowance is respectfully requested. Moreover, claim
The remaining § 103 rejections are traversed on grounds that the secondary references of record do not teach or suggest the features of base claims 1 and 10 missing from the Park and Seok publications.

New claims 20-30 have been added to the application.

Claim 20 recites that the channel list data in claim 1 is “electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus” and that “the information data includes a textual description of the stored image data.” (See, for example, page 17, lines 4-6, of the specification for support). These features are not taught or suggested by the cited references.

For example, the Seok publication discloses displaying program information in a channel list. However, that program information is not stored in association with a recorded program for later retrieval and display at a time after the program has been recorded and stored in its television. The link information for facilitating the retrieval and display of this information is also missing. The remaining references of record also fail to teach or suggest these features, whether taken alone or in combination.

The Tsumagari publication discloses storing management data for a recorded program. However, that data is not a textual description of the program. Rather, it provides transport stream information, none of which describes the content of the program, e.g., actors, genre, etc. Moreover, the management data of Tsumagari is never displayed and therefore never associated with link information in the manner required by base claim 1.

Based on these differences, it is respectfully submitted that claim 20 is allowable.
Claim 21 recites that the textual description of the image data in claim 20 describes “at least one of a genre of the stored image data or a person or character in the stored image data,” claim 22 recites that “the information data further provides an indication of a broadcast time of the stored image data,” and claim 23 recites that “the information data further provides an indication of a broadcast service used to broadcast the stored image data.” These features are not taught or suggested by the cited references, whether taken alone or in combination.

Claim 24 is an independent claim which recites features similar to many of those which patentably distinguish claim 1 from the cited references. These features include “a linker to link image data and information data, respectively, with the channel list data,” that “the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data,” and that “the information data corresponding to the image data is displayed as a result of the information data being linked with the image data when the image data is selected from the channel list data.”

Based on these differences, it is submitted that claim 24 and its dependent claims are allowable.

Claim 25 recites that “the image data and the information data are included in broadcast data, and the broadcast data and the information data are stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data.” These features are not taught or suggested by the cited references, whether taken alone or in combination.
Claim 26 recites that the linker of claim 24, "links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data." These features are not taught or suggested by the cited references, whether taken alone or in combination.

Claim 27 recites that "the channel list is electronic program guide (EPG) data for an electronic program guide to be displayed on the digital image display apparatus, and wherein the information data includes a textual description of the stored image data." These features are not taught or suggested by the cited references, whether taken alone or in combination.

Claim 28 recites that the textual description of claim 27 "describes at least one of a genre of the stored image data or a person or character in the stored image data." These features are not taught or suggested by the cited references, whether taken alone or in combination.

Claim 29 recites that "the information data further provides an indication of a broadcast time of the stored image data" and claim 30 recites that "the information data further provides an indication of a broadcast service used to broadcast the stored image data." These features are not taught or suggested by the cited references, whether taken alone or in combination.

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and timely allowance of the application is respectfully requested.
To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
KED & ASSOCIATES, LLP

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Daniel Y. J. Kim
Registration No. 36,186

[Signature]
Samuel W. Ntiros
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Chantilly, Virginia 20153-1200
(703) 766-3777 DYK/SWN/krf

Date: February 9, 2011
Please direct all correspondence to Customer Number 34610
Electronic Patent Application Fee Transmittal

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Title of Invention: PROVING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

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Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

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**Warnings:**

**Information:**

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**Warnings:**

**Information:**

Total Files Size (in bytes): 1588028

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.
**PATENT APPLICATION FEE DETERMINATION RECORD**

Substitute for Form PTO-875

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If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(h).

| MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(g)) |

* If the difference in column 1 is less than zero, enter "0" in column 2.

**APPLICATION AS AMENDED – PART II**

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Legal Instrument Examiner: /PATSY ZIMMERMAN/

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*** If the "Highest Number Previously Paid For" in this space is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.
United States Patent and Trademark Office
Sales Receipt for Accounting Date: 02/11/2011

PZIMMER  SALE #00000002 Mailroom Dt: 02/09/2011  160607  11874770
01 FC : 1201  220.00 DA
Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.
**Office Action Summary**

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<tr>
<td>MARY ANNE KAY</td>
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**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on **26 August 2010**.

2a)☒ This action is **FINAL**.  2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) **1-19** is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) **1-19** is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on **18 October 2007** is/are:  a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All  b)☐ Some  * c)☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson’s Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)

4)☐ Interview Summary (PTO-413)  

   Paper No(s)/Mail Date _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

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U.S. Patent and Trademark Office  
PTOL-326 (Rev. 08-06)  
Office Action Summary  
Part of Paper No./Mail Date 20101103
DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered August 26, 2010 for the patent application 11/874770 filed on October 16, 2007.

2. The First Office Action of March 26, 2010 is fully incorporated into this Final Office Action by reference.

Status of Claims

3. Claims 1-19 are pending in this application.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negativised by the manner in which the invention was made.

5. Claims 1-6, 10-14, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (U.S. PGPub 2007/0094681 A1, referred to as Park) in view of Seok (U.S. PGPub 2007/0130587 A1, referred to as Seok) in further view of Krieger et al. (U.S. PGPub 2004/0268403 A1, referred to as Krieger) in further view of Tsumagari
et al. (U.S. PGPub 2003/0142962 A1, referred to as Tsumagari), Paragraph 11. below applies.

**Claims 1, 10, 19**

Park teaches:

A device for providing information of image data stored in a digital image display apparatus, the device comprising:

a channel list generator to search for a broadcast channel received through the digital image display apparatus and to generate channel list data (Park ¶ 0042; Examiner’s Note (EN): Upon display of the channel list, a new channel list is generated by the controller); and

Park fails to teach:

a linker to link image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data, wherein the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and

the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.
Seok teaches:

a linker to link image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, (Seok ¶¶ 0021-0024; EN: Controller provides linking of program service information and broadcast information),

wherein the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data (Seok ¶¶ 0021-0024; EN: Video Display Unit)

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park with the image data, information data and broadcast data storage and display as taught by Seok for the purpose of providing a method of displaying a channel list, in which convenience of a user is improved.

Park in view of Seok fails to teach:

the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data,

Krieger teaches:

the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data (Krieger Fig. 10; ¶¶
0044; EN: Menu allows scheduling of recording of program. Paragraph 11. below applies)

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park in view of Seok in view of Krieger for the purpose of providing for a user to automatically schedule the associated program to be recorded, for example, by a digital video recorder (DVR).

Park in view of Seok in further view of Krieger fails to teach:

stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.

Tsumagari teaches:

stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data (Tsumagari ¶¶ 0164, 0174; EN: Records digital broadcast signals including a management area for recording management information, and a data area for recording program contents data. Paragraph 11. below applies).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park in view of Seok in further
view of Krieger with the displayed menu as taught by Tsumagari for the purpose of providing the screen display unit of the recorder/player displaying descriptor information as a menu, and outputting the menu to the TV.

Claims 2, 11

Park teaches:

wherein the channel list generator renews stored channel list data if a new receivable broadcast channel is found (Park ¶ 0042; EN: Upon display of the channel list, a new channel list is generated by the controller).

Claims 3, 12

Park et al. fails to teach:

wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data.

Krieger teaches:

wherein the linker links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data (Krieger Abstract; EN: Examiner interprets “My TV Planner” to be analogous to channel list generated at set top box. Paragraph 11. below applies).

Rationale:
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park et al. with the TV tag as taught by Krieger for the purpose of providing representation of a particular television related data element (e.g., a television program, an actor, a sports team, etc.) and can be embedded within contextually relevant content.

Claim 4

Park et al. fails to teach:

wherein the device for providing information is included in the digital image display apparatus.

Seok teaches:

wherein the device for providing information is included in the digital image display apparatus (Seok ¶¶ 0021-0024, 0033-0034; EN: Digital television).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park et al. with the digital television as taught by Seok for the purpose of providing the channel list for displaying brief information required for retrieving channels to allow the user to identify it at a glance. Thus, it is possible to reduce the number of times of the user's key manipulation required for retrieving the channels. As a result, the video processing apparatus can improve convenience of the user.

Claim 5

Park et al. fails to teach:
a broadcast receiving unit, receiving broadcast data;

an input unit, outputting an input signal corresponding to an inputted key;

a processor, generating a control signal controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;

a display unit, outputting video data of the received broadcast data;

a sound output unit, outputting audio data of the received broadcast data;

a storing unit, storing the broadcast data; and

a broadcast processing unit.

Seok teaches:

a broadcast receiving unit, receiving broadcast data (Seok Fig. 1 el. 105; ¶¶ 0033-0034; EN: Tuner);

an input unit, outputting an input signal corresponding to an inputted key (Seok Fig. 1 el. 130; ¶¶ 0033-0034; EN: Input unit);

a processor, generating a control signal controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit (Seok Fig. 1 el. 135; ¶¶ 0033-0034; EN: Controller);

a display unit, outputting video data of the received broadcast data (Seok Fig. 1 el. 150; ¶¶ 0033-0034; EN: Video Display Unit);

a sound output unit, outputting audio data of the received broadcast data (Seok Fig. 1 el. 125; ¶¶ 0033-0034; EN: Audio Output Unit);
a storing unit, storing the broadcast data (Seok Fig. 1 el. 115; ¶¶¶ 0033-0034; EN: Data Memory); and

a broadcast processing unit (Seok Fig. 1 el. 110, 120, 140, 145; ¶¶¶ 0033-0034; EN: Audio, video, OSD processors).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park et al. with the digital television as taught by Seok for the purpose of providing the channel list for displaying brief information required for retrieving channels to allow the user to identify it at a glance. Thus, it is possible to reduce the number of times of the user's key manipulation required for retrieving the channels. As a result, the video processing apparatus can improve convenience of the user.

Claim 6

Park teaches:

a demodulator to remove a carrier wave from the broadcast data and demodulating the broadcast data, from which the carrier wave is removed, into a digital data stream (Park ¶ 0039; EN: The tuner 130 applies a demodulation process and an error correction process to the tuned broadcasting signal corresponding to a specific channel, and outputs it in a transport stream format);

a transfer stream (TS) parser to parse the broadcast data into audio data and video data (Park ¶ 0039; EN: the tuner splits the tuned broadcasting
signal into a video signal, an audio signal and various additional data and outputs them in a bit stream format);

a video element stream (ES) buffer, temporarily storing the parsed video data in order to output it through the display unit (Park ¶ 0040; EN: Examiner interprets that temporary buffering is part of the process. Paragraph 11. below applies); and

an audio element stream (ES) buffer, temporarily storing the parsed audio data in order to output it through the display unit (Park ¶ 0040; EN: Examiner interprets that temporary buffering is part of the process. Examiner interprets that audio is also handled by Fig. 1, el. 120, 125. Paragraph 11. below applies).

Claim 13

Park et al. fails to teach:

wherein the linking step further comprises storing the channel list data linked with the image data and the information data, respectively.

Seok teaches:

wherein the linking step further comprises storing the channel list data linked with the image data and the information data, respectively (Seok ¶¶ 0021-0024; EN: Controller provides linking of program service information and broadcast information).

Rationale:
It would have been obvious to one of ordinary skill in the art at the time the
invention was made to modify the teachings of Park et al. with the image data,
information data and broadcast data storage and display as taught by Seok for
the purpose of providing a method of displaying a channel list, in which
convenience of a user is improved.

Claim 14

Park et al. fails to teach:

wherein the channel list data comprises information related to a channel capable
of receiving the broadcast data, information related to a type of the
broadcast data and information related to a tag linked with the information
data.

Seok teaches:

wherein the channel list data comprises information related to a channel capable
of receiving the broadcast data, information related to a type of the
broadcast data (Seok ¶¶ 0036-0037; EN: PSIP data. Paragraph 11. below
applies).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the
invention was made to modify the teachings of Park et al. with the channel list
data as taught by Seok for the purpose of providing information on a
broadcasting program provided from each channel and information on the
broadcasting signal.
Park et al. fails to teach:

information related to a tag linked with the information data.

Krieger teaches:

information related to a tag linked with the information data (Krieger Abstract; EN: Examiner interprets “My TV Planner” to be analogous to channel list generated at set top box. Paragraph 11. below applies).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park et al. with the TV tag as taught by Krieger for the purpose of providing representation of a particular television related data element (e.g., a television program, an actor, a sports team, etc.) and can be embedded within contextually relevant content.

Claim 18

Park teaches:

receiving a selecting signal of image data and information data (Park ¶¶ 0049-0052; EN: New signal is found);

searching for the selected image data (Park ¶¶ 0049-0052; EN: New signal is found); and

searching for information data linked with the found image data (Park ¶¶ 0049-0052; EN: New signal is found).
Claim Rejections - 35 USC § 103

6. Claims 7-9 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park in view of Seok in further view of Krieger in further view of Tsumagari in further view of Smyth et al. (U.S. PGPub 2002/0007492 A1, referred to as Smyth) Paragraph 11. below applies.

Claims 7, 15

Park et al. fails to teach:

wherein the information data includes transport stream information and recording information of the image data.

Krieger teaches:

recording information of the image data (Krieger ¶ 0044; EN: Embedded TV tag).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park et al. with the recording information as taught by Krieger for the purpose of providing an embedded TV tag that may be configured to enable a user to automatically schedule the associated program to be recorded.

Park et al. fails to teach:

wherein the information data includes transport stream information.

Smyth teaches:
wherein the information data includes transport stream information (Smyth ¶ 0029; EN: Paragraph 11. below applies).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park et al. with the error information as taught by Smyth for the purpose of providing faster detection of transmission errors and conservation of bandwidth by less frequent retransmissions.

Claims 8, 16

Park et al. fails to teach:

wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol-rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

Smyth teaches:

wherein the transport stream information comprises at least one from the group consisting of forward error correction (FEC) information (Smyth ¶ 0029; EN: Paragraph 11. below applies).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park et al. with the error information as taught by Smyth for the purpose of providing faster detection of
transmission errors and conservation of bandwidth by less frequent retransmissions.

Claims 9, 17

Park et al. fails to teach:

wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

Krieger teaches:

wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, (Krieger ¶ 0044; EN: Embedded TV tag).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park et al. with the recording information as taught by Krieger for the purpose of providing an embedded TV tag that may be configured to enable a user to automatically schedule the associated program to be recorded.
Response to Arguments

7. In reference to Applicant’s argument:

The Seok publication discloses generating a channel list and displaying program information in the list when a cursor is pointed to a specific program in the list. However, the program information is not stored in response to a signal (for example, from a user's remote control) to record a program for later playback. The claims have been amended to more clearly emphasize these differences.

As amended, claim 1 recites “the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data.” (See, for example, pages 17 and 19-21 of the specification for support). These features are not taught or suggested by the Park and Seok publications, i.e., both publications disclose generating a channel list and Seok discloses displaying program information in connection with the list.

However, neither publication stores that program information in response to a broadcast data storing signal for recording program corresponding to the image data as recited in claim 1. Rather, in Seok, the program information is not stored with a recorded program and moreover is only displayed when a cursor passes over the name of a program in a channel list, not in response to a signal for recording the program.

Claim 1 also recites that “the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.” The Park and Seok publications do not teach or suggest linking image and information data that has been stored in response to a storing (e.g., recording) signal, and therefore does not teach or suggest any of these additional features which relate to the storing of this data and their subsequent display as a result of them being linked together when stored.

Based on these differences, it is respectfully submitted that claim 1 is allowable over a Park-Seok combination. Furtherance of claim 1 and its dependent claims to allowance is respectfully requested.

Claims 10 and 19 have been amended to recite features similar to those which patently distinguish claim 1 from the cited combination.

Examiner’s Response:

Applicant’s arguments have been fully considered and are persuasive.

Therefore, the rejection of claims 1, 10 and 19 has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Park (U.S. PG Pub 2007/0094681 A1) and Seok (U.S. PG Pub 2007/0130587 A1) and Krieger et al. (U.S. PG Pub 2004/0268403 A1) and Tsumagari et al. (U.S. PG Pub 2003/0142962 A1).
Examination Considerations

8. The claims and only the claims form the metes and bounds of the invention.

“Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969) (MPEP p 2100-8, c 2, l 45-48; p 2100-9, c 1, l 1-4).

The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

9. Examiner’s Notes are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner’s Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

10. Unless otherwise annotated, Examiner’s statements are to be interpreted in reference to that of one of ordinary skill in the art. Statements made in reference to the condition of the disclosure constitute, on the face of it, the basis and such would be
obvious to one of ordinary skill in the art, establishing thereby an inherent prima facie statement.

11. Examiner's Opinion: ¶¶ 8.-10. apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.
13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to MARY ANNE KAY whose telephone number is (571)270-5677, FAX (571)270-6677, e-mail mary.kay@uspto.gov. The Examiner can normally be reached on Monday -Thursday and every other Friday, 8:00 AM - 5:00 PM, EST.

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the Applicant. Without a written authorization by Applicant recorded in the Applicant’s file, the USPTO will not respond via e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is an example authorization which may be used by the Applicant:

Notwithstanding the lack of security with Internet Communications, I hereby authorize the USPTO to communicate with me concerning any subject matter related to the instant application by e-mail. I understand that a copy of such communications related to formal submissions will be made of record in the applications file.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Joseph Hirl can be reached on (571)272-3685. Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

Receptionist,
Customer Service Window,
Randolph Building,
401 Dulany Street,
Alexandria, Virginia 22313,
(located on the first floor of the south side of the Randolph Building);
or faxed to:

(571)273-8300 (for formal communications intended for entry).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary Anne Kay
Examiner

/Joseph P. Hirl/
Supervisory Patent Examiner, Art Unit 2426
November 8, 2010
**Notice of References Cited**

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** APPLICANTS **
Seung-Kwan HA, Seoul, KOREA, REPUBLIC OF;

** CONTINUING DATA ******************

** FOREIGN APPLICATIONS ******************

** IF REQUIRED, FOREIGN FILING LICENSE GRANTED **
11/01/2007

Foreign Priority claimed: Yes No
35 USC 119(a-d) conditions met: Yes No
Verified and Acknowledged: MARY ANNE KAY
Examiner's Signature:

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** ADDRESS **
KED & ASSOCIATES, LLP
P.O. Box 221200
Chantilly, VA 20153-1200
UNITED STATES

** TITLE **
PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

** FILING FEE RECEIVED **
1160

FEES: Authority has been given in Paper No.__________ to charge/credit DEPOSIT ACCOUNT No.__________ for following:

- All Fees
- 1.16 Fees (Filing)
- 1.17 Fees (Processing Ext. of time)
- 1.18 Fees (Issue)
- Other ___________
- Credit
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Seung-Kwan HA
Serial No: 11/874,770
Filed: October 18, 2007

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

AMENDMENT

U.S. Patent and Trademark Office
Customer Window, Mail Stop Amendment
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

The following amendments and remarks are submitted in reply to the Office Action mailed on March 26, 2010, in connection with the above-identified application. A Petition for Extension of Time is submitted herewith to make the filing of this paper timely.

Amendments to the Claims are in the Listing of Claims beginning on page 2.

Remarks begin on page 8.
Listing of Claims

1. A device for providing information of image data stored in a digital image display apparatus, the device comprising:

   a channel list generator to search generating unit, searching for a broadcast channel received through the digital image display apparatus and generating channel list data; and

   a linker to link unit, linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and information data being stored in the digital image display apparatus according in response to a broadcast selecting signal and a broadcast data storing signal received for recording a program corresponding to the image data, whereas wherein:

   the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

   the stored provides information data corresponding to [of] the image data by using is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.

2. (Currently Amended) The device of claim 1, wherein the channel list generator generating unit renews stored channel list data if a new receivable broadcast channel is found.

3. (Currently Amended) The device of claim 1, wherein the linker unit links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the stored image data and the stored information data.
4. (Original) The device of claim 1, wherein the device for providing information is included in the digital image display apparatus.

5. (Original) The device of claim 1, wherein the digital image display apparatus comprises:
   - a broadcast receiving unit, receiving broadcast data;
   - an input unit, outputting an input signal corresponding to an inputted key;
   - a processor, generating a control signal controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;
   - a display unit, outputting video data of the received broadcast data;
   - a sound output unit, outputting audio data of the received broadcast data;
   - a storing unit, storing the broadcast data; and
   - a broadcast processing unit.

6. (Currently Amended) The device of claim 5, wherein the broadcast data processing unit comprises:
   - a demodulator to remove demodulating unit, removing a carrier wave from the broadcast data and demodulating the broadcast data, from which the carrier wave is removed, into a digital data stream;
   - a transfer stream (TS) parser to parse parsing unit, parsing the broadcast data into audio data and video data;
   - a video element stream (ES) buffer, temporarily storing the parsed video data in order to output it through the display unit; and
   - an audio element stream (ES) buffer, temporarily storing the parsed audio data in order to output it through the display unit.
7. (Original) The device of claim 1, wherein the information data includes transport stream information and recording information of the image data.

8. (Original) The device of claim 7, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

9. (Original) The device of claim 7, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

10. (Currently Amended) A method for providing information of image data stored in a digital image display apparatus, the method comprising:

    generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus and; and

    linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and information data being stored in the digital image display apparatus according in response to a broadcast selecting signal and a broadcast data storing signal received for recording a program corresponding to the image data, whereas wherein:

    the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and
the stored provides information data corresponding to [of] the image data by using is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.

11. (Original) The method of claim 10, wherein, in the generating step, the channel list data is generated by renewing stored channel list data if a new receivable broadcast channel is found.

12. (Currently Amended) The method of claim 10, wherein, in the linking step, a tag is inserted into a portion of the channel list data and a link point connected to the tag is included in the stored image data and the stored information data.

13. (Original) The method of claim 10, wherein the linking step further comprises storing the channel list data linked with the image data and the information data, respectively.

14. (Original) The method of claim 10, wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.

15. (Currently Amended) The method of claim 10, wherein the information data includes transport stream information and recording information of the image data date.
16. (Original) The method of claim 15, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

17. (Original) The method of claim 15, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

18. (Original) The method of claim 10, wherein providing information of the image data by using the information data is performed by:

   receiving a selecting signal of image data and information data;

   searching for the selected image data; and

   searching for information data linked with the found image data.

19. (Currently Amended) A recording medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the recorded medium being readable by the digital image display apparatus, the program comprising:

   generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus and; and

   linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data and
information data being stored in the digital image display apparatus according in response to a broadcast selecting signal and a broadcast data storing signal received for recording a program corresponding to the image data, whereas wherein:

the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data, and

the stored provides information data corresponding to [[of]] the image data by using is displayed as a result of the stored information data being linked with the image data when the image data is selected from the channel list data.
REMARKS

Claims 1-19 are pending.

In the Office Action, claims 1, 2, 4-6, 10, 13, 18, and 19 were rejected under 35 USC § 103(a) for being obvious in view of a Park-Seok. Applicants request the Examiner to withdraw this rejection for the following reasons.

The Park publication discloses generating a channel list.

The Seok publication discloses generating a channel list and displaying program information in the list when a cursor is pointed to a specific program in the list. However, the program information is not stored in response to a signal (for example, from a user’s remote control) to record a program for later playback. The claims have been amended to more clearly emphasize these differences.

As amended, claim 1 recites “the broadcast data and information data being stored in the digital image display apparatus in response to a broadcast data storing signal received for recording a program corresponding to the image data.” (See, for example, pages 17 and 19-21 of the specification for support). These features are not taught or suggested by the Park and Seok publications, i.e., both publications disclose generating a channel list and Seok discloses displaying program information in connection with the list.

However, neither publication stores that program information in response to a broadcast data storing signal for recording program corresponding to the image data as recited in claim 1. Rather, in Seok, the program information is not stored with a recorded program and moreover is only displayed when a cursor passes over the name of a program in a channel list, not in response to a signal for recording the program.

Claim 1 also recites that “the stored information data corresponding to the image data is displayed as a result of the stored information data being linked with the image data when the image
data is selected from the channel list data.” The Park and Seok publications do not teach or suggest linking image and information data that has been stored in response to a storing (e.g., recording) signal, and therefore does not teach or suggest any of these additional features which relate to the storing of this data and their subsequent display as a result of them being linked together when stored.

Based on these differences, it is respectfully submitted that claim 1 is allowable over a Park-Seok combination. Furtherance of claim 1 and its dependent claims to allowance is respectfully requested.

Claims 10 and 19 have been amended to recite features similar to those which patentably distinguish claim 1 from the cited combination.

The remaining § 103 rejections are traversed on grounds that the secondary references of record do not teach or suggest the features of base claims 1 and 10 missing from the Park and Seok publications.

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and timely allowance of the application is respectfully requested.
To the extent necessary, a petition for an extension of time under 37 CFR §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
KED & ASSOCIATES, LLP

[Signature]

Daniel Y. J. Kim
Registration No. 36,186

Samuel W. Ntiros
Registration No. 39,318

Correspondence Address:
P.O. Box 221200
Chantilly, Virginia 20153-1200
(703) 766-3777 DYK/SWN/krf
Date: August 26, 2010

**Please direct all correspondence to Customer Number 34610**
**Electronic Patent Application Fee Transmittal**

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This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Seung-Kwan HA
Serial No: 11/874,770
Filed: October 18, 2007

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

U.S. Patent and Trademark Office
Customer Window, Mail Stop Amendment
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Dear Sir:
Transmitted herewith is an Amendment and/or Reply in the above identified application.

☐ No additional fee is required.
☐ Also attached: Petition for Extension of Time

The fee has been calculated as shown below:

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If multiple claims newly presented, add $390.00

Fee for extension of time

TOTAL FEE DUE

☐ Please charge my Credit Card.

☐ The Commissioner is hereby authorized to charge payment of any fees associated with this communication or credit any overpayment, to Deposit Account No. 16-0607, including any filing fees under 37 C.F.R. 1.16 for presentation of extra claims and any patent application processing fees under 37 C.F.R. 1.17.

Respectfully submitted,
KED & ASSOCIATES, LLP

Daniel J. Kim
Registration No. 36,186
Samuel W. Nitros
Registration No. 39,318

Correspondence Address:
P.O. Box 221200
Chantilly, VA 20153-1200
(703) 766-3777 DYN/SWN/krf
Date: August 26, 2010

Please direct all correspondence to Customer Number 34610
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Seung-Kwan HA

Confirmation No.: 3177

Group Art Unit: 2423

Serial No.: 11/874,770

Examiner: Andrew Y. KOENIG

Filed: October 18, 2007

Customer No.: 34610

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

PETITION FOR EXTENSION OF TIME UNDER 37 C.F.R. §1.136(a)(1)

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

Applicant petitions the Commissioner of Patents and Trademarks to extend the time for response to the Office Action dated March 26, 2010 for (2) month(s) from June 26, 2010 to August 26, 2010.

Please charge our credit card including the amount of $490.00 for the extension of time under 37 C.F.R. §1.17(a). Any deficiency or overpayment should be charged or credited to Deposit Account No. 16-0607.

Respectfully submitted,
KED & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 36,186
Samuel W. Ntiro
Registration No. 39,318

Correspondence Address:
P.O. Box 221200
Chantilly, VA 20153-1200
(703) 766-3777 DYK/SWN/kef
Date: August 26, 2010
Please direct all correspondence to Customer Number 34610
PATENT APPLICATION FEE DETERMINATION RECORD
Substitute for Form PTO-875

APPLICATION AS FILED – PART I

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**APPLICATION SIZE FEE** <br>(37 CFR 1.18(s))

If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

**MULTIPLE DEPENDENT CLAIM PRESENT** <br>(37 CFR 1.18(j))

* If the difference in column 1 is less than zero, enter “0” in column 2.

APPLICATION AS AMENDED – PART II

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Legal Instrument Examiner: <br> /GERALDINE STANLEY/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-866-PTO-9199 and select option 2.
Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.
Office Action Summary

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<td>HA, SEUNG-KWAN</td>
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<td>MARY ANNE KAY</td>
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--- The MAILING DATE of this communication appears on the cover sheet with the correspondence address ---

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)✓ Responsive to communication(s) filed on 13 February 2009.

2a)☐ This action is FINAL. 2b)✓ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)✓ Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)✓ Claim(s) 1-19 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)✓ The drawing(s) filed on 18 October 2007 is/are: a)✓ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)✓ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)✓ All  b)☐ Some  c)☐ None of:

      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. ______.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)✓ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsman’s Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)

   Paper No(s)/Mail Date ______.

4)☐ Interview Summary (PTO-413)

   Paper No(s)/Mail Date ______.

5)☐ Notice of Informal Patent Application

6)☐ Other: ______.
DETAILED ACTION

1. Claims 1-19 are pending in this application.

“Medium” Interpretation

2. From the specification at ¶ 0026 the Examiner has determined that the Applicant in accordance with statutory requirements, limits “medium” to be of a hardware character.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2, 4-6, 10, 13, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (U.S. PGPub 2007/0094681 A1, referred to as Park) in view of Seok (U.S. PGPub 2007/0130587 A1, referred to as Seok) Paragraph 10. below applies.

Claims 1, 10, 19
Park teaches:

A device for providing information of image data stored in a digital image display apparatus, the device comprising:

a channel list generating unit, searching for a broadcast channel received through the digital image display apparatus and generating channel list data (Park ¶ 0042; Examiner’s Note (EN): Upon display of the channel list, a new channel list is generated by the controller); and

Park fails to teach:

a link unit, linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus according to a broadcast selecting signal and a broadcast data storing signal,

whereas the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and provides information of the image data by using the information data linked with the channel list data.

Seok teaches:

a link unit, linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus according to a broadcast selecting signal and a
broadcast data storing signal (Seok ¶¶ 0021-0024; EN: Controller provides linking of program service information and broadcast information),

whereas the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and provides information of the image data by using the information data linked with the channel list data (Seok ¶¶ 0021-0024; EN: Video Display Unit)

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park with the image data, information data and broadcast data storage and display as taught by Seok providing a method of displaying a channel list, in which convenience of a user is improved.

Claims 2, 11

Park teaches:

wherein the channel list generating unit renews stored channel list data if a new receivable broadcast channel is found (Park ¶ 0042; EN: Upon display of the channel list, a new channel list is generated by the controller).

Claim 4

Park fails to teach:
wherein the device for providing information is included in the digital image display apparatus.

Seok teaches:

wherein the device for providing information is included in the digital image display apparatus (Seok ¶¶ 0021-0024, 0033-0034; EN: Digital television).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park with the digital television as taught by Seok providing the channel list for displaying brief information required for retrieving channels to allow the user to identify it at a glance. Thus, it is possible to reduce the number of times of the user's key manipulation required for retrieving the channels. As a result, the video processing apparatus can improve convenience of the user.

Claim 5

Park fails to teach:

a broadcast receiving unit, receiving broadcast data;

an input unit, outputting an input signal corresponding to an inputted key;

a processor, generating a control signal controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;

a display unit, outputting video data of the received broadcast data;

a sound output unit, outputting audio data of the received broadcast data;
a storing unit, storing the broadcast data; and

a broadcast processing unit.

**Seok** teaches:

- a broadcast receiving unit, receiving broadcast data (**Seok** Fig. 1 el. 105; ¶¶ 0033-0034; EN: Tuner);

- an input unit, outputting an input signal corresponding to an inputted key (**Seok** Fig. 1 el. 130; ¶¶ 0033-0034; EN: Input unit);

- a processor, generating a control signal controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit (**Seok** Fig. 1 el. 135; ¶¶ 0033-0034; EN: Controller);

- a display unit, outputting video data of the received broadcast data (**Seok** Fig. 1 el. 150; ¶¶ 0033-0034; EN: Video Display Unit);

- a sound output unit, outputting audio data of the received broadcast data (**Seok** Fig. 1 el. 125; ¶¶ 0033-0034; EN: Audio Output Unit);

- a storing unit, storing the broadcast data (**Seok** Fig. 1 el. 115; ¶¶ 0033-0034; EN: Data Memory); and

- a broadcast processing unit (**Seok** Fig. 1 el. 110, 120, 140, 145; ¶¶ 0033-0034; EN: Audio, video, OSD processors).

**Rationale:**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of **Park** with the digital television as taught by **Seok** providing the channel list for displaying brief information required
for retrieving channels to allow the user to identify it at a glance. Thus, it is possible to reduce the number of times of the user's key manipulation required for retrieving the channels. As a result, the video processing apparatus can improve convenience of the user.

Claim 6

Park teaches:

a demodulating unit, removing a carrier wave from the broadcast data and demodulating the broadcast data, from which the carrier wave is removed, into a digital data stream (Park ¶ 0039; EN: The tuner 130 applies a demodulation process and an error correction process to the tuned broadcasting signal corresponding to a specific channel, and outputs it in a transport stream format);

a transfer stream (TS) parsing unit, parsing the broadcast data into audio data and video data (Park ¶ 0039; EN: the tuner splits the tuned broadcasting signal into a video signal, an audio signal and various additional data and outputs them in a bit stream format);

a video element stream (ES) buffer, temporarily storing the parsed video data in order to output it through the display unit (Park ¶ 0040; EN: Examiner interprets that temporary buffering is part of the process. Paragraph 10. below applies); and

an audio element stream (ES) buffer, temporarily storing the parsed audio data in order to output it through the display unit (Park ¶ 0040; EN: Examiner
interprets that temporary buffering is part of the process. Examiner
interprets that audio is also handled by Fig. 1, el. 120, 125. Paragraph 10.
below applies).

Claim 13

Park fails to teach:

wherein the linking step further comprises storing the channel list data linked with
the image data and the information data, respectively.

Seok teaches:

wherein the linking step further comprises storing the channel list data linked with
the image data and the information data, respectively (Seok ¶¶ 0021-
0024; EN: Controller provides linking of program service information and
broadcast information).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the
invention was made to modify the teachings of Park with the image data,
information data and broadcast data storage and display as taught by Seok
providing a method of displaying a channel list, in which convenience of a user is
improved.

Claim 18

The method of claim 10, wherein providing information of the image data by
using the information data is performed by:
receiving a selecting signal of image data and information data (Park ¶¶ 0049-0052; EN: New signal is found);

searching for the selected image data (Park ¶¶ 0049-0052; EN: New signal is found); and

searching for information data linked with the found image data (Park ¶¶ 0049-0052; EN: New signal is found).

**Claim Rejections - 35 USC § 103**


**Claims 3, 12**

*Park* fails to teach:

wherein the link unit links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the image data and the information data.

*Krieger* teaches:

wherein the link unit links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the image data and the information data (*Krieger* Abstract; EN: Examiner interprets “My TV
Planner” to be analogous to channel list generated at set top box.

Paragraph 10. below applies).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park with the TV tag as taught by Krieger providing representation of a particular television related data element (e.g., a television program, an actor, a sports team, etc.) and can be embedded within contextually relevant content.

Claim 14

The method of claim 10,

Park fails to teach:

wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.

Seok teaches:

wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data (Seok ¶¶0036-0037; EN: PSIP data. Paragraph 10. below applies).

Rationale:
It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park with the channel list data as taught by Seok providing information on a broadcasting program provided from each channel and information on the broadcasting signal.

Park fails to teach:

information related to a tag linked with the information data.

Krieger teaches:

information related to a tag linked with the information data (Krieger Abstract;

EN: Examiner interprets “My TV Planner” to be analogous to channel list generated at set top box. Paragraph 10. below applies).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park with the TV tag as taught by Krieger providing representation of a particular television related data element (e.g., a television program, an actor, a sports team, etc.) and can be embedded within contextually relevant content.

Claim Rejections - 35 USC § 103

6. Claims 7-9 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park in view of Krieger in further view of Smyth et al. (U.S. PGPub 2002/0007492 A1, referred to as Smyth) Paragraph 10. below applies.

Claims 7, 15

Park fails to teach:
wherein the information data includes transport stream information and recording information of the image data.

**Krieger** teaches:

recording information of the image data (*Krieger ¶ 0044*; EN: Embedded TV tag).

**Rationale:**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of **Park** with the recording information as taught by **Krieger** providing an embedded TV tag that may be configured to enable a user to automatically schedule the associated program to be recorded.

**Park** fails to teach:

wherein the information data includes transport stream information.

**Smyth** teaches:

wherein the information data includes transport stream information (*Smyth ¶ 0029*; EN: Paragraph 10. below applies).

**Rationale:**

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of **Park** with the error information as taught by **Smyth** providing faster detection of transmission errors and conservation of bandwidth by less frequent retransmissions.

**Claims 8, 16**
Park fails to teach:

wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol-rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

Smyth teaches:

wherein the transport stream information comprises at least one from the group consisting of forward error correction (FEC) information (Smyth ¶ 0029; EN: Paragraph 10. below applies).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park with the error information as taught by Smyth providing faster detection of transmission errors and conservation of bandwidth by less frequent retransmissions.

Claims 9, 17

Park fails to teach:

wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

Krieger teaches:
wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, (Krieger ¶ 0044; EN: Embedded TV tag).

Rationale:

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Park with the recording information as taught by Krieger providing an embedded TV tag that may be configured to enable a user to automatically schedule the associated program to be recorded.

Examination Considerations

7. The claims and only the claims form the metes and bounds of the invention. “Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim should not be read into the claim. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969) (MPEP p 2100-8, c 2, l 45-48; p 2100-9, c 1, l 1-4) The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the
art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

8. Examiner’s Notes are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner’s Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

9. Unless otherwise annotated, Examiner’s statements are to be interpreted in reference to that of one of ordinary skill in the art. Statements made in reference to the condition of the disclosure constitute, on the face of it, the basis and such would be obvious to one of ordinary skill in the art, establishing thereby an inherent prima facie statement.

10. Examiner’s Opinion: ¶¶ 7.-9. apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Conclusion

11. The prior art of record and not relied upon is considered pertinent to Applicant’s disclosure.
- Yun et al., U.S. PGPub 2007/0083892 A1
- Mountain, U.S. PGPub 2002/0194599 A1
- Istvan et al., U.S. PGPub 2002/0184351 A1
- Tsumagari et al., U.S. PGPub 2003/0142962 A1

12. Claims 1-19 are rejected.

Correspondence Information

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to MARY ANNE KAY whose telephone number is (571)270-5677. The Examiner can normally be reached on Monday - Friday, 8:00 AM - 5:00 PM, EST.

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the Applicant. Without a written authorization by Applicant recorded in the Applicant’s file, the USPTO will not respond via e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is an example authorization which may be used by the Applicant:

Notwithstanding the lack of security with Internet Communications, I hereby authorize the USPTO to communicate with me concerning any subject matter related to the instant application by e-mail. I understand that a copy of such communications related to formal submissions will be made of record in the applications file.
If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Joseph Hirl can be reached on (571)272-3685. Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

Receptionist,

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Randolph Building,

401 Dulany Street,

Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

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(571)273-8300 (for formal communications intended for entry).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).
Mary Anne Kay
Examiner

/Joseph P. Hirl/
Supervisory Patent Examiner, Art Unit 2426

March 24, 2010
**Notice of References Cited**

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### NON-PATENT DOCUMENTS

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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(e).)*

Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.
# Index of Claims

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Search Notes

Application/Control No. 11874770

Applicant(s)/Patent Under Reexamination
HA, SEUNG-KWAN

Examiner MARY ANNE KAY

Art Unit 2426

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**OTHER ART (Including Author, Title, Date, Pertinent Pages, Publisher, Place of Publication, Etc.)**

*European Search Report dated December 11, 2008.*

**EXAMINER**

/Mary Anne Kay/

**DATE CONSIDERED**

February 12, 2010

**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.
# BIB DATA SHEET

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**APPLICANTS**
Seung-Kwan HA, Seoul, KOREA, REPUBLIC OF;

**CONTINUING DATA**

**FOREIGN APPLICATIONS**

**IF REQUIRED, FOREIGN FILING LICENSE GRANTED**
11/01/2007

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**ADDRESS**
KED & ASSOCIATES, LLP
P.O. Box 221200
Chantilly, VA 20153-1200
UNITED STATES

**TITLE**
Providing Information of Image Data Stored in Digital Image Display Apparatus

**FILING FEE RECEIVED**
1160

FEES: Authority has been given in Paper No. _________ to charge/credit DEPOSIT ACCOUNT No. _________ for following:

- [ ] All Fees
- [ ] 1.16 Fees (Filing)
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- [ ] 1.18 Fees (Issue)
- [ ] Other ____________
- [ ] Credit

BIB (Rev. 05/07)
# LIST OF ART CITED BY APPLICANT

**PTO-1449**

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## U.S. PATENT DOCUMENTS

## U.S. PATENT APPLICATION PUBLICATIONS

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## OTHER ART (Including Author, Title, Date, Pertinent Pages, Publisher, Place of Publication, Etc.)


/M.A.K./

EXAMINER: /Mary Anne Kay/

DATE CONSIDERED: February 12, 2010

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.
## EAST Search History (Prior Art)

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**NOTE:** At Column marked “DBs” the “ALL” means “US-PGPUB; USPAT; USOOR; FPRS; EPO; JPO; DERWENT; IBM_TDB”.
In re Application of Seung-Kwan HA

Serial No.: 11/874,770

Filed: October 18, 2007

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

INFORMATION DISCLOSURE STATEMENT

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

Pursuant to 37 C.F.R.§ 1.56, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO-1449. One copy of each non-U.S. reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the “References Cited” on any patent to issue therefrom.

Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the indicated date. Applicant reserves the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered. This statement should not be construed as a representation that a search has been made, that information cited in the statement is considered to be and/or is material to patentability, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the material submitted herewith. It is further understood that the Examiner will consider information that was cited or submitted to the U.S. Patent and Trademark Office in a prior application relied on under 35 U.S.C. §120. 1138 OG 37, 38 (May 19, 1992).

1. This Information Disclosure Statement is being filed (i) within three months of the U.S. filing date of a U.S. application other than a CPA continued prosecution application under §1.53(d) OR (ii) within three months of the date of entry of the national stage as set forth in §1.491 in an international application OR (iii) before the mailing date of a first Office Action on the merits OR (iv) before the mailing of a first Office Action after the filing of a Request for continued examination under §1.114. No certification or fee is required. 37 C.F.R. §1.97(b).

☐ 2. This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date of the first Office Action on the merits, but before the mailing date of a Final Rejection OR Notice of Allowance OR an action that otherwise closes prosecution in the application. 37 C.F.R. §1.97(c).

☐ a. I hereby state that each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. §1.97(e)(1). No fee is required.
b. I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. §1.97(e)(2).

c. Attached is our check no. _____ in the amount of $180.00 in payment of the fee under 37 C.F.R. §1.17(p). Please credit or debit Deposit Account No. 16-0607 as needed to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached.

d. Please charge our Credit Card in the amount of $180.00 in payment of the fee under 37 C.F.R. §1.17(p) per the attached PTO 2038 form. Please credit or debit Deposit Account No. 16-0607 as needed to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached.

3. This Information Disclosure Statement is being filed after the mailing date of a Final Rejection OR Notice of Allowance OR an action that otherwise closes prosecution in the application, but on or before payment of the Issue Fee.

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d. I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. §1.97(e)(2).

4. The references were cited in a corresponding European application. An English language version of the European Search Report dated December 12, 2008 is attached for the Examiner's information.

5. To the extent necessary, a petition for an extension of time under 37 C.F.R. §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,

KED & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 36,186

Correspondence Address:
P.O. Box 221200
Chantilly, VA 20153-1200
Telephone: (703) 766-3777
Date: February 13, 2009

Please direct all correspondence to Customer Number 34610

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LIST OF ART CITED BY APPLICANT
(PTO-1449)

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EXAMINER | DATE CONSIDERED
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**EXAMINER**: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to Applicant.

\Pi4\Documents\2309\2309-002\185668.doc
SIGNAL PROCESSING DEVICE AND SIGNAL PROCESSING METHOD

The display section 35 connected to a control section 31 displays, at the same time, both the contents described in the network information table of the digital broadcast data demodulated by a demodulator 42 and complying with the first network, and also the contents described in the network information table of the digital broadcast data replaced by an NIT-replacing circuit 48 and complying with the second network. An NIT-detecting circuit 44 detects an NITA from an MPEG2 transport packet, i.e., digital broadcast data in the satellite broadcasting system (first network). The control section 31 complying with a CATV system (second network) generates the data representing at least the transmission frequency of the NITA detected by the NIT-detecting circuit 44. The NIT-replacing circuit 48 replaces the NITA contained in the MPEG2 transport packet, i.e., digital broadcast data in the satellite broadcasting system, with the NITb, thereby generating an MPEG2 transport packet, which will be used as digital broadcast data in the CATV system.
Description

Technical Field

[0001] The present invention relates to a signal processing apparatus and a signal processing method, both designed to convert a first digital broadcast having a prescribed transmission frequency on a first network, to a second digital broadcast signal having a prescribed frequency on a second network.

Background Art

[0002] Cable television companies have been delivering digital broadcast programs from one network to another. For example, they have been receiving the multi-channel broadcast programs via artificial satellites and transmitting the programs to households via the networks.

[0003] In this case, the digital broadcast program on the first network cannot be delivered in the second network only if the modulation mode is changed to another by means of a modulator-converter-transmitter or the like. This is because the digital broadcast program has a network information table (NIT) that contains physical data items concerning a transmission path. Further, it is necessary to change the transmission frequency data item and similar data items contained in the NIT of the digital broadcast data, to data items that can be used in the second network.

[0004] The NIT contains a program data item, too. A set top box (i.e., household receiver) connected to a cable television transmission path is designed to detect the NIT and receive the program identified by the program data item.

[0005] Hence, the NIT of the digital broadcast data delivered in the first network is detected, and the NIT detected is converted so that it may comply with the second network. That is, the NIT of the digital broadcast data delivered in the first network is replaced by an NIT complying with the second network. The digital broadcast data is thereby obtained in the second network.

[0006] To deliver a digital program broadcast in a network, in any other network, the contents of the NIT of the digital broadcast data are very important. If the physical data and service data transmitted in a network are not correctly related to those transmitted in another network, digital broadcast programs cannot be delivered appropriately.

Disclosure of the Invention

[0007] Accordingly, an object of this invention is to provide a signal processing apparatus that makes it easy to determine the relation between the physical data and service data transmitted in a first network and the physical data and service data transmitted in a second network.

[0008] If the contents of the digital broadcast data transmitted in the first network, such as service data and the number of transport streams to be transmitted, may be changed, the above-mentioned data must be prepared again.

[0009] Thus, another object of the invention is to provide a signal processing apparatus and a signal processing method, which can automatically apply changes made in the first network to the second network.

[0010] Still another object of this invention is to provide a signal processing apparatus and a signal processing method, which can automatically respond to changes, if any, made in the number of transport streams transmitted from the first network.

[0011] Another object of the present invention is to provide a signal processing apparatus and a signal processing method, which can automatically respond to changes, if any, made in the number of service items contained in the digital broadcast data transmitted from the first network.

[0012] A signal processing apparatus according to the invention is designed to convert a first digital broadcast having a prescribed transmission frequency on a first network, to a second digital broadcast signal having a prescribed frequency on a second network. The apparatus is characterized by comprising: first frequency-converting means for converting the frequency of the first digital broadcast signal, thereby to generate a first digital modulated signal; demodulating means for demodulating the first digital modulated signal supplied from the first frequency-converting means, thereby to generate digital broadcast data; table-detecting means for detecting a network information table which is physical information about a transmission path, from the digital broadcast data supplied from the demodulating means; table-changing means for changing at least transmission frequency data contained in the network information table detected by the table-detecting means, to data that complies with the second network; table-replacing means for replacing the network information table supplied from the demodulating means, with the network information table supplied from the table-changing means; display means for displaying the contents described in the network information table of the digital broadcast data supplied from the demodulating means and complying with the first network, and also the contents described in the network information table of the digital broadcast data replaced by the table-changing means and complying with the second network; modulating means for modulating the digital broadcast data whose network information table has been replaced by the table-replacing means, thereby to generate a second digital modulated signal; and second frequency-converting means for converting the frequency of the second digital broadcast signal, thereby to generate the second digital broadcast signal.

[0013] In the signal processing apparatus accord-
ing the invention, the display means displays the contents described in the network information table of the digital broadcast data complying with, for example, the first network, along with the contents described in the network information table of the digital broadcast data complying with the second network.

[0014] Another signal processing apparatus according to this invention is designed to convert a first digital broadcast having a prescribed transmission frequency on a first network, to a second digital broadcast signal having a prescribed frequency on a second network. This apparatus is characterized by comprising: first frequency-converting means for converting the frequency of the first digital broadcast signal, thereby to generate a first digital modulated signal; demodulating means for demodulating the first digital modulated signal supplied from the first frequency-converting means, thereby to generate digital broadcast data; table-detecting means for detecting a network information table which is physical information about a transmission path, from the digital broadcast data supplied from the demodulating means; analyzing means for analyzing information about the first network, on the basis of the network information table detected by the table-detecting means; comparing means for comparing the information about the first network analyzed by the analyzing means, with the previous information about the first network; table-changing means for changing the network information table of the first network to one that complies with the second network, on the basis of the information about the first network, which has been generated as results of comparison accomplished by the comparing means; table-replacing means for replacing the network information table supplied from the demodulating means, with the network information table supplied from the table-changing means; modulating means for modulating the digital broadcast data whose network information table has been replaced by the table-replacing means, thereby to generate a second digital modulated signal; and second frequency-converting means for converting the frequency of the second digital broadcast signal, thereby to generate the second digital broadcast signal.

[0015] A signal processing method according to the present invention is designed to convert a first digital broadcast having a prescribed transmission frequency on a first network, to a second digital broadcast signal having a prescribed frequency on a second network. The method is characterized by comprising: a first frequency-converting step of converting the frequency of the first digital broadcast signal, thereby to generate a first digital modulated signal; a demodulating step of demodulating the first digital modulated signal generated in the first frequency-converting step, thereby to generate digital broadcast data; a table-detecting step of detecting a network information table which is physical information about a transmission path, from the digital broadcast data generated in the demodulating step; analyzing step of analyzing information about the first network, on the basis of the network information table detected in the table-detecting step; comparing step of comparing the information about the first network analyzed by in the analyzing step, with the previous information about the first network; table-changing step of changing the network information table of the first network to one that complies with the second network, on the basis of the information about the first network, which has been generated as results of comparison accomplished in the comparing step; table-replacing step of replacing the network information table generated in the demodulating step, with the network information table generated in the table-changing step; modulating step of modulating the digital broadcast data whose network information table has been replaced in the table-replacing step, thereby to generate a second digital modulated signal; and second frequency-converting step for converting the frequency of the second digital broadcast signal, thereby to generate the second digital broadcast signal.

Brief Description of the Drawings

[0016]

FIG. 1 is a block diagram illustrating a digital CATV system to which the present invention is applied;

FIGS. 2A and 2B are diagrams showing the frame structure of an MPEG2 transport packet and the frame structure of a DVB system;

FIG. 3 is a diagram depicting the structure of an MPEG2 packet;

FIG. 4 is a diagram showing the structure of a PES packet;

FIG. 5 is a diagram showing the structure of a program association table (PAT);

FIG. 6 is a diagram depicting the structure of a program map table (PMT);

FIG. 7 is a diagram illustrating the structure of a network information table (NIT);

FIG. 8 is a diagram showing the structure of the satellite-delivery system descriptor;

FIG. 9 is a diagram representing the structure of the cable-delivery system descriptor;

FIG. 10 is a diagram showing the structure of the service list descriptor;

FIG. 11 is a block diagram illustrating the modula-
tor-converter-transmitter incorporated in the digital CATV system;

FIG. 12 is a diagram representing some of the contents in the NIT, displayed by the display section of the modulator-converter-transmitter;

FIG. 13 is a flowchart illustrating how the NIT is analyzed and set by the control section provided in the modulator-converter-transmitter; and

FIGS. 14A and 14B are diagrams showing the satellite frequencies set in the NIT by the modulator-converter-transmitter and the satellite-CATV frequency and delivery service, respectively.

Best Mode for Carrying Out the Invention

[0017] The best mode for carrying out the invention will be described in detail, with reference to the accompanying drawings.

[0018] This invention is applied to, for example, a digital CATV (Cable Television) system 10 having the structure shown in FIG. 1. The CATV system 10 comprises an antenna 11, a modulator-converter-transmitter 12, a transmission path 13, and set top boxes (household receiver) 14-1 to 14-m. The antenna 11 receives digital broadcast signals from the transponders (satellite relays) provided in a satellite 20. The modulator-converter-transmitter 12 changes the transmission frequencies, modulation modes and the like of the digital broadcast signals, thereby generating CATV digital broadcast signals, and transmits the CATV broadcast signals to the transmission path 13. The set top boxes (household receiver) 4-1 to 4-m are connected to the transmission path 13.

[0019] The digital broadcast signals the satellite 20 transmits will be described. In the present embodiment, the digital broadcast signals comply with the DVB (Digital Video Broadcasting) system, i.e., the digital broadcasting standards adopted in Europe. FIG. 2B depicts the frame structure of the digital broadcast data complying with the DVB system. One frame is composed of eight transport packets (see FIG. 2A). In this case, each packet has a synchronization byte (= 47H). One synchronization byte is inverted to 88H, thereby achieving the synchronization of the frame. Each MPEG2 transport packet (i.e., MPEG2 packet) contains an error-correcting code of Reed Solomon (204, 188). The digital broadcast data shown in FIG. 2B is subjected first to QPSK (Quadrature Phase Shift Keying) modulation and then to frequency modulation. The data is thereby converted to digital broadcast signals of 27 MHz, which are transmitted from the satellite 20.

[0020] FIG. 3 shows the structure of an MPEG2 transport packet that consists of 188 bytes. Of these bytes, the first four bytes constitute the packet header. The packet header describes PID (Packet Identification), or a packet identifier, which indicates the attribute of the stream (i.e., data stream) of the packet. As is known in the art, the payload (data section) of the MPEG2 transport packet contains a PES packet having the structure shown in FIG. 4. The PES packet is divided into 184-byte data items. The MPEG2 packet further contains PSI (Program Specific Information) that includes tables such as a PAT (Program Association Table), a PMT (Program Map Table) and an NIT (Network Information Table). These tables are provided in the form of sections.

[0021] PSI is information that is required for easy selection of a station and a program. PAT represents the PID of PMT that is used to transmit the packet constituting each program labeled with a program number (16 bits). FIG. 5 shows the structure of the PAT. The PID assigned to the PAT is "0", which is a fixed identifier.

[0022] The contents of PSI will be described. Table ID indicates the type of the table. It is "0x000" (in hexadecimal notation), identifying the PAT. TS (Transport Stream) ID identifies the stream (multiplexed coded data) and is equivalent to a transponder in the case of satellite broadcasting. Version number is added every time the table contents are updated. Current-next indicator is used to identify the new version and the old version which are transmitted at the same time. Program number identifies a channel. Network ID indicates the PID of NIT when it is "0x0000". Program map PID identifies the PID of PMT.

[0023] PMT indicates the PID of the packet that contains the data stream including the video data, audio data, added data and the like which constitute the program identified by a program number. The PID of PMT is designated by PAT, as described above. FIG. 6 depicts the structure of PMT. Those contents of PMT which differ from the contents of PAT will be explained. Table ID describes the type of the table. It is "0x002", identifying the PMT. PCR PID indicates the PID of the packet that contains PCR (Program Clock Reference) showing a clock signal that will be used to demodulate data. Stream type designates the type of signals to be transmitted in the form of a data stream that includes video data, audio data added data and the like.

[0024] NIT indicates the physical data about the transmission path. In the case of satellite broadcasting, the physical data represents the orbit of the satellite, the polarized waves the satellite transmits, the frequencies for the transponders provided in the satellite, and the like. The PID of NIT is designated by PAT, as mentioned above.

[0025] FIG. 7 illustrates the structure of the NIT. Table ID indicates the type of the table. When the table ID is "0x40", it designates the network. When it is "0x41", it designates the next network. Section syntax indicator shows whether the NIT is composed of a single section or a plurality of sections. Section length indicates the total length of data that follows it. Network ID identifies the network and corresponds to an individual
satellite in the case of satellite broadcasting. Version number is incremented whenever the contents of the NIT are changed. Current next indicator shows whether the section is valid or not at present. Section number specifies the number assigned to the current section. Last section number indicates the number assigned to the last of the sections that constitute one table. Network descriptor length indicates the length of the data that follows it. TS loop length specifies the length of the TS loop that immediately follows it. TSID is a code identifying the TS and corresponds to one transponder (27-MHz band) in the case of satellite broadcasting or one channel (6-MHz band) in the case of a CATV system. Original network ID specifies the source network from which a digital broadcast signal is transmitted to the network. TS descriptor length indicates the total data length of the TS descriptors which are described immediately after it.

[0026] The TS descriptors that play an important role in the NIT will be explained.

[0027] First, the satellite-delivery system descriptor will be described. This descriptor is used in the NIT in the digital satellite broadcasting.

[0028] FIG. 8 shows the structure of the satellite-delivery system descriptor. Descriptor tag is defined in the DVB system and specifies the type of the descriptor. The tag is "0x43" in this descriptor. Frequency indicates the transmission frequency for a stream (a transponder in the case of the satellite broadcasting). Orbit and longitude show the orbit of the satellite. Polarized wave indicates the polarized waves emitted from the satellite. Demodulation, symbol rate and frequency of error connection of internal codes show the specification of the transmission system used.

[0029] The cable-delivery descriptor will now be described. This descriptor is used in the digital CATV system.

[0030] FIG. 9 represents the structure of the cable-delivery system descriptor. The descriptor tag, which designates the type of the descriptor, is defined by the DVB system and is "0x44". Frequency indicates the frequency of one stream (i.e., one channel in the CATV system). FEC (external code) indicates the external code that is being used. Usually it is "0010", representing a Reed-Solomon code. Those parts of this satellite-delivery system descriptor, which are identical to those of the satellite-delivery system descriptor, will not be described here.

[0031] The service list descriptor will be described. This descriptor shows the ID of the service that is multiplexed on the stream (one transponder in the satellite broadcasting, or one channel in the CATV system).

[0032] FIG. 10 shows the structure of the service list descriptor. Descriptor tag, which indicates the type of the descriptor, is defined in the DVB system and is "0x41". Service ID identifies the service. Service type indicates the contents of the service.

[0033] FIG. 11 illustrates the modulator-converter-transmitter 12 incorporated in the digital CATV system 10. The transmitter 12 receives digital broadcast signals from the first to Nth transponders (satellite relays) provided in the communications satellite 20. It changes the transmission frequency and modulation mode of each digital broadcast signal. In addition, the transmitter 12 replaces the satellite-delivery system descriptor in the NIT with a cable-delivery system descriptor, thus generating a CATV digital broadcast signal. The transmitter 12 transmits the CATV digital broadcast signal to the transmission path 13.

[0034] The transmitter 12 has a microcomputer. It comprises a control section 31, first to Nth signal-processing sections 32-1 to 32-N, and a mixer 23. The control section 31 controls the other components of the transmitter 12. The sections 32-1 to 32-N process the digital broadcast signal of SHF (Super High Frequency) band, transmitted from the transponders of the communications satellite 20, thereby generating CATV digital broadcast signals BS1 to BSN. The mixer 23 mixes the digital broadcast signals BS1 to BSN and supplies them to the transmission path 13. To the control section 31 there are connected an operation section 34 and a display section 35. The operation section 34 is operated to set reception frequencies for the tuners provided in the signal-processing sections 32-1 to 32-N. The display section 35 displays the operation state of the transmitter 12.

[0035] As shown in FIG. 12, the display section 35 displays the information about the satellite. More precisely, the section 35 displays the information about the transmission path of the NIT designed for the satellite broadcasting (i.e., information in the satellite-delivery descriptor), which is processed by the control section 31, and the service ID (i.e., information in the service list descriptor), which identifies the program being broadcast. Further, the display section 35 displays the information (i.e., information in the cable-delivery system descriptor) about the transmission path for the NIT generated by the control section 31 and designed for the CATV system. The section 35 also displays the service ID to be transmitted to the cable. The display section 35 displays streams, side by side, so that the user may easily compare these items of information.

[0036] The signal-processing section 32-1 comprises a tuner 41, a demodulator 42, and an ECC (Error Correction Code) decoder 43. The tuner 41 selects the digital broadcast signal transmitted from the first transponder of the communications satellite 20, from among the SHF-band digital broadcast signals the antenna 11 has received, thus obtaining a QSPK-modulated signal S1. The demodulator 42 demodulates the QSPK-modulated signal S1, generating a DVB-frame signal S2. The ECC decoder 43 corrects the errors in the DVB-frame signal S2, generating an MPEG2 transport packet S3, which is digital broadcast data.

[0037] The signal-processing section 32-1 has an NIT-detecting circuit 44, a memory 45, and a memory
46. The NIT-detecting circuit 44 detects the NIT from each of the MPEG2 transport packets S3 the ECC decoder 43 outputs one after another. The memory 45 stores the table NITa the NIT-detecting circuit 44 has detected. The memory 46 stores the table NITb that has been generated by changing the table NITa stored in the memory 45 and which can be used in the CATV system. The NIT-detecting circuit 44 detects an NIT in accordance with the PID assigned to the transport packet.

[0038] The control section 31 analyzes the table NITa detected by the NIT-detecting circuit 44 and stored in the memory 45. As the result of analysis, the control section 31 acquires detailed information including the number of the transponders provided in the satellite, the transmission frequency and the service multiplexed on the transport stream transmitted of each transponder.

[0039] The control section 31 holds the information about a CATV system to which broadcast data is to be delivered. More precisely, in the control section 31 there is set the information showing which transponder provided in the satellite should be transmitted to which CATV channel and which service multiplexed in that channel should be delivered to the CATV. Based on this information, the NITa for the satellite is changed to NITb for the CATV system.

[0040] If the number of the transponders to be transmitted may change by some cause and becomes different from the number of transponders described in the information the control section 31 holds. This makes it impossible to change the NITa for the satellite to NITb for the CATV system. In such a case, the control section 31 analyzes again the NITa transmitted from the satellite, by performing the sequence of operations shown in the flowchart of FIG. 13. The control section 31 thereby finds the difference between the difference between the previous information and the present information and automatically generates new information such as the satellite-CATV frequency table of FIG. 14B or the delivery satellite-CATV delivery service table of FIG. 14B.

[0042] That is, the control section 31 acquires an NIT (Step S1), determines whether the version number contained in the NIT has been updated or not (Step S1). If the version number has been updated, the control section 31 determines whether the number of transponders associated has changed or not (Step S3). If the number of transponders has decreased, the control section 31 deletes the data about the cable channel that corresponds to any transponder which is no longer transmitted (Step S4). Then, the control section 31 updates the information, whereby the information shows that the data about that cable channel has been deleted (Step S5). Hence, no data for that cable channel is delivered to the CATV. If the number of transponders has increased, the control section 31 allocates a cable channel to any transponder added, so that the digital broadcast data transmitted from the transponder may be delivered to the CATV (Step S6). Then, the section 31 generates new information, updating the NIT (Step S7). Further, the control section 31 controls, via an interface 47, those of the signal-processing sections 32-1 to 32-N that have been reserved, thus making them operate normally (Step S8). The digital broadcast data transmitted from any transponder added may not be delivered to the CATV. In this case, the control section 31 updates the information set and rewrites the NIT on the basis of the new information (Step S9).

[0044] The number of services multiplexed in the transport stream transmitted from a transponder may increase or decrease. In this case, too, the control section 31 automatically updates the information in the same way as in the case where the number of transponders increases or decreases. Then, the section 31 rewrites the NIT on the basis of the information thus updated.

[0045] As described above, the NIT for the digital broadcast data transmitted from the satellite 20 has the structure illustrated in FIG. 7. The table NITa detected by the NIT-detecting circuit 44 has a similar structure. To acquire the table NITa, the control section 31 changes the satellite delivery system descriptor contained in the table NITa, to a cable delivery system descriptor.

[0046] Data is written into and read from the memories 45 and 46 under the control of the control section 31, which is accomplished via the interface 47. The reception frequency of the tuner 41 is controlled via the interface 47 by the control section 31, too.

[0047] The signal-processing section 32-1 has an NIT-replacing circuit 48. The circuit 48 is designed to detect NITs from the MPEG2 transport packets S3 that are sequentially output from the ECC decoder 43 and to replace each NIT with the NITb stored in the memory 46. The NIT-replacing circuit 48 detects NITs on the basis of the fixed PID.

[0048] The signal-processing section 32-1 has an ECC encoder 49, a modulator 50, and a frequency converter 51. The ECC encoder 49 adds an error-correcting code of Reed Solomon (204, 188) to any MPEG2 transport packet S4 in which the NIT has been replaced by the NIT-replacing circuit 48, thereby generating a signal S5 (see FIG. 2B) of the DV-frame configuration. The modulator 50 is designed to perform 64QAM (Quadrature Amplitude Modulation) on the signal S5 of the DV-frame configuration. The frequency converter 51 converts the frequency of the 64QAM-modulated signal from the modulator 50, thus generating a CATV digital broadcast signal BS1 of either VHF band or UHF band.

[0049] The other signal-processing sections 32-2 to 32-N are identical in structure. Each comprises a tuner 41, a modulator 42, an ECC decoder 43, an interface 47, an NIT-replacing circuit 48, an ECC encoder 49, a modulator 50 and a frequency converter 51. The NIT-replacing circuit 48 provided in each of the signal-processing sections 32-2 to 32-N replaces the NIT by using the table NITb that is stored in the memory 46 of
the signal-processing section 32-1. The tuner 41 provided in each of the signal-processing sections 32-2 to 32-N selects one of the digital broadcast signals transmitted from the second to Nth transponders of the communications satellite 20. The digital broadcast signal selected is frequency-converted to a QPSK-modulated signal S1. The control section 31 controls, via the interface 47, the reception frequency of the tuner 41 provided in each of the signal-processing sections 32-2 to 32-N. In the signal-processing sections 32-2 to 32-N, the frequency converters 51 convert the frequencies of the modulated signals, so that the digital broadcast signals BS1 to BSN may have different transmission frequencies.

In the digital CATV system 10 described above, the NIT-detecting circuit 44 provided in the modulator-converter-transmitter 12 detects the NITA from the MPEG2 transport packet that is digital broadcast data in the satellite broadcasting system (first network). The control section 31 acquires at least the NITb which complies with the CATV (second network) and which information representing the transmission frequency of the NITA. The NIT-replacing circuit 48 replaces the NITA for the MPEG2 transport packet, i.e., the digital broadcast data in the satellite broadcasting system, with the NITb. An MPEG2 transport packet that is used as digital broadcast data in the CATV is thereby generated. Hence, digital multi-channel broadcast programs can be delivered in the CATV system.

In modulator-converter-transmitter 12, the display section 35 displays the contents described in the NITA and the contents described in the NITb, the NITA for use in the first network having been replaced by the NITb for the use in the second network, by means of each of the signal-processing sections 32-1 to 32-N. It is therefore easy for the user to know whether NITs have been correctly replaced in the signal-processing sections 32-1 to 32-N. If any NIT has not been correctly replaced, the user may immediately take necessary steps to replace it with another.

The digital broadcasting achieved via the communications satellite 20 may be changed for some reason. Even in this case, the contents of the NITA detected by the NIT-detecting circuit 44 are read by analyzing the NITA by means of the control section 31. The information set in the NITA is thereby automatically updated to new information. The NIT is thus changed on the basis of the new information. The NIT-replacing circuit 48 replaces the NITA with the NITb. This makes it possible to deliver the new digital broadcast data to the CATV system.

In the signal processing apparatus according to the present invention, the first frequency-converting means converts the frequency of the first digital broadcast signal having a prescribed transmission frequency on a first network, thereby to generate a first digital modulated signal. The first frequency-converting means converts the frequency of the first digital, thereby generating digital broadcast data. The table-detecting means detects a network information table, which is physical information about a transmission path, from the digital broadcast data. The table-changing means changes at least transmission frequency data contained in the network information table, to data that complies with the second network. The table-replacing means replaces the network information table supplied from the demodulating means, with the network information table supplied from the table-changing means, thereby generating digital broadcast data that complies with the second network. The modulating means modulates this digital broadcast data, thereby generating a second digital modulated signal. The second frequency-converting means converts the frequency of the second digital broadcast signal, thereby to generate the second digital broadcast signal. Therefore, the apparatus can convert a first digital broadcast having a prescribed transmission frequency on a first network, to a second digital broadcast signal having a prescribed frequency on a second network, and deliver the second digital broadcast signal.

In the signal processing apparatus, the display means displays the contents described in the network information table of the digital broadcast data demodulated by the demodulating means and complying with the first network, and also the contents described in the network information table replaced by the table-converting means and complying with the second network, it is therefore easy for the user to confirm the relation between the physical data and service data transmitted in a first network and the physical data and service data transmitted in a second network.

In the present invention, the network information table of the first network is analyzed and compared with the network information table analyzed previously. If the network information table differs from the previously analyzed on, the information is automatically changed to new information. The network information table is changed on the basis of the new information. The network information table about digital broadcast data is replaced by the new network information table of the second first network. Hence, the changes made in the first network can be automatically applied to the second network.

Claims

1. A signal processing apparatus for converting a first digital broadcast having a prescribed transmission frequency on a first network, to a second digital broadcast signal having a prescribed frequency on a second network, characterized by comprising:

   first frequency-converting means for converting the frequency of the first digital broadcast signal, thereby to generate a first digital modulated signal;
demodulating means for demodulating the first digital modulated signal supplied from the first frequency-converting means, thereby to generate digital broadcast data;

table-detecting means for detecting a network information table which is physical information about a transmission path, from the digital broadcast data supplied from the demodulating means;

table-changing means for changing at least transmission frequency data contained in the network information table detected by the table-detecting means, to data that complies with the second network;

first frequency-converting means for converting the frequency of the first digital broadcast signal, thereby to generate a first digital modulated signal;

demodulating means for demodulating the first digital modulated signal supplied from the first frequency-converting means, thereby to generate digital broadcast data;

table-detecting means for detecting a network information table which is physical information about a transmission path, from the digital broadcast data supplied from the demodulating means;

analyzing means for analyzing information about the first network, on the basis of the network information table detected by the table-detecting means;

comparing means for comparing the information about the first network analyzed by the analyzing means, with the previous information about the first network;

table-changing means for changing the network information table of the first network to one that complies with the second network, on the basis of the information about the first network, which has been generated as results of comparison accomplished by the comparing means;

table-replacing means for replacing the network information table supplied from the demodulating means, with the network information table supplied from the table-changing means;

modulating means for modulating the digital broadcast data whose network information table has been replaced by the table-replacing means, thereby to generate a second digital modulated signal; and

second frequency-converting means for converting the frequency of the second digital broadcast signal, thereby to generate the second digital broadcast signal.

2. The signal processing apparatus according to claim 1, characterized in that the display means displays, at the same time, both the contents described in the network information table of the digital broadcast data complying with the first network and also the contents described in the network information table of the digital broadcast data complying with the second network.

3. A signal processing apparatus for converting a first digital broadcast having a prescribed transmission frequency on a first network, to a second digital broadcast signal having a prescribed frequency on a second network, characterized by comprising:

second frequency-converting means for converting the frequency of the second digital broadcast signal, thereby to generate the second digital broadcast signal.

4. The signal processing apparatus according to claim 3, characterized in that, when the information about the first network, generated as results of comparison accomplished by the comparing means, shows that transport streams to be transmitted have increased in numbers, the table-changing means changes the network information table of the first
5. The signal processing apparatus according to claim 4, characterized in that the table-changing means changes the network information table so that the transmission frequency contained in the information about any additional transport stream is allocated to one of the transmission frequencies reserved for the second network and not used.

6. The signal processing apparatus according to claim 3, characterized in that, when the information about the first network, generated as results of comparison accomplished by the comparing means, shows that transport streams to be transmitted have increased in numbers, the table-changing means changes the network information table so that the information about any additional transport stream is excluded from the network information table of the first network.

7. The signal processing apparatus according to claim 3, characterized in that, when the information about the first network, generated as results of comparison accomplished by the comparing means, shows that transport streams to be transmitted have decreased in numbers, the table-changing means changes the network information table of the first network to one that complies with the second network, on the basis of the formation about deleted transport streams.

8. The signal processing apparatus according to claim 3, characterized in that, when the information about the first network, generated as results of comparison accomplished by the comparing means, shows that service data items contained in a transponder stream have increased in numbers, the table-changing means changes the network information table of the first network to one that complies with the second network, on the basis of the formation about additional services.

9. The signal processing apparatus according to claim 3, characterized in that, when the information about the first network, generated as results of comparison accomplished by the comparing means, shows that service data items contained in a transponder stream have increased in numbers, the table-changing means changes the network information table of the second network so that any additional service item contained in the transponder stream is excluded from the network information table of the second network.

10. The signal processing apparatus according to claim 3, characterized in that, when the information about the first network, generated as results of comparison accomplished by the comparing means, shows that service data items contained in a transponder stream have decreased in numbers, the table-changing means changes the network information table of the first network to one that complies with the second network, on the basis of the formation about deleted services.

11. A signal processing method for converting a first digital broadcast having a prescribed transmission frequency on a first network, to a second digital broadcast signal having a prescribed frequency on a second network, characterized by comprising:

- a first frequency-converting step of converting the frequency of the first digital broadcast signal, thereby to generate a first digital modulated signal;
- a demodulating step of demodulating the first digital modulated signal generated in the first frequency-converting step, thereby to generate digital broadcast data;
- a table-detecting step of detecting a network information table which is physical information about a transmission path, from the digital broadcast data generated in the demodulating step;
- analyzing step of analyzing information about the first network, on the basis of the network information table detected in the table-detecting step;
- comparing step of comparing the information about the first network analyzed by in the analyzing step, with the previous information about the first network;
- table-changing step of changing the network information table of the first network to one that complies with the second network, on the basis of the information about the first network, which has been generated as results of comparison accomplished in the comparing step;
- table-replacing step of replacing the network information table generated in the demodulating step, with the network information table generated in the table-changing step;
- modulating step of modulating the digital broadcast data whose network information table has been replaced in the table-replacing step, thereby to generate a second digital mod-
ulated signal; and

second frequency-converting step for converting the frequency of the second digital broadcast signal, thereby to generate the second digital broadcast signal.

12. The signal processing method according to claim 11, characterized in that, when the information about the first network, generated as results of comparison accomplished in the comparing step, shows that transport streams to be transmitted have increased in numbers, the network information table of the first network is changed, to one that complies with the second network, in the table-changing step on the basis of the formation about additional transport streams.

13. The signal processing method according to claim 12, characterized in that the network information table is changed, in the table-changing step, so that the transmission frequency contained in the information about any additional transport stream is allocated to one of the transmission frequencies reserved for the second network and not used.

14. The signal processing method according to claim 11, characterized in that, when the information about the first network, generated as results of comparison accomplished in the comparing step, shows that transport streams to be transmitted have increased in numbers, the network information table is changed, in the table-changing step, so that the information about any additional transport stream is excluded from the network information table of the first network.

15. The signal processing method according to claim 11, characterized in that, when the information about the first network, generated as results of comparison accomplished in the comparing step, shows that transport streams to be transmitted have decreased in numbers, the network information table of the first network is changed to one that complies with the second network, in the table-changing step on the basis of the formation about deleted transport streams.

16. The signal processing method according to claim 11, characterized in that, when the information about the first network, generated as results of comparison accomplished in the comparing step, shows that service data items contained in a transponder stream have increased in numbers, the network information table of the first network is changed to one that complies with the second network, in the table-changing step, on the basis of the formation about additional services.

17. The signal processing method according to claim 11, characterized in that, when the information about the first network, generated as results of comparison accomplished in the comparing step, shows that service data items contained in a transponder stream have increased in numbers, the network information table of the second network is changed in the table-changing step so that any additional service item contained in the transponder stream is excluded from the network information table of the second network.

18. The signal processing method according to claim 11, characterized in that, when the information about the first network, generated as results of comparison accomplished in the comparing step, shows that service data items contained in a transponder stream have decreased in numbers, the network information table of the first network is changed to one that complies with the second network, in the table-changing step on the basis of the formation about deleted services.
"00 00 01H"

PACKET START CODE PREFIX

STREAM ID

PES PACKET LENGTH

PES HEADER OPTION

STUFFING BYTES

BYTES OF PES PACKET DATA

FIG. 4
<table>
<thead>
<tr>
<th>Table Id</th>
<th>Section Syntax Indicator</th>
<th>&quot;0&quot;</th>
<th>Reserved Version Number</th>
<th>Current Section Number</th>
<th>Number of Last Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>12</td>
<td>16</td>
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FIG.5

**Table of Contents:**

**Repeated Part**

- CRC 32
- Network Pid 13
- Program Map Pid 13
- Program Number 16
- Reserved 3
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<tr>
<th>TABLE ID</th>
<th>SECTION SYNTAX INDICATOR</th>
<th>&quot;0&quot;</th>
<th>RESERVED</th>
<th>SECTION LENGTH</th>
<th>PROGRAM NUMBER</th>
<th>RESERVED</th>
<th>VERSION NUMBER</th>
<th>CURRENT-NEXT INDICATOR</th>
<th>SECTION NUMBER</th>
<th>LAST-SECTION NUMBER</th>
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<td>12</td>
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FIG. 6
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<tr>
<th>DESCRIPTOR TAG</th>
<th>DESCRIPTOR LENGTH</th>
<th>FREQUENCY</th>
<th>0xFF (RESERVED)</th>
<th>FEC (EXTERNAL CODE)</th>
<th>MODULATION</th>
<th>SYMBOL RATE</th>
<th>0xF</th>
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<td>8</td>
<td>32</td>
<td>12</td>
<td>4</td>
<td>8</td>
<td>28</td>
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</table>

0x44

4-BIT BCD CODE

0000: NOT DEFINED
0001: NO EXTERNAL CODE
0010: READ-SOLOMON (204, 188)
OTHERS: RESERVED

0x00: NOT DEFINED
0x03: 64QAM
OTHERS: RESERVED

4-BIT BCD CODE

FIG.9
REPEATED PART

<table>
<thead>
<tr>
<th>DESCRIPTOR TAG</th>
<th>DESCRIPTOR LENGTH</th>
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<td>8</td>
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</table>

SERVICE ID | SERVICE TYPE |
-----------|--------------|
| 16         | 8            |

0x01: DIGITAL TV SERVICE
0x02: DIGITAL AUDIO SERVICE
0x03: TELETEXT SERVICE
0x04: NVOD BASIC SERVICE
0x05: MOSAIC SERVICE
0x06: PAL-ENCODED DATA
0x07: SECAM-ENCODED DATA
0x08~0xFE: USER-DEFINED
OTHERS: RESERVED

FIG.10
BOARD INFORMATION

NETWORK NAME : AAA

SATELLITE FREQUENCY : 12.538 GHz

SERVICE : 708 731 755 721

CATV FREQUENCY : 333MHz

SERVICE : 708 731 755 721

FIG.12
FIG. 13
### FIG. 14A

<table>
<thead>
<tr>
<th>SATELLITE FREQUENCY</th>
<th>CATV FREQUENCY</th>
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<tr>
<td>12.658 GHz</td>
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<td></td>
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</tr>
<tr>
<td>12.538 GHz</td>
<td>301</td>
<td>×</td>
</tr>
<tr>
<td></td>
<td>302</td>
<td>○</td>
</tr>
<tr>
<td>12.598 GHz</td>
<td>400</td>
<td>×</td>
</tr>
<tr>
<td></td>
<td>401</td>
<td>×</td>
</tr>
<tr>
<td></td>
<td>402</td>
<td>×</td>
</tr>
<tr>
<td></td>
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## INTERNATIONAL SEARCH REPORT

### INTERNATIONAL CLASSIFICATION OF SUBJECT MATTER

| Int.Cl | H04N7/16 | 7/20 | H04L29/06 | 27/18 | H04H1/00 |

According to International Patent Classification (IPC) or to both national classification and IPC

### FIELDS SEARCHED

| Minimum documentation searched (classification system followed by classification symbols) |
| Int.Cl | H04N7/16 | 7/20 | H04L29/06 | 27/18 | H04H1/00 |

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

- Jitsuyo Shinan Koho 1922-1996
- Toroku Jitsuyo Shinan Koho 1994-2000
- Kokai Jitsuyo Shinan Koho 1971-2000
- Jitsuyo Shinan Toroku Koho 1996-2000

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

### DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<th>Relevant to claim No.</th>
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<td>E,A</td>
<td>JP, 11-150716, A (Sony Corporation), 02 June, 1999 (02.06.99) (Family: none)</td>
<td>1-18</td>
</tr>
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</table>

- * Document defining the general state of the art which is not considered to be of particular relevance
- ** Document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *** Document referring to an oral disclosure, use, exhibition or other means
- **** Document published prior to the international filing date but later than the priority date claimed

### See patent family annex.

- "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
- "A" document member of the same patent family

### Date of the actual completion of the international search
30 March, 2000 (30.03.00)

### Date of mailing of the international search report
11 April, 2000 (11.04.00)

### Name and mailing address of the ISA/Japanese Patent Office
Authorized officer

### Facsimile No.

<table>
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Form PCT/ISA/210 (second sheet) (July 1992)
**Context-sensitive television tags**

A TV tag embedded in web-based content can be selected by a viewer to cause a system to perform an operation associated with the TV tag. Example operations include personalization of a TV planner to include programs that are related to the selected TV tag, scheduling of a particular program to be recorded, generation of an email reminder to be sent when a particular program is scheduled for broadcast, and so on. In an implementation that includes a TV planner, the TV planner may be personalized to include programs associated with a television series, an episode, a movie, a celebrity, a sports team, a topic, and/or a particular channel.
Description

TECHNICAL FIELD

[0001] This invention relates to television broadcast schedule data and, in particular, to distributed context-sensitive TV tags.

BACKGROUND

[0002] With the increasing amount of data available on the Internet, users may frequently encounter web-based content that relates to television entertainment in some way. Such content may include articles about or descriptions of particular movies or television programs, entertainment news articles or biographies about particular celebrities, and so on. Furthermore, some web content, although not directly related to a particular celebrity or television program, may cover a topic that is also associated with one or more television programs.

[0003] With the increasing number of available television broadcast channels, it is increasingly more difficult for television viewers to identify programs of interest and/or to remember to watch those programs. For example, a user may encounter web content that describes a particular television program, decide that it is a program they would like to watch, but then either forget to watch the program or have difficulty finding the program in the television broadcast schedule. As another example, a user may encounter web content on a particular topic, and decide that they would be interested in watching a television program on the same topic, but then have difficulty finding a television program associated with the same topic.

[0004] Many systems exist that provide television viewers with the ability to view broadcast program schedules. Such schedules are frequently referred to as electronic program guides (EPGs). Figure 1 - Prior Art illustrates a typical EPG display, which is arranged in a grid format with channels down the left and times across the top. Program data, which is used to generate the EPG, is typically provided over a network to a client device, such as a television set-top box or a personal computer. Such systems may also provide Internet surfing capabilities, but there is typically no association between web content and television broadcast schedule data. Accordingly, a need exists for a television viewer to be able to easily identify television broadcast schedule data associated with related web content.

SUMMARY

[0005] Distributed context-sensitive television tags are described. Such tags represent a particular television-related data element (e.g., a television program, an actor, a sports team, etc.), and can be embedded within contextually relevant content. For example, a web page that describes a particular television program may include a TV tag that lists the next one or more scheduled airings of the program. In addition to providing data, TV tags may have associated actions. For example, a web page that describes a new television program to be aired next fall may include a TV tag that a user can select to cause the scheduled airings of the new program to be displayed in a personalized TV planner. TV tags can also be configured to perform other actions when selected by a user. For example a TV tag can be configured to schedule a recording device to record a particular program or to schedule an alert system to generate an alert to be sent to a particular user when a particular movie is scheduled to be broadcast on television.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The same numbers are used throughout the drawings to reference like features and components.

Figure 1 - Prior Art illustrates a typical electronic program guide grid display.

Figure 2 illustrates an exemplary default display of a TV planner that can be incrementally personalized via TV tags.

Figure 3 illustrates an exemplary display of a TV planner that has been personalized.

Figure 4 illustrates an exemplary embedded TV tag for adding data associated with a particular program to the personalized TV planner.

Figure 5 illustrates an exemplary embedded TV tag for adding data associated with a particular movie to the personalized TV planner.

Figure 6 illustrates an exemplary embedded TV tag for adding data associated with a sports event or a sports team to the personalized TV planner.

Figure 7 illustrates an exemplary embedded TV tag for adding data associated with a movie not yet scheduled for broadcast to the personalized TV planner.

Figure 8 illustrates an exemplary embedded TV tag for adding data associated with a particular person to the personalized TV planner.

Figure 9 illustrates an exemplary embedded TV tag for listing the next five scheduled airings of a particular program.

Figure 10 illustrates an exemplary embedded TV tag that enables a user to schedule a recording device to record a particular program.

Figure 11 illustrates an exemplary embedded TV tag for listing scheduled broadcasts of programs that are related to the content being displayed.

Figure 12 illustrates an exemplary architecture in which a TV planner that can be incrementally personalized may be implemented.

Figure 13 illustrates select components of an exemplary TV planner system as illustrated in Figure 12.

Figure 14 illustrates select components of an exemplary client device as illustrated in Figure 12.
Figure 15 is a flow diagram illustrating an exemplary method for generating personalized TV planner data.

Figure 16 is a flow diagram illustrating an exemplary method for incrementally personalizing and rendering TV planner data.

Figure 17 is a flow diagram illustrating an exemplary method for embedding TV tags in web-based content.

Figure 18 is a flow diagram illustrating an exemplary method for rendering web-based content with an embedded TV tag.

**DetaiLED DESCRIPTION**

[0007] The following discussion is directed to distributed TV tags that provide contextually relevant television broadcast schedule data. The TV tags may also be configured to have an associated action such as to enable incremental personalization of the TV planner to display programs that a viewer is most interested in viewing. (Alternatively, depending on the implementation, the TV tags may also be configured to enable viewer interaction with any other TV-oriented personalization service such as a TV event calendar, a TV reminder system, a personalized weekly TV newsletter, and so on.) An exemplary TV planner that can be personalized via the distributed TV tags is described herein, and is implemented as a web-based application in which data is transferred across the Internet and displayed using a personal computer. It is recognized, however, that any number of other configurations may also be implemented, for example, to transfer data across cable, broadcast, or satellite networks to other types of client devices, such as television set-top boxes.

[0008] Distributed TV tags can be configured to provide contextually relevant television data within other web-based content. Furthermore, the TV tags can be implemented as selectable tags that, when selected, cause a particular action to be performed. In a described exemplary implementation, TV tags are configured to cause personalization data to be stored such that the personalization data can then be used to generate a personalized TV planner that displays listings of scheduled television programs that a viewer is likely to be interested in watching. TV tags that are configured to perform other actions or to simply display contextually relevant data are described in more detail below in the Alternate TV Tag Implementations section.

**Exemplary TV Planner Display**

[0009] Figure 2 illustrates an exemplary default display of a TV planner 200 that can be personalized. The illustrated exemplary default display may be displayed when a viewer has not yet personalized the TV planner data or when a viewer has not yet logged in with a username and password. In the illustrated implementation, a viewer-requested display of TV planner 200 includes a personalized list of recommended programs 202. a list of the viewer's favorite shows 204, a list of the viewer's favorite people 206, a list of the viewer's favorite sports teams 208, a list of the viewers favorite topics 210, and a list of the viewer's favorite channels 212. Alternate implementations may include more or fewer favorite lists that can be personalized. TV planner 200, illustrated in Figure 2, has not yet been personalized. Accordingly, favorite lists 204 - 212 do not contain any data. Furthermore, in the described implementation, the list of recommended programs 202 is filled by default with the top critic picked programs for each timeslot. As illustrated, programs that are critic picks are indicated in the recommended programs list 202 by an icon, such as the thumbs-up icon 214. In alternate implementations, criteria other than critic picks, may be used to initially populate the recommended programs list 202, for example, the list may be populated with programs scheduled for broadcast at the specified time on a particular set of channels.

[0010] Sign in button 216 can be selected by a viewer to open a login screen (not shown) that allows the viewer to enter a username and password to access the user's personalized TV planner data. This can also be used, for example, to switch from one viewer's personalized TV planner to another viewer's personalized TV planner.

[0011] Figure 3 illustrates an exemplary display of TV planner 200 that has been personalized by a viewer. In the illustrated example, the viewer has personalized the list of favorite shows 302 to include the programs "ER" and "Friends". The viewer has personalized the list of favorite people 304 to include actor, Tom Hanks. The viewer has furthermore personalized the list of favorite channels 306 to include NBC. The list of favorite sports teams 308 and the list of favorite topics 310 are both blank, indicating that the viewer has not personalized those areas of the TV planner. The personalized list of recommended programs 312 includes programs that are scheduled for broadcast that also meet the criteria represented by the favorite lists 302 - 310. In the illustrated example, distinct icons are used to indicate the reason why individual programs are displayed in the personalized list of recommended programs 312. For example, the star icon 314 is used to indicate that the scheduled broadcasts of "Friends" and "ER" are displayed because the viewer has selected those two programs as favorite shows (as indicated by the favorite shows list 302). Similarly, the celebrity icon 316 is used to indicate that the scheduled broadcast of "Sleepless in Seattle" is displayed because a person associated with the movie was selected by the viewer as a favorite person. In this example, Tom Hanks is listed as a favorite person in the favorite people list 304, and Tom Hanks is the lead actor in the movie "Sleepless in Seattle". The movie reel icon 318 is used to indicate that the scheduled broadcasts of "Will & Grace", and "Good Morning, Miami" are displayed because they are scheduled for
broadcast on a channel that was selected by the viewer as a favorite channel. In alternate implementations, textual descriptions may be used in place of the icons to indicate why a particular program is displayed in the personalized list of recommended programs 312. Alternatively, the personalized list of recommended programs 312 may be displayed with no such indicators, or with indicators associated with only some of the available favorite lists.

[0012] In the illustrated exemplary implementation, programs that are top critic picks may also be displayed in the personalized list of scheduled programs 312, even if those programs are not indicated by a viewer selected favorite program, channel, person, topic, sport team, or other supported favorite list. For example, the system may be configured to display at a minimum, a particular number of programs. In an event that the minimum number is not reached by programs that satisfy the personalization information, top critic picks may be used to supplement the list. Furthermore, although not illustrated, programs may be displayed in the personalized list of programs 312 that are neither critic picks nor viewer favorites. Such programs may be displayed because the viewer previously requested that the particular broadcast or episode be displayed, and may have a distinct icon or other demarcation associated with them.

[0013] An exemplary TV planner application may be configured to enable viewer personalization in multiple ways. For example, the TV planner application may include a wizard-type user interface that walks a user through a series of display screens that allow the user to select one or more programs, channels, actors, etc. to be added to lists of favorites. Context-sensitive TV tags, embedded, for example, in web-based content, provide another way in which viewer personalization of the TV planner 200 can be performed. For example, TV tags may be used to add elements of program data (e.g., programs, people, sports events and teams, topics, and/or channels) to the favorite lists 302-312.

Exemplary TV Tags

[0014] Figure 4 illustrates an exemplary program details web page 400 that includes a TV tag 402. Program details web page 400 may be displayed in response to any number of selections made by a viewer. For example, a viewer may access program details web page 400 by selecting a program from an EPG grid, such as the one illustrated in Figure 1 - Prior Art. In the illustrated example, TV tag 402 may be selected by a viewer to indicate that the viewer wants broadcast schedule data for the television program "Dateline NBC" to be added to the personalized list of scheduled programs 312 in TV planner 200. In the illustrated example, a viewer can select one of three radio buttons 404, 406, and 408, to indicate the viewer's level of interest in the program. For example, to personalize the TV planner 200 to display the broadcast schedule data associated with the described airing of the program (which is Tue 10/1, 10:00 PM in the illustrated example), the viewer selects the "Add this episode" radio button 404. If the viewer is interested in seeing broadcast schedule data associated with any airing of "Dateline NBC", the viewer selects the "Add all episodes" radio button 406. If the viewer is interested in only seeing broadcast schedule data associated with new episodes of the program (i.e., no reruns), the viewer selects the "Add only new episodes" radio button 408.

[0015] In the described implementation, selecting radio button 404 adds data associated with only the indicated broadcast of the program to the personalized list of scheduled programs 312. In an exemplary implementation, a selection of radio buttons 406 or 408 indicates that the viewer is interested in multiple episodes of the program, selecting radio buttons 406 or 408 also adds the indicated program to the viewer's favorite shows list 302.

[0016] In alternate implementations, a TV tag displayed on a web page may consist of only a small amount of text and/or an image or icon. In such an implementation, selecting the TV tag may launch the display of another input area through which the user can indicate more specific preferences.

[0017] Figure 5 illustrates an exemplary program details web page 500 that includes a TV tag 502. While program details web page 400 illustrated in Figure 4 describes a scheduled broadcast of an episode of a television series (i.e., "Dateline NBC"), program details web page 500 describes a scheduled broadcast of a movie. Program details web page 500 may be displayed in response to any number of selections made by a viewer. For example, a viewer may access program details web page 500 by selecting the movie from an EPG grid, such as the one illustrated in Figure 1 - Prior Art. In the illustrated example, TV tag 502 may be selected by a viewer to indicate that the viewer wants broadcast schedule data for the described broadcast of the movie "Homeward Bound: The Incredible Journey" to be added to the personalized list of scheduled programs 312 in TV planner 200. In the illustrated example, viewer selection of TV tag 502 causes the data associated with the described movie broadcast to be added to the personalized list of scheduled programs 312 in TV planner 200.

[0018] Figure 6 illustrates an exemplary program details web page 600 that includes a TV tag 602. Program details web page 600 describes a scheduled broadcast of a sporting event, in this case, a major league baseball game. Program details web page 600 may be displayed in response to any number of selections made by a viewer. For example, a viewer may access program details web page 600 by selecting the scheduled broadcast of the baseball game from a website focused on sporting events, such as a website associated with a sports broadcast network. In the illustrated example, TV tag 602 may be selected by a viewer to indicate that the viewer wants broadcast schedule data for the described
broadcast of the sporting event to be added to the personalized list of scheduled programs 312 in TV planner 200. TV tag 602 also includes options that allow the viewer to indicate other levels of interest associated with the sporting event. For example, viewer selection of the "Add this airing" link 604 causes data associated with the described broadcast of the sporting event to be added to the viewer’s personalized list of scheduled programs 312 in TV planner 200. TV tag 602 also includes selections that allow a viewer to indicate that one of the teams involved in the sporting event is a favorite team.

For example, viewer selection of the "Track all programs with the Seattle Mariners" link 606 may cause the Seattle Mariners to be added to the viewer’s personalized list of favorite teams 308 so that all sporting events involving the Seattle Mariners will be displayed in the viewer’s personalized list of scheduled programs 312 in TV planner 200. Similarly, viewer selection of the "Track only live sporting events with the Seattle Mariners" link 608 may cause the Seattle Mariners to be added to the viewer’s personalized list of favorite teams 308, but with data that indicates that only the live sporting events involving the Seattle Mariners are to be displayed in the viewer’s personalized list of scheduled programs 312 in TV planner 200. Links 610 and 612 are similar to links 606 and 608, respectively, but are associated with the other team involved in the sporting event (in this case, the New York Mets).

[0019] Figure 7 illustrates an exemplary movie details web page 700 that describes a movie currently showing in theaters. Web page 700 includes a TV tag 702 that can be selected by a viewer. In the described implementation, selecting TV tag 702 associated with a movie that is not yet scheduled for broadcast on television, adds personalization data to the viewer’s TV planner that causes broadcast schedule data for the described movie to be displayed in the viewer’s personalized list of scheduled programs 312 in TV planner 200 when the movie is released for broadcast on television. Furthermore, a TV planner system may be implemented to also send an alert to the viewer when the movie becomes available on TV. Such an alert may be in the form of an email message, a telephone call, an Internet-based alert, or any other type of viewer alert.

[0020] Figure 8 illustrates an exemplary celebrity biography web page 800 that includes a TV tag 802 that can be selected by a viewer. Celebrity biography web page 800 may be displayed in response to any number of selections made by a viewer. For example, a viewer may access celebrity biography web page 800 by selecting a hyperlinked celebrity name on a movie details page, such as the Jim Carrey link 704 on movie details web page 700. In the illustrated example, TV tag 802 may be selected by a viewer to indicate a level of interest that the viewer has in the described celebrity. For example, viewer selection of the "Track movies this person plays in" link 804 causes data associated with any movies in which the celebrity has a role to be added to the viewer’s personalized list of scheduled programs 312 in TV planner 200. Viewer selection of the "Track movies this person directs" link 804 causes data associated with any movies for which the celebrity is the director to be added to the viewer’s personalized list of scheduled programs 312 in TV planner 200. Viewer selection of the "Track television series this person is in" link 804 causes data associated with any television series in which the celebrity has a role to be added to the viewer’s personalized list of scheduled programs 312 in TV planner 200. Viewer selection of the "Track talk shows this person is on" link 804 causes data associated with any programs on which the celebrity is a guest to be added to the viewer’s personalized list of scheduled programs 312 in TV planner 200. In the illustrated example, viewer selection of each option 804 - 810 of TV tag 802 also results in the described person being added to the viewer’s personalized list of favorite people 304.

[0021] The TV tags illustrated in Figures 4-8 are used to personalize data presented in a personalized TV planner. Similar context-sensitive TV tags may be used to perform other tasks as well, or to simply display contextually relevant television broadcast data. For example, any combination of any number of actions may be associated with a TV tag that is displayed with data associated with a particular television program, celebrity, movie, topic, or channel. For example, a TV tag may have an associated action that adds personalization data to a TV planner (described with reference to Figures 4-8). Alternatively, a TV tag may have an associated action that schedules an alert system to alert the user, for example, when a program associated with the tag is scheduled to be broadcast. TV tags may also be configured to automatically generate and send an email message containing data associated with a program associated with the TV tag. Such a tag may be configured to include a text edit box as part of the TV tag, in which the user can enter, for example, an email address to which an alert is to be sent. In an alternate implementation, a TV tag may be configured to allow a user to request more information associated with a program, celebrity, team, or topic with which the TV tag is associated, or to find similar programs, celebrities, teams, or topics.

[0022] As illustrated in Figure 9, a TV tag may also be configured to display non-selectable contextually relevant data with no associated action. For example, a TV tag may be embedded in a web page that gives a description or critic review of a particular television program such that the TV tag lists the next five (or other configurable number) of scheduled broadcasts of the particular program. As shown in Figure 9, screen display 900 gives a description of a particular movie. Embedded TV tag 902 is configured, in this example, to provide a list of the next five airings of the described movie.
Figure 10 illustrates still another implementation of an embedded TV tag that may be configured to enable a user to automatically schedule the associated program to be recorded, for example, by a digital video recorder (DVR). Screen display 1000 gives details associated with a particular scheduled broadcast of a particular movie. Embedded TV tag 1002 indicates whether or not a recording device associated with the client system is programmed to record the program, and if it is not, provides a selectable link that automatically schedules the recording device to record the described program.

Furthermore, in addition to the scenarios described above, TV tags may also be rendered along with content that may not be directly accessible through an EPG. For example, a network advertisement for a particular program may be rendered with a TV tag. Additionally, news or informational articles may also be rendered with context-sensitive TV tags.

Figure 11 illustrates an example in which a screen display 1100 of an article about elephants includes a TV tag 1102 that lists programs scheduled for broadcast that are in some way associated with displayed article. For example, the article illustrated in Figure 11 is about elephants. The list of scheduled programs includes a National Geographic special about elephants, an airing of the Disney movie, "Dumbo", and an airing of a documentary about life in the circus. Similarly a TV tag may be rendered with the article that enables a user to search for scheduled programs that are about elephants and/or to add elephants as a favorite topic in the user's personalized TV planner.

Exemplary Environment

Figure 12 illustrates an exemplary environment 1200 in which TV tags and incremental personalization of a TV planner via TV tags may be implemented. Exemplary environment 1200 includes a network (e.g., the Internet 1202) that facilitates communication between one or more program data providers 1204, one or more entertainment content providers 1206, TV tag generator 1207, a TV planner system 1208, and one or more client devices 1210.

Program data provider 1204 stores electronic files of program data, which can be used to generate a TV planner or any other TV-oriented personalization service (e.g., a TV event calendar, a TV reminder system, a personalized weekly TV newsletter, and so on). Program data may include program identifiers, program titles, ratings, characters, descriptions, actor names, director names, release year, genres, station identifiers, channel identifiers, broadcast times, and so on. For discussion purposes, an electronic file maintains program data that includes a program descriptor (e.g., a title), a broadcast date to identify dates on which the program will be broadcast, and a broadcast time to identify the time at which the broadcast will begin.

Program data provider 1204 may make program data available across multiple networks. For example, as illustrated in Figure 12, the program data may be made available over the Internet 1202. Additionally (or alternatively), although not shown, the program data may be made available to other systems, such as a media content distribution system (e.g., a cable headend system) over one or more other networks, such as a broadcast, satellite, or other network using, for example, a file transfer protocol (FTP).

Entertainment content provider 1206 provides entertainment-related content, such as entertainment news articles, profiles describing television programs, movies available on television, and/or movies available in theaters, personal profiles of characters, actors, directors, or other entertainment personalities. In the described implementation, the entertainment-related content is formatted to include, or be associated with, one or more TV tags, and is rendered using client device 1210. (As described above, content that is not entertainment-specific may also be configured to be rendered with TV tags.) In one implementation, TV tags may be imbedded in web-based content as the content is created. Alternatively, as illustrated in Figure 12, a TV tag generator 1207 may be implemented to modify web-based content to include TV tags. In an exemplary implementation, the TV tags that are embedded in the web-based content include various parameters that direct a web server system or a client browser application to retrieve contextually relevant information, based on the TV tag parameters. The contextually relevant information is then rendered with the web-based content.

As a viewer browses Internet content, the viewer may come across content that has associated TV tags. As described above, a TV tag may be configured to display television broadcast scheduled data that is associated with the content, and, in some cases, may be configured as a selectable link with an associated action. When a viewer selects a TV tag, an action associated with the TV tag is performed. For TV tags configured to provide personalization data associated with a personalized TV planner, when a viewer selects a TV tag, indicating that they are interested in the movie, program, character, person, or topic that the tag is associated with, data is transmitted to TV planner system 1208 to be used to personalize TV planner data that may be requested by the viewer at another time. In alternate implementations, selection of an embedded TV tag may result in other actions being performed, such as scheduling of a program to be recorded, creation of a reminder email to be sent when a particular program is scheduled for broadcast, and so on.

In the described implementation, TV planner system 1208 receives program data from program data providers 1204 and personalization data from one or more client devices 1210. When a viewer (using client device 1210) requests TV planner data, TV planner system 1208 formats and/or filters the program data based
on the personalization data, and then distributes personalized TV planner data to client device 1210.

**Exemplary TV Planner System**

[0032] Figure 13 illustrates select components of exemplary TV planner system 1208, illustrated in Figure 12. Exemplary TV planner system 1208 includes network interface 1302, program data repository 1304, personalization data repository 1306, program data filter 1308, and personalized TV planner server 1310.

[0033] Network interface 1302 enables TV planner system 1208 to send and receive data across a network, such as the Internet 1202. In alternate implementations, TV planner system 1208 may include multiple network interfaces to enable the transmission and receipt of data across multiple networks.

[0034] Program data repository 1304 stores program data that is received, for example, across the Internet from program data providers 1204. Personalization data repository 1306 stores data that describes how multiple viewers’ TV planners are to be personalized.

[0035] When a viewer requests personalized TV planner data, program data filter 1308 filters the program data stored in program data repository 1304 according to the viewer’s personalization data stored in personalization data repository 1306. Personalized TV planner server 1310 transmits the filtered program data through network interface 1302 to a client device 1210.

**Exemplary Client Device**

[0036] Figure 14 illustrates select components of exemplary client device 1210, illustrated in Figure 12. In the described implementation, client device 1210 is implemented as a personal computer system. However, alternate implementations are also contemplated, including, for example, a television set-top box with Internet browsing capability and portable browser devices, such as web-enabled cellular telephones. Exemplary client device 1210 includes network interface 1402 for enabling communication with other devices via a network (such as Internet 1202), a processor 1404, and a memory 1406. An operating system 1408, a browser application 1410, and other applications 1412 are stored in memory 1406 and executed on processor 1404 to enable viewer interaction with the client device 1210. Client device 1210 also includes a display 1414, which may be implemented, for example, as a computer monitor.

[0037] Browser application 1410 receives and processes formatted data, such as hypertext markup language (HTML) or extended markup language (XML) data, causing the data to be rendered using display 1414. Browser application 1410 also enables viewer interaction with the rendered data, such as through selection of rendered hyperlinks.

[0038] Although not shown, client device 1210 may also include a recording device, such as a DVR, that may be scheduled to record a particular program based on user-selection of a TV tag.

**Generating Personalized TV Planner Data**

[0039] Figure 15 illustrates an exemplary process 1500 for generating personalized TV planner data. The process shown in Figure 15 is illustrated as a set of operations shown as discrete blocks. The process may be implemented in any suitable hardware, software, firmware, or combination thereof. The order in which the operations are described is not to be construed as a limitation.

[0040] At block 1502, TV planner system 1208 receives program data from program data provider(s) 1204. The received program data is received and stored in the program data repository component 1304 of the TV planner system 1208. The received program data includes descriptors that identify programs (e.g., television programs, movies, video-on-demand, and/or music) that are scheduled for broadcast. The received data also includes broadcast information, such as broadcast channels, broadcast dates, and broadcast times, and may also include additional information related to the scheduled programs.

[0041] At block 1504, TV planner system 1208 receives a viewer request for TV planner data. For example, a viewer selects a link to open a personalized TV planner web page using browser application 1410 on client device 1210. Viewer selection of the link causes a request to be sent across Internet 1202 from client device 1210 to TV planner system 1208.

[0042] At block 1506, TV planner system 1208 determines whether or not personalization data associated with the requesting viewer exists in personalization data repository 1306. For example, the first time a viewer requests the TV planner, unless the viewer has previously selected one or more TV tags found in entertainment-related web pages, there may be no personalization data stored for the viewer.

[0043] At block 1508, when it is determined that there is no personalization data associated with the requesting viewer stored in personalization data repository 1306 (the "No" branch from block 1506), the program data is filtered to identify a default set of programs to be displayed. In an exemplary implementation, program data filter 1308 filters the program data stored in program data repository 1304, resulting in the top five critical programs for each time segment to be displayed.

[0044] At block 1510, if it is determined that there is personalization data associated with the requesting viewer stored in personalization data repository 1306 (the "Yes" branch from block 1506), the program data is filtered based on the stored personalization data to identify a personalized list of scheduled programs to be displayed. In an exemplary implementation, program data filter 1308 creates a filter based on data stored in personalization data repository 1306. That filter is then ap-
plied to program data stored in program data repository 1304, resulting in a list of scheduled programs that the
viewer has previously expressed interest in.

[0045] At block 1512, TV planner system 1208 determines whether or not a maximum number of programs
has been identified for each time slot to be displayed.

[0046] At block 1514, when it is determined that the
maximum number of programs has not been identified
for each time slot to be displayed (the "No" branch from
block 1512), scheduled programs that are top critic
picks, and that are not already in the filtered list are ad-
justed in the personalized TV planner data to increase the
number of programs that will be displayed for each time
slot.

[0047] At block 1516, TV planner system 1208 trans-
nits the personalized TV planner data to the client de-
vice from which the request was received.

Method for Enabling Personalization of TV Planner
Data

[0048] Figure 16 illustrates an exemplary method
1600 for enabling personalization of TV planner data. The
process shown in Figure 16 is illustrated as a set of
operations shown as discrete blocks. The process may
be implemented in any suitable hardware, software,
firmware, or combination thereof. The order in which the
operations are described is not to be construed as a limi-
tation.

[0049] At block 1602, client device 1210 receives en-
tertainment content from entertainment content provider
1206 across Internet 1202.

[0050] At block 1604, the received entertainment con-
tent is rendered on display 1414 using browser application
1410. The rendered content includes a selectable
tV tag, such as those TV tags illustrated in Figures 4-8.

[0051] At block 1606, browser application 1410 re-
eceives an indication of a viewer selection of the rendered
TV tag.

[0052] At block 1608, data associated with the select-
ed TV tag is transmitted across Internet 1202 to TV plan-
er system 1208. The personalization data associated
with the selected TV tag is stored in personalization data
repository 1306.

[0053] At a later time, at block 1610, client device
1210 receives a viewer request for personalized TV plan-
er data. For example, a viewer may select a TV plan-
er hyperlink in a web page displayed using browser
application 1410.

[0054] At block 1612, client device 1210 transmits the
request to TV planner system 1208.

[0055] At block 1614, client device 1210 receives per-
onalized TV planner data from TV planner system
1208.

[0056] At block 1616, the received personalized TV
planner data is rendered using browser application
1410.

Method for Embedding TV Tags

[0057] Figure 17 illustrates an exemplary method
1700 for embedding TV tags in web-based content. The
process shown in Figure 17 is illustrated as a set of op-
erations shown as discrete blocks. The process may be
implemented in any suitable hardware, software,
firmware, or combination thereof. The order in which the
operations are described is not to be construed as a limi-
tation.

[0058] At block 1702, TV tag generator 1207 receives
program data from program data provider 1204.

[0059] At block 1704, TV tag generator 1207 receives
entertainment content from entertainment content pro-
vider 1206 across Internet 1202.

[0060] At block 1706, the program data associated
with the received entertainment content is identified. For
example, a keyword search for data associated with re-
ceived program data is performed against the received
web-based content.

[0061] Alternatively, rather than receiving program
data (as described above with reference to block 1702),
at block 1706, TV tag generator 1207 may perform a
query against a remote data repository that stores pro-
gam data.

[0062] At block 1708, TV tag generator 1207 gener-
ates a TV tag to be imbedded in the web-based content.
In an exemplary implementation, the media content is
formatted as an ASP.NET Active Server page, and a TV
tag is generated as an ASP.NET user control. The ASP.
NET user control (the TV tag) may be configured to re-
ceive the following initialization parameters: display
mode, tag type; and tag ID.

[0063] The display mode of the tag defines the format
in which the TV tag will be rendered within (or alongside)
the media content, and may also be based on an action
that is associated with the TV tag. For example, an "add
to planner" display mode may indicate that a simple link
identifying a particular program will be displayed, and
that when a user selects the link, the identified program
will be added to a personalized TV planner. Alterna-
tively, a "program details" display mode may indicate that
a simple link identifying a particular program will be dis-
played, and that when a user selects the link, more de-
tailed program information associated with the particular
program will be displayed. As another alternative, a
"search" display mode may indicate that a link will be
displayed that, when selected, launches a keyword
search against program data in an effort to identify any
programs scheduled for broadcast that are associated
with one or more keywords associated with the media
content (and thus associated with the TV tag). A display
mode may also be configured such that the TV tag that
is displayed includes a text box in which a user can enter
an email address. Upon selection of the TV tag, an alert
system is configured to automatically generate and
send an email message when a TV program associated
with the media content is scheduled for broadcast. A dis-
play mode may also indicate that the tag is not selectable and will only be used to display broadcast schedule data that is contextually relevant.

[0064] In an exemplary implementation, the tag type identifies a basis for the TV tag. Example bases include program, series, person, sports team, sports event, genre, topic, etc.

[0065] The tag ID is a value that is associated with the tag type of the TV tag. For example, a person tag type may have an associated tag ID with a value of "Tom Cruise", while a sports team tag type may have an associated tag ID with a value of "San Francisco Giants".

[0066] At block 1710, TV tag generator 1207 embeds the generated TV tag in the received web-based media content.

[0067] At block 1712, TV tag generator 1207 publishes the web-based media content with the embedded TV tags, for example, over Internet 1202.

Method for Rendering Content with TV Tags

[0068] Figure 18 illustrates an exemplary method 1800 for rendering web-based content that includes a TV tag. The process shown in Figure 18 is illustrated as a set of operations shown as discrete blocks. The process may be implemented in any suitable hardware, software, firmware, or combination thereof. The order in which the operations are described is not to be construed as a limitation.

[0069] At block 1802, a browser application 1410 receives an indication of a viewer request to view web-based content that includes a TV tag. For example, the user may enter a URL that is associated with the web content, or may select a link from another web page that causes the web content with the TV tag to be rendered.

[0070] At block 1804, the browser application 1410 retrieves contextually relevant television data based on parameters of the TV tag. For example, a tag that is associated with a particular television program and is configured to display the next five airings of the program causes the browser application to submit a search against a broadcast schedule database repository to identify the next five airings of the particular program. In an exemplary implementation, the search that is submitted returns broadcast schedule data that is filtered based on the user's timezone. Additionally or alternatively, the broadcast schedule data that is returned is filtered based on the channel lineup that is available to the user from the user's television programming provider.

[0071] At block 1806, the browser application 1410 determines the state of any actions associated with the particular TV tag. For example, if the TV tag is configured to enable a viewer to schedule a particular television program to be recorded, the browser application 1410 may query a recording device to determine whether or not the program is already scheduled to be recorded.

[0072] At block 1808, the browser application 1410 renders the web content and the associated TV tag data, according to the parameters of the TV tag.

[0073] In an alternate implementation, the retrieval of contextually relevant TV data based on the TV tag parameters (described above with reference to block 1804) is performed by a server system before the web-based content is sent to the browser application on the client system. In addition, the determination of the state of actions associated with TV tags (described above with reference to block 1806) may be performed by a server system or a client system.

Conclusion

[0074] As described above, TV tags embedded in web-based media content can be configured to provide television broadcast schedule data that is contextually relevant to the web-based content in which they are embedded. Furthermore, embedded TV tags can have associated actions that, for example, enable a television viewer to incrementally personalize a web-based television planner to display programs that the viewer is most interested in viewing. Although the systems and methods have been described in language specific to structural features and/or methodological steps, it is to be understood that the invention defined in the appended claims is not necessarily limited to the specific features or steps described. Rather, the specific features and steps are disclosed as preferred forms of implementing the claimed invention.

[0075] The following is a list of further preferred embodiments of the invention:

Embodiment 1. A method comprising:

- receiving data that describes a television broadcast schedule;
- rendering web-based content that is related to television entertainment; and
- rendering along with the content, a TV tag, the TV tag having an associated data element that can be associated with at least a portion of the data that describes a television broadcast schedule.

Embodiment 2. The method as recited in embodiment 1 wherein the data element comprises data associated with a particular person and the person comprises an actor.

Embodiment 3. The method as recited in embodiment 1 wherein the data element comprises data associated with a particular person and the person comprises a director.

Embodiment 4. The method as recited in embodiment 1 further comprising:
receiving an indication of a viewer selection of the TV tag; and
performing an action that is associated with the TV tag.

Embodiment 5. The method as recited in embodiment 4 wherein the action comprises scheduling a recording device to record a particular program that is associated with the TV tag.

Embodiment 6. The method as recited in embodiment 4 wherein the action comprises scheduling an alert system to generate an alert associated with a particular program that is associated with the TV tag.

Embodiment 7. The method as recited in embodiment 6 wherein the alert comprises an email message.

Embodiment 8. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computer system to perform the method as recited in embodiment 1.

Embodiment 9. A method comprising:
rendering an article that describes a particular television program;
rendering along with the article, a selectable TV tag that is associated with the particular television program;
receiving an indication of a viewer selection of the TV tag; and
transmitting personalization data based on the selected TV tag to a TV planner system that generates a personalized version of a television broadcast schedule.

Embodiment 10. A method comprising:
rendering content that describes a particular movie;
rendering along with the content, a selectable TV tag that is associated with the particular movie;
receiving an indication of a viewer selection of the TV tag; and
transmitting personalization data based on the selected TV tag to a TV planner system that generates a personalized version of a television broadcast schedule.

Embodiment 11. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computer system to perform the method as recited in embodiment 10.

Embodiment 12. A method comprising:
rendering content associated with a particular person;
rendering along with the content, a selectable TV tag that is associated with the particular person;
receiving an indication of a viewer selection of the TV tag; and
transmitting personalization data based on the selected TV tag to a TV planner system that generates a personalized version of a television broadcast schedule.

Embodiment 13. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computer system to perform the method as recited in embodiment 12.

Embodiment 14. A method comprising:
rendering an article associated with a particular sport;
rendering along with the article, a selectable TV tag that is associated with the particular sport;
receiving an indication of a viewer selection of the TV tag; and
transmitting personalization data based on the selected TV tag to a TV planner system that generates a personalized version of a television broadcast schedule.

Embodiment 15. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computer system to perform the method as recited in embodiment 14.

Embodiment 16. A method comprising:
receiving web-based content, the content having an associated TV tag that identifies a topic of the web-based content;
searching television broadcast schedule data for programs associated with the topic; and
rendering, along with the web-based content, a list of scheduled programs that are associated with the topic.

Embodiment 17. A method comprising:
receiving web-based media content;
identifying television entertainment data that may be associated with the web-based media content; and
associating a TV tag representing the television entertainment data with the web-based media content, such that the TV tag is rendered when the web-based media content is rendered.

Embodiment 18. The method as recited in embodiment 17 wherein the associating comprises adding an ASP.NET control that represents the television entertainment data to an ASP.NET Active Server page that represents the web-based media content.

Embodiment 19. The method as recited in embodiment 18 wherein the ASP.NET control comprises an ASP.NET user control.

Embodiment 20. The method as recited in embodiment 18 wherein the ASP.NET control comprises an ASP.NET server control.

Embodiment 21. The method as recited in embodiment 17 wherein the TV tag has an associated action that is automatically performed when a viewer selects a rendered version of the TV tag.

Embodiment 22. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computing system to perform the method as recited in embodiment 17.

Embodiment 23. A system, comprising:

- means for receiving web-based content;
- means for receiving television entertainment data; and
- means for embedding in the web-based content, a TV tag that represents a portion of the television entertainment data that is related to the web-based content.

Embodiment 24. The system as recited in embodiment 23, further comprising means for performing an action associated with the TV tag.

Embodiment 25. The system as recited in embodiment 24 wherein the means for performing an action comprises means for maintaining viewer personalization data based on the selection of the TV Tag.

Embodiment 26. The system as recited in embodiment 23, further comprising means for filtering the television entertainment data based on a timezone associated with a viewer.

Embodiment 27. The system as recited in embodiment 23, further comprising means for filtering the television entertainment data based on a channel lineup associated with a viewer.

Embodiment 28. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computing system to:

- receive web-based content that includes an embedded TV tag;
- perform a search for television broadcast schedule data based on the TV tag, and render the web-based content, replacing the embedded TV tag with results of the search.

Embodiment 29. The one or more computer-readable media as recited in embodiment 28 wherein the search returns a list of scheduled television programs that are associated with the web-based content.

Embodiment 30. The one or more computer-readable media as recited in embodiment 28 further comprising computer-executable instructions that, when executed, direct a computing system to:

- receive an indication of a viewer selection of a data element that represents at least a portion of the results of the search; and
- perform an action that is associated with the TV tag in relation to the data element.

Embodiment 31. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computing system to:

- receive an indication of a viewer selection of a TV tag, the TV tag being rendered with other web-based content, the TV tag having an associated television entertainment data element and an associated action; and
- perform the associated action with reference to the associated television entertainment data element.

Embodiment 32. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computing system to:

- receive an indication of a viewer selection of a TV tag, the TV tag being rendered with other web-based content, the TV tag representing a particular television program, and transmit personalization data to a TV planner system indicating that the viewer is interested in seeing a scheduled broadcast instance of the particular television program in a rendered per-
sonalized TV planner.

Embodiment 33. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computing system to:

receive an indication of a viewer selection of a TV tag, the TV tag being rendered with other web-based content, the TV tag representing a particular television program, and transmit personalization data to an alert system indicating that the viewer is interested in receiving an alert when the particular television program is scheduled for broadcast.

Embodiment 34. One or more computer-readable media comprising computer-executable instructions that, when executed, direct a computing system to:

receive an indication of a viewer selection of a TV tag, the TV tag being rendered with other web-based content, the TV tag representing a particular television program, and schedule a recording device to record a broadcast of the particular television program.

Claims

1. A method comprising:

rendering web-based content that is related to television entertainment;
rendering along with the content, a selectable TV tag, the TV tag having an associated action and an associated data element;
receiving an indication of a viewer selection of the TV tag; and
performing the associated action in relation to the associated data element based on the selection of the TV tag.

2. The method as recited in claim 1 wherein the web-based content comprises at least one of: program details associated with a particular television program, a description of a particular movie, an article that describes a particular television program, content associated with a particular sport, a celebrity biography, a news article, or an advertisement.

3. The method as recited in claim 1 or 2 wherein the data element comprises at least one of: data associated with a particular television series, television broadcast schedule data that is filtered based on a time zone, television broadcast schedule data that is filtered based on a channel lineup that is available from a television broadcast provider, data associated with a particular episode of a television series, data associated with a particular television program, data associated with a particular movie, data associated with a particular person, data associated with a particular sporting event, data associated with a particular sports team, or data associated with a particular broadcast channel.

4. The method as recited in one of claims 1 to 3 wherein the TV tag is used to display a portion of data that describes a television broadcast schedule, the portion being contextually relevant in relation to the web-based content.

5. The method as recited in one of claims 1 to 4 wherein the performing an action comprises providing personalization data based on the selected TV tag to a TV planner system that generates a personalized version of a television broadcast schedule.

6. The method as recited in claim 5 wherein the TV tag represents a particular television series, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing each episode of the particular television series that is scheduled to be broadcast.

7. The method as recited in claim 5 wherein the TV tag represents a particular episode of a particular television program, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing the particular episode of the particular television program that is scheduled to be broadcast.

8. The method as recited in claim 5 wherein the TV tag represents a particular television series, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing only new episodes of the particular television program that are scheduled to be broadcast.

9. The method as recited in claim 5 wherein the TV tag represents a particular scheduled airing of a particular movie, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing the particular scheduled airing of the particular movie.

10. The method as recited in claim 5 wherein the TV tag is associated with a particular movie and the providing comprises:
determining whether the particular movie is scheduled for television broadcast; and in an event that the particular movie is not scheduled for television broadcast, providing personalization data that indicates that the personalized version of the television broadcast schedule is to include data describing scheduled broadcasts of the particular movie at a later date when the movie is scheduled for television broadcast.

11. The method as recited in claim 5 wherein the TV tag is associated with a particular movie and the providing comprises:

   determining whether the particular movie is scheduled for television broadcast; and in an event that the particular movie is not scheduled for television broadcast, providing personalization data that indicates that the TV planner system is to automatically generate and send a reminder to the viewer when the particular movie is later scheduled for television broadcast.

12. The method as recited in claim 5 wherein the TV tag represents a particular actor, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing any program scheduled to be broadcast in which the particular actor has a leading role.

13. The method as recited in claim 5 wherein the TV tag represents a particular celebrity, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing any program scheduled to be broadcast in which the particular celebrity has a role.

14. The method as recited in claim 5 wherein the TV tag represents a particular celebrity, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing any program scheduled to be broadcast in which the particular celebrity has an appearance.

15. The method as recited in claim 14 wherein the program scheduled to be broadcast in which the particular celebrity has an appearance comprises a talk show on which the celebrity is a guest.

16. The method as recited in claim 5 wherein the TV tag is associated with a particular sporting event, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing any scheduled airing of the particular sporting event.

17. The method as recited in claim 5 wherein the TV tag is associated with a particular sports team, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing any scheduled airing of sporting events involving the particular sports team.

18. The method as recited in claim 5 wherein the TV tag is associated with a particular sports team, and wherein the personalization data indicates that the personalized version of the television broadcast schedule is to include data describing any scheduled airing of live sporting events involving the particular sports team.

19. The method as recited in one of claims 1 to 18 wherein the performing the associated action comprises maintaining personalization data based on the data element, the personalization data to be used to filter subsequent renderings of broadcast schedule data.

20. The method as recited in one of claims 1 to 19 wherein the data element identifies a particular television program, and wherein performing the associated action comprises scheduling a recording device to record the particular television program.

21. The method as recited in one of claims 1 to 20 wherein the performing the associated action comprises scheduling an alert system to generate an alert associated with the data element.

22. The method as recited in claim 21 wherein the data element identifies a particular television program, and the alert is generated when the particular television program is scheduled to be broadcast.

23. The method as recited in claim 21 or 22 wherein the alert comprises at least one of an email message, an Internet-based alert message, or an automated telephone call.

24. A system comprising:

   a program data repository to maintain television broadcast schedule data; a web server system to store and serve web-based content; and a TV tag generator to embed TV tags representing portions of the television broadcast schedule data in the web-based content such that when the web-based content is rendered, television broadcast schedule data associated
25. The system as recited in claim 24 wherein the TV tag generator is implemented as part of the web server system.

26. The system as recited in claim 24 or 25 further comprising:

- a network interface to receive viewer personalization data based on viewer-selection of a TV tag embedded in web-based media content;
- a personalization data repository to maintain the viewer personalization data; and
- a program data filter to filter the television broadcast schedule data based on the personalization data.

27. The system as recited in claim 26 further comprising

- a schedule transmitter to transmit a filtered television broadcast schedule to a viewer.
<table>
<thead>
<tr>
<th>Time</th>
<th>Channel</th>
<th>Program</th>
<th>Time</th>
<th>Channel</th>
<th>Program</th>
<th>Time</th>
<th>Channel</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 PM</td>
<td>PPV</td>
<td>Shrek</td>
<td>1:30 PM</td>
<td>KREM</td>
<td>As the World Turns</td>
<td>2:00 PM</td>
<td>KAYU</td>
<td>Texas Justice</td>
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<td>Days of Our Lives</td>
<td></td>
<td>KSPS</td>
<td>Terry Madden Watercolor</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>KGPX</td>
<td>Bonanza</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TDC</td>
<td>Home Matters</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>HSN</td>
<td>Mother's Day Gifts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PIN</td>
<td>Orange Clean</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>VP-CH</td>
<td>Southside Homes</td>
</tr>
</tbody>
</table>

**Figure 1**
Prior Art
### Entertainment

**MY TV PLANNER**

<table>
<thead>
<tr>
<th>Time</th>
<th>Program</th>
<th>Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 PM</td>
<td>Friends</td>
<td>NBC</td>
</tr>
<tr>
<td>8:30 PM</td>
<td>Scrubs</td>
<td>NBC</td>
</tr>
<tr>
<td>9:00 PM</td>
<td>Will &amp; Grace</td>
<td>NBC</td>
</tr>
<tr>
<td></td>
<td>CSI: Crime Scene Investigation</td>
<td>CBS</td>
</tr>
<tr>
<td></td>
<td>Frontline</td>
<td>PBS</td>
</tr>
<tr>
<td>9:30 PM</td>
<td>Good Morning, Miami</td>
<td>NBC</td>
</tr>
<tr>
<td></td>
<td>Sleepless in Seattle</td>
<td>TBS</td>
</tr>
<tr>
<td>10:00 PM</td>
<td>Friends</td>
<td>KICU</td>
</tr>
<tr>
<td></td>
<td>ER</td>
<td>NBC</td>
</tr>
<tr>
<td></td>
<td>Without a Trace</td>
<td>CBS</td>
</tr>
<tr>
<td></td>
<td>World's Greatest Hoaxes: Season 1</td>
<td>FXP</td>
</tr>
<tr>
<td>10:30 PM</td>
<td>Will &amp; Grace</td>
<td>NBC</td>
</tr>
</tbody>
</table>

**MY Shows**
- Track your favorite shows

**MY People**
- Track your favorite actors

**MY Teams**
- Track your favorite sports teams

**MY Topics**
- Track your favorite topics (drama, cooking, etc.)

**MY Channels**
- Track your favorite channels

---

**Figure 2**
### Entertainment

#### MY TV PLANNER

- **View Planner for**: Thu, April 3
- **Time**: 8 PM
- **Category**: All categories

<table>
<thead>
<tr>
<th>Time</th>
<th>Show</th>
<th>Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 PM</td>
<td><strong>Friends</strong></td>
<td>NBC</td>
</tr>
<tr>
<td>8:30 PM</td>
<td><strong>Scrubs</strong></td>
<td>NBC</td>
</tr>
<tr>
<td>9:00 PM</td>
<td><strong>Will &amp; Grace</strong></td>
<td>NBC</td>
</tr>
<tr>
<td>9:30 PM</td>
<td><strong>Sleepless in Seattle</strong></td>
<td>TBS</td>
</tr>
<tr>
<td>10:00 PM</td>
<td><strong>Friends</strong></td>
<td>KICU</td>
</tr>
<tr>
<td>10:30 PM</td>
<td><strong>Will &amp; Grace</strong></td>
<td>NBC</td>
</tr>
</tbody>
</table>

- **Critics Pick**: 312

- **My Shows**: ER, Friends

- **My People**: Tom Hanks

- **My Teams**: Track your favorite sports teams

- **My Topics**: Track your favorite topics (drama, cooking, etc.)

- **My Channels**: NBC

---

**Figure 3**
Entertainment

Program Details

Dateline NBC
Investigative journalism
Channel: KNTV 3
Airing Time: Tue 10/1, 10:00 PM (60 minutes)
Categories: General, Series, General/News, Series/Talk Show
Future airings of Dateline NBC:
• Fri 9/20  9:00 PM    3 KNTV (NBC)
• Fri 9/27  8:00 PM    3 KNTV (NBC)
• Sun 9/29  7:00 PM    3 KNTV (NBC)

Figure 4
## Entertainment

### Program Details

**Homeward Bound: The Incredible Journey**

An old golden retriever, a mutt and a cat try to find their way home through strange territory.

- **Channel:** Hallmark Channel 77
- **Airing Time:** Mon 5/26, 5:00 PM (120 minutes)
- **Categories:** General, Movies, General/Action/Adventure, General/Movies, Movies/Action and Adventure
- **MPAA Rating:** G
- **Star Rating:** ***
- **Release Year:** 1993
- **Lead Actors:** Don Adler, Ed Bernard
- **Actors:** Kevin Chevalia, Anne Christianson, Ted D'Arms, Kim Greist
- **Director:** Duwayne Dunham
- **Other Credits:** Franklin R. Levy, Jeffrey Chernov (Producer)

---

**Figure 5**
Entertainment

Program Details

MLB Baseball - Seattle Mariners at New York Mets
Channel: KSKN 22
Airing Time: Fri 6/6, 4:00 PM (180 minutes)
Categories: Sports, Sports/Baseball
Future airings of MLB Baseball - Seattle Mariners at New York Mets:
- Sun 6/8 10:00 AM 30 Fox Sports Northwest (Sports Regional)
- Sat 6/7 4:00 PM 30 Fox Sports Northwest (Sports Regional)
- Fri 6/6 4:00 PM 461 Game 1 (PAY)
- Sun 6/8 10:00 AM 462 Game 2 (PAY)

Add to my TV Planner
- Add this airing
- Track the Seattle Mariners
- Track all programs with the Seattle Mariners
- Track only live sporting events with the Seattle Mariners

- Track the New York Mets
- Track all programs with the New York Mets
- Track only live sporting events with the New York Mets

Figure 6
Figure 7
**Entertainment**

**Celebrity Biography**

Jim Carrey  
Actor  
Born: January 17, 1962

---

- Track this person in my TV Planner
- Track movies this person plays in
- Track movies this person directs
- Track television series this person is in
- Track talk shows this person appears on

**Figure 8**
### Program Details

**Homeward Bound: The Incredible Journey**  
An old golden retriever, a mutt and a cat try to find their way home through strange territory.  
**Categories:** General, Movies, General/Action/Adventure, General/Movies, Movies/Action and Adventure  
**MPAA Rating:** G  
**Star Rating:** ***  
**Release Year:** 1993  
**Lead Actors:** Don Adler, Ed Bernard  
**Actors:** Kevin Chevalia, Anne Christianson, Ted D'Arms, Kim Greist  
**Director:** Duwayne Dunham  
**Other Credits:** Franklin R. Levy, Jeffrey Chernov (Producer)  

**Next 5 Airings**  
- Channel 77 - 5/26 - 5:00 PM  
- Channel 77 - 5/29 - 8:00 PM  
- Channel 23 - 5/29 - 8:30 PM  
- Channel 46 - 6/4 - 10:30 AM  
- Channel 46 - 6/5 - 12:00 PM
Entertainment

Program Details

Homeward Bound: The Incredible Journey
An old golden retriever, a mutt and a cat try to find their way home through strange territory.
Channel: Hallmark Channel 77
Airing Time: Mon 5/26, 5:00 PM (120 minutes)
Categories: General, Movies, General/Action/Adventure, General/Movies, Movies/Action and Adventure
MPAA Rating: G
Star Rating: ***
Release Year: 1993
Lead Actors: Don Adler, Ed Bernard
Actors: Kevin Chevalia, Anne Christianson, Ted D'Arms, Kim Greist
Director: Duwayne Dunham
Other Credits: Franklin R. Levy, Jeffrey Chernov (Producer)

Record This Program
Recording of this program is currently NOT scheduled. Click here to schedule this program to be recorded.

Figure 10
Figure II

Related Programs Scheduled For Broadcast
5/30, 6:00 PM - National Geographic Special
6/1, 7:00 PM - Dumbo
6/2, 4:30 PM - Life at the Circus - A Documentary
Figure 12
Figure 13
Figure 14
Receive Program Data

Receive Viewer Request for TV Planner

Viewer-Specific Personalization Exists?

Yes

Filter Program Data Based on Personalization Data

Max Programs per Time Slot?

Yes

Add Non-Duplicate Critic Picks

No

Filter Program Data Based on Critic Picks

Transmit Personalized TV Planner Data to Requesting Viewer

Figure 15
Figure 16
1700

1702
Receive TV Program Data

1704
Receive Web-Based Content

1706
Identify TV Program Data associated with the Content

1708
Generate a TV Tag

1710
Embed the TV Tag in the Web-Based Content

1712
Publish the Web-Based Content with Embedded TV Tag

Figure 17
Receive User Request to View Web Content with TV Tag

Retrieve Contextually Relevant TV Schedule Data Associated with Tag

Determine State of Any Actions Associated with Tag

Render Web Content and TV Tag

Figure 18
A system for forming and processing program specific information suitable for terrestrial, cable or satellite broadcast

Program channels are allocated first and second identification numbers in packetized program information used in video processing and storage medium formats. Packetized program information is decoded (100) to provide data content of a program. Channel map information in the packetized program information is identified (60,22). The channel map includes a first identification number for use in identifying a first broadcast sub-channel and the first identification number is associated with a first broadcast source. The channel map also includes a second identification number for use in identifying the first broadcast sub-channel from among a group of sub-channels associated with the first identification number. The identified information is assembled (60,22) to form a channel map suitable for use in identifying a program transmitted on the first broadcast channel using the first and second identification numbers in conjunction.
Description

[0001] This invention is related to the formation of Program Guides, system information and program specific information for MPEG compatible processing. In video broadcasting and processing applications, digital video data is typically encoded to conform to the requirements of a known standard. One such widely adopted standard is the MPEG2 (Moving Pictures Expert Group) image encoding standard, hereinafter referred to as the "MPEG standard". The MPEG standard is comprised of a system encoding section (ISO/IEC 13818-1, 10th June 1994) and a video encoding section (ISO/IEC 13818-2, 20th January 1995). Data encoded to the MPEG standard is in the form of a packetized datastream which typically includes the data content of many program channels (e.g. content corresponding to cable television channels 1-125). Further, several digital services and channels may occupy the frequency spectrum previously occupied by a single analog channel. A 6 MHz bandwidth previously allocated to an analog NTSC compatible broadcast channel may now be split into a number of digital sub-channels offering a variety of services. For example, the broadcast spectrum for RF channel 13 may be allocated to sub-channels including a main program channel, a financial service channel offering stock quotes, a sports news service channel and a shopping and interactive channel. In addition, both the quantity of sub-channels transmitted and the individual sub-channel bandwidth may be changed dynamically to accommodate changing broadcast programming requirements.

[0002] In such a digital video system the proliferation in the quantity of services being broadcast and the increased variety of their content, as well as the ability of a broadcaster to dynamically vary the number and allocated bandwidth of these channels poses a number of problems. Specifically, the increase in the quantity of broadcast channels may increase the difficulty of tuning and lengthen the time required to acquire a selected program channel. Further, as the quantity of channels increases so does the quantity of ancillary program specific information required in decoding the transmitted program data. The ancillary program specific information includes data used in identifying and assembling packets comprising selected programs and also includes program guide and text information associated with the transmitted program data. The increased quantity and variety of ancillary information transmitted places an additional burden on available transmission bandwidth and receiver decoding and storage resources.

[0004] In addition, channel numbering in such a digital video system may present a problem. This is because a broadcaster may not want to lose an original analog NTSC broadcast channel number even though the broadcaster is transmitting several program channels in the frequency spectrum previously occupied by the single analog program channel. The broadcaster may have a significant investment in the channel number as a brand identity e.g. Fox 5™, Channel 13™. These problems and derivative problems are addressed by a system according to the present invention.

[0005] In a digital video system, individual program channels are allocated first and second identification numbers. The first identification number (a major number) is associated with an information provider. The second identification number (a minor number), is used in identifying a broadcast sub-channel from among a group of sub-channels associated with the first identification number. The first and second identification numbers in conjunction, are used in identifying data constituting a program transmitted on the broadcast sub-channel.

Brief Description of the Drawings

[0006] In the drawing:

Figure 1 is a block diagram of digital video receiving apparatus for demodulating and decoding broadcast signals, according to the principles of the invention.

Figure 2 shows a Master Guide Table (MGT) format for use in conveying program specific information, according to the invention.

Figure 3 shows a Channel Information Table (CIT) format for use in conveying program specific information incorporating dual program channel identification numbers, according to the invention.

Figure 4 shows a Service Location Descriptor (SLD) format for use in conveying program specific information incorporating program map information, according to the invention.

Figure 5 shows a program specific information text format for use in conveying program related text information, according to the invention.

Figure 6 shows a scheme for assigning a text message identifier as used in the text format of Figure 5.

Figure 7 shows a multiple compressed text string format for use in conveying program related text information, according to the invention.

Figures 8 and 9 show exemplary indicator definitions for compression and coding indicators within the multiple compressed text string format of Figure 7.

Figure 10 shows a method for generating program specific information according to the invention.

[0007] Figure 1 is a block diagram of a digital video receiving system for demodulating and decoding broadcast signals, according to the principles of the invention.
Although the disclosed system is described in the context of a system for receiving video signals incorporating program specific information including program guide data in MPEG compatible format, it is exemplary only. The program specific information may be of a variety of types. For example, it may comply with Program Specific Information (PSI) requirements specified in section 2.4.4 of the MPEG systems standard or it may comply with the high definition television (HDTV) signal standard Digital Television Standard for HDTV Transmission of April 12 1995, prepared by the United States Advanced Television Systems Committee (ATSC) or other ATSC standards. Alternatively, it may be formed in accordance with proprietary or custom requirements of a particular system.

[0008] The principles of the invention may be applied to terrestrial, cable, satellite, Internet or computer network broadcast systems in which the coding type or modulation format may be varied. Such systems may include, for example, non-MPEG compatible systems, involving other types of encoded data streams and other methods of conveying program specific information. Further, although the disclosed system is described as processing broadcast programs, this is exemplary only. The term ‘program’ is used to represent any form of packetized data such as audio data, telephone messages, computer programs, Internet data or other communications, for example.

[0009] In overview, in the video receiver system of Figure 1, a broadcast carrier modulated with signals carrying audio, video and associated data representing broadcast program content is received by antenna 10 and processed by unit 13. The resultant digital output signal is demodulated by demodulator 15. The demodulated output from unit 15 is trellis decoded, mapped into byte length data segments, deinterleaved and Reed-Solomon error corrected by decoder 17. The corrected output data from unit 17 is in the form of an MPEG compatible transport data stream containing program representative multiplexed audio, video and data components. The transport stream from unit 17 is demultiplexed into audio, video and data components by unit 22 which are further processed by the other elements of decoder system 100. In one mode, decoder 100 provides MPEG decoded data for display and audio reproduction on units 50 and 55 respectively. In another mode, the transport stream from unit 17 is processed by decoder 100 to provide an MPEG compatible data stream for storage on storage medium 105 via storage device 90.

[0010] A user selects for viewing either a TV channel or an on-screen menu, such as a program guide, by using a remote control unit 70. Processor 60 uses the selection information provided from remote control unit 70 via interface 65 to appropriately configure the elements of Figure 1 to receive a desired program channel for viewing. Processor 60 comprises processor 62 and controller 64. Unit 62 processes (i.e. parses, collates and assembles) program specific information including program guide and system information and controller 64 performs the remaining control functions required in operating decoder 100. Although the functions of unit 60 may be implemented as separate elements 62 and 64 as depicted in Figure 1, they may alternatively be implemented within a single processor. For example, the functions of units 62 and 64 may be incorporated within the programmed instructions of a microprocessor. Processor 60 configures processor 13, demodulator 15, decoder 17 and decoder system 100 to demodulate and decode the input signal format and coding type. Units 13, 15, 17 and subunits within decoder 100 are individually configured for the input signal type by processor 60 setting control register values within these elements using a bi-directional data and control bus C.

[0011] The transport stream provided to decoder 100 comprises data packets containing program channel data and program specific information. Unit 22 directs the program specific information packets to processor 60 which parses, collates and assembles this information into hierarchically arranged tables. Individual data packets comprising the User selected program channel are identified and assembled using the assembled program specific information. The program specific information contains conditional access, network information and identification and linking data enabling the system of Figure 1 to tune to a desired channel and assemble data packets to form complete programs. The program specific information also contains ancillary program guide information (e.g. an Electronic Program Guide - EPG) and descriptive text related to the broadcast programs as well as data supporting the identification and assembly of this ancillary information.

[0012] The program specific information is assembled by processor 60 into multiple hierarchically arranged and interlinked tables. An exemplary hierarchical table arrangement includes a Master Guide Table (MGT), a Channel Information Table (CIT), Event Information Tables (EITs) and optional tables such as Extended Text Tables (ETTs). The MGT contains information for acquiring program specific information conveyed in other tables such as identifiers for identifying data packets associated with the other tables. The CIT contains information for tuning and navigation to receive a User selected program channel. The EIT contains descriptive lists of programs (events) receivable on the channels listed in the CIT. The ETT contains text messages describing programs and program channels. Additional program specific information describing and supplementing items within the hierarchical tables is conveyed within descriptor information elements. The program specific information acquired by processor 60 via unit 22 is stored within internal memory of unit 60.

[0013] Considering Figure 1 in detail, a carrier modulated with signals carrying program representative audio, video and associated data received by antenna 10, is converted to digital form processed by input processor 13. Processor 13 includes radio frequency (RF) tuner
and intermediate frequency (IF) mixer and amplification stages for down-converting the input signal to a lower frequency band suitable for further processing. In this exemplary system, the input signal received by antenna 10 contains 33 Physical Transmission Channels (PTCs 0-32). Each Physical Transmission Channel (PTC) is allocated a 6 MHz bandwidth and contains, for example, up to 6 sub-channels.

[0014] It is assumed for exemplary purposes that a video receiver user selects a sub-channel (SC) for viewing using remote control unit 70. Processor 60 uses the selection information provided from remote control unit 70 via interface 65 to appropriately configure the elements of decoder 100 to receive the PTC corresponding to the selected sub-channel SC. Following down conversion, the output signal from unit 13 for the selected PTC has a bandwidth of 6 MHz and a center frequency in the range of 119-405 MHz. In the following discussion, an RF channel or Physical Transmission Channel (PTC) refers to an allocated broadcaster transmission channel band which encompasses one or more sub-channels (also termed virtual or logical channels).

[0015] Processor 60 configures the radio frequency (RF) tuner and intermediate frequency (IF) mixer and amplification stages of unit 13 to receive the selected PTC. The down-converted frequency output for the selected PTC is demodulated by unit 15. The primary functions of demodulator 15 are recovery and tracking of the carrier frequency, recovery of the transmitted data clock frequency, and recovery of the video data itself. Unit 15 also recovers sampling and synchronization clocks that correspond to transmitter clocks and are used for timing the operation of processor 13, demodulator 15 and decoder 17. The recovered output from unit 15 is provided to decoder 17.

[0016] The output from demodulator 15 is mapped into byte length data segments, deinterleaved and Reed-Solomon error corrected according to known principles by unit 17. In addition, unit 17 provides a Forward Error Correction (FEC) validity or lock indication to processor 60. Reed-Solomon error correction is a known type of Forward Error Correction. The FEC lock indication that the Reed-Solomon error correction is synchronized to the being corrected and is providing a valid output. It is to be noted that the demodulator and decoder functions implemented by units 13, 15 and 17 are individually known and generally described, for example, in the reference text *Digital Communication*, Lee and Messerschmidt (Kluwer Academic Press, Boston, MA, USA, 1988).

[0017] The corrected output data from unit 17 is processed by MPEG compatible transport processor and demultiplexer 22. The individual packets that comprise either particular program channel content, or program specific information, are identified by their Packet Identifiers (PIIDs). Processor 22 separates data according to type based on an analysis of Packet Identifiers (PIIDs) contained within packet header information and provides synchronization and error indication information used in subsequent video, audio and data decompression.

[0018] The corrected output data provided to processor 22 is in the form of a transport data stream containing program channel content and program specific information for many programs distributed through several sub-channels. The program specific information in this exemplary description describes sub-channels present in a transport stream of a particular PTC. However, in another embodiment the program specific information may also describe sub-channels located in other PTCs and conveyed in different transport streams. Groups of these sub-channels may be associated in that their source is a particular broadcaster or they occupy the transmission bandwidth previously allocated to an analog NTSC compatible broadcast channel. Further, individual packets that comprise a selected program channel in the transport stream are identified and assembled by processor 60 operating in conjunction with processor 22 using PID's contained in the program specific information.

[0019] The program specific information is in the form of hierarchically arranged tables including an MGT, CIT, EIT, and ETT together with supplementary descriptor information. The PID that identifies packets comprising the MGT data is predetermined and stored within processor 60 internal memory. Further, the MGT conveys the that identify the CIT, EIT, and ETT data and conveys other information indicating the size of these tables. Processor 60 monitors the MGT for updates to identify any changes in PIDs or table sizes. Therefore, after processor 60 determines from the FEC lock indication provided by unit 17 that valid data is being provided to transport processor 22, the MGT may be acquired without additional PID information. Using Control signal C, processor 60 configures transport processor 22 to select the data packets comprising the remaining program specific information including the CIT, EIT and ETT data. Processor 22 matches the PIDs of incoming packets provided by unit 17 with PID values pre-loaded in control registers within unit 22 by processor 60. Further, processor 60 accesses, parses and assembles the program specific information packets captured by processor 22 and stores the program specific information within its internal memory. Processor 60 derives tuning parameters including PTC carrier frequency, demodulation characteristics, and sub-channel PIDs, from the acquired program specific information. Processor 60 uses this information in configuring units 13, 15, 17 and decoder 100 to acquire selected sub-channel (SC) program content.

[0020] The program specific information including MGT, CIT, EIT, and ETT data and associated descriptors acquired and collated by processor 60 incorporates advantageous features exemplified in the data formats presented in Figures 2-9. These features facilitate the identification, acquisition, assembly and decoding of program channel content and associated program guide data by decoder 100 (Figure 1). Processor 60 forms a MGT as exemplified by the data format of Figure 2 by accessing
and assembling the program specific information packets that are stored in the unit 60 internal memory. The MGT contains data identifiers e.g. PID_ETT 205 and PID_PG210 (Figure 2) enabling the assembly of the CIT, EIT and ETT tables. Processor 60 uses the MGT data identifiers to access and assemble the program specific information packets to form the CIT, EIT, and ETT data and associated descriptors.

[0021] Processor 60 uses the acquired CIT channel map information, as exemplified in Figure 3, to identify the packets comprising the sub-channel SC that the User selected to view. A user selects sub-channel SC for viewing by entering two program channel numbers via remote control unit 70 and interface 65. Individual program channels are advantageously allocated both a first and a second identification number. The first identification number (a major number as indicated by bundle_number 300 in Figure 3) identifies the broadcast source and broadcaster channel brand number e.g. Fox 5™, Channel 13™. The first identification number indicates a broadcast source of a program or service and may be independent of the RF channel on which the program is broadcast. However, in other embodiments the first identification number may be associated with a broadcast RF channel or be associated with other program characteristics such as a program category or theme e.g. movies. The second identification number (a minor number as indicated by channel_number_in_bundle 305 in Figure 3) identifies a sub-channel corresponding to a specific service within a group of services provided by a broadcaster. The first and second identification numbers in conjunction identify a particular service as a sub-channel provided by a specific broadcaster. Although, the selected sub-channel SC may occupy an RF bandwidth within an encompassing channel spectrum associated with the broadcast source, neither the first or second identification numbers are associated with such a spectrum. However, this association may be made in an alternative embodiment. This dual numbering system enables a broadcaster to retain channel brand identity across a range of dynamically allocable broadcast sub-channels.

[0022] The dual program channel identification numbers used to select sub-channel SC may be entered by the user in a variety of ways. These may include using remote unit 70 to select sub-channel SC from within a hierarchical menu system displaying program channel selections in a program guide or by simple sequential number entry via the unit 70 keypad, for example. The channel selection system may also encompass the use of a different data entry device such as a keyboard or discrete switches, for example. Further, the data entry system also accommodates the entry of a single channel identification number as well as dual identification numbers. Upon detecting a channel selection completion command, processor 60 converts a single channel identification number entry into dual identification numbers. Processor 60 converts the single channel identification number to dual channel identification numbers in accordance with a predetermined conversion map. This conversion may also be performed using a predetermined and stored algorithm or formula. The derived dual identification numbers are used by processor 60 for packet identification, tuning and for identifying other decoder information in the manner previously described as if both numbers had been entered by a user.

[0023] Processor 60 uses the received program channel identification numbers 300 and 305 provided from remote control unit 70 via interface 65 to determine the PTC corresponding to the selected sub-channel SC from the CIT. Once the PTC number (item 315 in Figure 3) is determined, processor 60 (Figure 1) configures units 13, 15, and 17 to receive the PTC for the selected sub-channel SC. The unique program sub-channel determined from the program channel identification numbers 300 and 305 may alternatively be termed a service or a virtual channel or a logical channel and the CIT may be deemed a virtual channel table. Further, as well as associating a particular PTC with first and second sub-channel identification numbers 300 and 305 of selected sub-channel SC, the CIT also associates other parameters with SC. These parameters include (a) a channel_id 320 for linking the selected sub-channel SC with program content information conveyed in the EITs, (b) a channel_type indicator 325 identifying whether the sub-channel data is, analog e.g. NTSC, digital video e.g. ATSC or digital audio e.g. ATSC audio, (c) an ETM_flag 3 3 0 indicating whether a text message is available for this sub-channel, (d) a channel name 340 and (e) a descriptor 335 e.g. a Service Location Descriptor as described later.

[0024] Processor 60 advantageously determines program map information for the selected sub-channel SC from Service Location Descriptor (SLD) conveyed within the CIT. The SLD program map information is exemplified by the data format of Figure 4. The SLD associates the selected sub-channel SC with packet identifiers, e.g. item 420, used to identify individual packetized data streams that constitute the components of a program being transmitted on selected sub-channel SC. In addition, the SLD program map information, in conjunction with the CIT, maps the selected sub-channel SC to a program number 405, a PCR (Program Clock Reference) identifier 410, a language code indicator 425, and a stream type identifier 415 identifying a stream as video, audio, control, auxiliary or private information, for example.

[0025] The SLD program map information replicates information already present within the Program Map Table (PMT) segment of the MPEG compatible transport stream input to decoder 100. However, by incorporating the SLD within the CIT, the time required by decoder 100 to identify and acquire a program being transmitted on selected sub-channel SC is advantageously reduced. This is because the CIT and SLD provide formatted and linked information sufficient to enable processor 60 to directly configure and tune the system of Figure 1 to receive the selected sub-channel SC. Specifically, the CIT and SLD directly associate individual first and second
sub-channel identification numbers with the PIDs for identifying the data streams that constitute a program being conveyed on this sub-channel. This enables processor 60 to configure the system of Figure 1 to receive the selected sub-channel SC without acquiring and using the Program Map Table (PMT) information in the MPEG compatible transport stream input to decoder 100. In addition, the data partitioning, data formatting and data repetition frequency characteristics of the CIT and SLD program map information may be determined independently of the requirements of MPEG PMT information.

[0026] The packetized decoded transport stream input to decoder 100 from unit 17 contains video, audio and data representing TV programs, for example, and also contains sub-picture data. The sub-picture data contains picture elements associated with programs and channels selectable by a user for viewing including program guides, display commands, subtitling, selectable menu options or other items, for example. As such, the sub-picture data includes the EIT containing descriptive lists of programs (events) receivable on the sub-channels listed in the CIT and also contains the ETT containing text messages describing programs and program sub-channels.

[0027] Processor 60 determines from the CIT and SLD the PIDs of the video, audio and sub-picture streams constituting the program being transmitted on selected sub-channel SC. Processor 22, matches the PIDs of incoming packets provided by decoder 17 with PID values of the video, audio and sub-picture streams being transmitted on sub-channel SC. These PID values are pre-loaded in control registers within unit 22 by processor 60. In this manner, processor 22 captures packets constituting the program transmitted on sub-channel SC and forms them into MPEG compatible video, audio and sub-picture streams for output to video decoder 25, audio decoder 35 and sub-picture processor 30 respectively. The video and audio streams contain compressed video and audio data representing the selected sub-channel SC program content. The sub-picture data contains the EIT and ETT information associated with the sub-channel SC program content.

[0028] Decoder 25 decodes and decompresses the MPEG compatible packetized video data from unit 22 and provides decompressed program representative pixel data to NTSC encoder 45 via multiplexer 40. Similarly, audio processor 35 decodes the packetized audio data from unit 22 and provides decoded and amplified audio data, synchronized with the associated decompressed video data, to device 55 for audio reproduction. Processor 30 decodes and decompresses sub-picture data received from unit 22.

[0029] The sub-picture data decoded by processor 30 includes text (Extended Text Messages - ETMs) in an ETT in the exemplary data format presented in Figure 5. The text messages conveyed in the ETT of Figure 5 are advantageously partitioned into time periods of specified duration. The segmented text messages describe programs occurring in a period of specified duration and start time e.g. 3 hour blocks starting from 12 a.m., 3 p.m., 6 p.m., etc. Indicators defining the duration and start time applicable to the conveyed text messages are included in the MGT of Figure 2 (duration item 215 and application_time item 220 of Figure 2 respectively). A text message (e.g. extended_text_message 505) is conveyed together with a text message identifier (ETM id 510) in the of Figure 5.

[0030] Decoder 100 (Figure 1) is able to more efficiently acquire, process and store program descriptive text messages that are partitioned into time periods of specified duration than is possible in the absence of such segmentation. This is because segmented text messages exclude information occurring outside the specified time period and consequently are smaller than non-segmented text messages. Therefore, segmented text message data occupies less storage space and can be acquired and processed more quickly than larger data blocks of non-segmented data. Further, the data format of Figure 5 allows a user to acquire text message data for a selected sub-channel SC or a group of selected program sub-channels. This allows the identification, acquisition and decoding of text message data by decoder 100 to be focused on the programs and sub-channels of interest to a user and reduces the acquisition of redundant text message information.

[0031] A text message conveyed in an ETT may contain channel information or program (event) information. Figure 6 shows an exemplary format for assigning a text message identifier ETM_id 510 of Figure 5 that identifies the type of text message e.g. whether the text message contains channel information (item 610 of Figure 6) or program information (item 605 of Figure 6). The text message identifier 510 (Figure 5) also identifies the source e.g. sub-channel to which the text message pertains.

[0032] A text message 505 conveyed in the ETT of Figure 5 is compressed and formatted according to the multiple compressed text string format of Figure 7. The compressed text string format advantageously incorporates indicators facilitating the identification and decoding of multiple compressed text strings by processor 30 in decoder 100 of Figure 1. Processor 30 decodes text string 505 (Figure 5) received from unit 22 (Figure 1) by determining the compression, coding and language characteristics of the text string from indicators 705, 710 and 715 (Figure 7) respectively. Specifically, processor 30, operating in conjunction with processor 60, decompresses received text string 505 by applying a decompression function e.g. a Huffman decompression function, selected using indicator 705. Similarly, processor 30, decodes the received text string by applying a decoding function interpreting text characters according to a character code set selected using indicator 710 and a language code set selected using indicator 715. Further, processor 30 determines the number of text strings to be processed and the number of bytes in each text string from indicators 725 and 720 respectively.
Figure 8 shows an exemplary indicator definition for compression indicator 705 within the multiple compressed text string format of Figure 7. It is to be noted that compression indicator 705 may indicate that no compression function is employed within a text string. In this case, processor 30 does not apply a decompression function to the text string received from unit 22. Figure 9 shows an exemplary indicator definition for coding indicator 710 within the multiple compressed text string format of Figure 7.

Processor 30 assembles and formats the decoded and decompressed text string elements of text string 505 (Figure 5) to form a decoded text string for output to On-Screen Display (OSD) and graphics generator 37 (Figure 1). Unit 37 interprets and formats the text string character data from unit 30 and generates formatted pixel mapped text and graphics data for presentation on unit 50. The formatted pixel mapped text and graphics data may represent a program guide or other type of menu or user interface for subsequent display on unit 50. Unit 37 also processes EIT, ETT and other information to generate pixel mapped data representing, subtitles, control and information menu displays including selectable menu options, and other items, for presentation on unit 50. The control and information displays enable function selection and entry of device operating parameters for User operation of decoder 100.

The text and graphics produced by OSD generator 37 are generated in the form of overlay pixel map data under direction of processor 60. The overlay pixel map data from unit 37 is combined and synchronized with the decompressed pixel representative data from MPEG decoder 25 in encoder 45 via multiplexer 40 under direction of processor 60. Combined pixel map data representing a video program on sub-channel SC together with associated sub-picture text message data is encoded by NTSC encoder 45 and output to device 50 for display.

In a storage mode of the system of Figure 1, the corrected output data from unit 17 is processed by decoder 100 to provide an MPEG-compatible data stream for storage. In this mode, a program is selected for storage by a user via remote unit 70 and interface 65. Processor 22, in conjunction with processor 60 forms condensed program specific information including MGT, CIT, EIT and ETT data and descriptors containing the advantageous features previously described. The condensed program specific information supports decoding of the program selected for storage but excludes unrelated information. Processor 60, in conjunction with processor 22 forms a composite MPEG compatible data stream containing packetized content data of the selected program and associated condensed program specific information. The composite data stream is output to storage interface 95.

Storage interface 95 buffers the composite data stream to reduce gaps and bit rate variation in the data. The resultant buffered data is processed by storage device 90 to be suitable for storage on medium 105. Storage device 90 encodes the buffered data stream from interface 95 using known error encoding techniques such as channel coding, interleaving and Reed Solomon encoding to produce an encoded data stream suitable for storage. Unit 90 stores the resultant encoded data stream incorporating the condensed program specific information on medium 105.

Figure 10 shows a method for generating program specific information including MGT, CIT, EIT and ETT data and descriptors containing the advantageous features previously described. The method may be employed at an encoder for broadcasting video data such as the data received by antenna 10 of Figure 1 or the method may be employed within a decoder unit such as within processor 60 of Figure 1.

Following the start at step 800 of Figure 10, a CIT is generated in step 810. The CIT contains sub-channel and program identification information enabling acquisition of available broadcast programs and sub-channels. The CIT incorporates first and second sub-channel identification numbers and an SLD containing packet identifiers for identifying individual packetized data streams that constitute individual programs to be transmitted on particular sub-channels. The generated CIT also incorporates items linked to listed program sub-channels including a program number, a PCR (Program Clock Reference) identifier, a language code indicator, and a stream type identifier, as previously described in connection with Figure 1.

In step 815, an EIT is generated containing program guide information including descriptive lists of programs (events) receivable on the sub-channels listed in the CIT. In step 820, an ETT is generated containing text messages describing programs, for example. Each text message is partitioned into time periods of specified duration. The duration and application time of the segmented text message data is also defined by indicators in the ETT itself. The text message data is encoded and compressed according to known techniques and conveyed in the ETT along with indicators defining the compression, coding and language characteristics employed. The ETT is also generated to include indicators defining the number of text strings to be processed and the number of bytes in each text string. In step 822 an MGT is generated containing data identifiers enabling the identification and assembly of CIT, EIT and ETT information. The MGT also conveys table size information for the previously generated CIT, EIT and ETT.

In step 825, program specific information is formed including the MGT, CIT, EIT and ETT data and descriptors generated in steps 805-822. In step 830, the program specific information together with video and audio program representative components for multiple sub-channels is formatted into a transport stream for output. In step 835, the output transport stream is further processed to be suitable for transmission to another device such as a receiver, video server, or storage device for...
recording on a storage medium, for example. The processes performed in step 835 include known encoding functions such as data compression Reed-Solomon encoding, interleaving, scrambling, trellis encoding, and carrier modulation. The process is complete and terminates at step 840. In the process of Figure 10, multiple CIC, EIT and ETT tables may be formed and incorporated in the program specific information in order to accommodate expanded numbers of sub-channels.

[0042] The architecture of Figure 1 is not exclusive. Other architectures may be derived in accordance with the principles of the invention to accomplish the same objectives. Further, the functions of the elements of decoder 100 of Figure 1 and the process steps of Figure 10 may be implemented in whole or in part within the programmed instructions of a microprocessor. In addition, the principles of the invention apply to any form of MPEG or non-MPEG compatible electronic program guide. A datastream formed according to the invention principles may be used in a variety of applications including video server or PC type communication via telephone lines, for example. A program datastream with one or more components of video, audio and data formed to incorporate program specific information according to invention principles may be recorded on a storage medium and transmitted or re-broadcast to other servers, PCs or receivers. Further, any reference herein to "bandwidth" is to be interpreted expansively to include bit rate capacity and is not limited to a frequency spectrum, for example.

Claims

1. Apparatus for forming program guide information suitable for decoding MPEG compatible packetized program information containing program map information to provide decoded program data, comprising:

- means for forming channel map information;
- and
- means for incorporating said channel map information into packetized program guide information for output,

wherein said channel map information replicates information conveyed in said MPEG compatible program map information and said replicated information associates a broadcast channel with packet identifiers used to identify individual packetized datastreams that constitute a program transmitted on said broadcast channel.

2. Apparatus according to claim 1, wherein said channel map information further associates an individual program with a corresponding program clock reference (PCR) value.

3. Apparatus according to claim 1, wherein said channel map information further associates an individual program with a corresponding language type indicator.

4. Apparatus according to claim 1, wherein said channel map information further associates said packet identifiers with first and second identification numbers used in conjunction to identify said broadcast channel.

5. Apparatus according to claim 1, wherein said information associating said broadcast channel with said packet identifiers is conveyed within a descriptor section of said channel map information.

6. Apparatus according to claim 5, wherein said channel map information associates a plurality of broadcast channels with corresponding descriptor sections.

7. Apparatus according to claim 1, wherein said channel map information further associates a datastream type indicator with an individual packetized datastream, said datastream type indicator identifying whether said individual packetized datastream contains at least one of a) audio information, and b) video information.

8. A method for forming program guide information suitable for decoding MPEG compatible packetized program information containing program map information to provide decoded program data, comprising the steps of:

- forming channel map information; and
- incorporating said channel map information into packetized program guide information for output,

wherein said channel map information replicates information conveyed in said MPEG compatible program map information and said replicated information associates a broadcast channel with packet identifiers used to identify individual packetized datastreams that constitute a program transmitted on said broadcast channel.
### Bit Stream Syntax for the Master Guide Table

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Bits</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>master_guide_table_section ()</code> {</td>
<td></td>
<td></td>
</tr>
<tr>
<td><code>table_id</code></td>
<td>8</td>
<td>0xE0</td>
</tr>
<tr>
<td><code>section_syntax_indicator</code></td>
<td>1</td>
<td>'1'</td>
</tr>
<tr>
<td><code>private_indicator</code></td>
<td>1</td>
<td>'1'</td>
</tr>
<tr>
<td><code>reserved</code></td>
<td>2</td>
<td>'11'</td>
</tr>
<tr>
<td><code>private_section_length</code></td>
<td>12</td>
<td>uint16bf</td>
</tr>
<tr>
<td><code>table_id_extension</code></td>
<td>16</td>
<td>0x0000</td>
</tr>
<tr>
<td><code>reserved</code></td>
<td>2</td>
<td>'11'</td>
</tr>
<tr>
<td><code>version_number</code></td>
<td>5</td>
<td>uint8bf</td>
</tr>
<tr>
<td><code>current_next_indicator</code></td>
<td>1</td>
<td>'1'</td>
</tr>
<tr>
<td><code>section_number</code></td>
<td>8</td>
<td>0x0000</td>
</tr>
<tr>
<td><code>last_section_number</code></td>
<td>8</td>
<td>0x0000</td>
</tr>
<tr>
<td><code>reserved</code></td>
<td>3</td>
<td>'111'</td>
</tr>
<tr>
<td><code>CRT_version_number</code></td>
<td>5</td>
<td>uint8bf</td>
</tr>
<tr>
<td><code>zero</code></td>
<td>4</td>
<td>'0000'</td>
</tr>
<tr>
<td><code>num_pg</code></td>
<td>4</td>
<td>uint8bf</td>
</tr>
<tr>
<td>for (i = 0; i &lt; num_pg; i++) PG(i) {</td>
<td></td>
<td></td>
</tr>
<tr>
<td><code>application_time</code></td>
<td>40</td>
<td>uint32bf</td>
</tr>
<tr>
<td><code>duration</code></td>
<td>16</td>
<td>uint16bf</td>
</tr>
<tr>
<td><code>reserved</code></td>
<td>2</td>
<td>'11'</td>
</tr>
<tr>
<td><code>CRT_flag</code></td>
<td>1</td>
<td>blsbf</td>
</tr>
<tr>
<td><code>num_bytes</code></td>
<td>21</td>
<td>uint8bf</td>
</tr>
<tr>
<td><code>reserved</code></td>
<td>3</td>
<td>'111'</td>
</tr>
<tr>
<td><code>PID_PG[i]</code></td>
<td>13</td>
<td>uint8bf</td>
</tr>
<tr>
<td><code>reserved</code></td>
<td>3</td>
<td>'111'</td>
</tr>
<tr>
<td><code>PID_ETT[i]</code></td>
<td>13</td>
<td>uint8bf</td>
</tr>
<tr>
<td><code>reserved</code></td>
<td>4</td>
<td>uint8bf</td>
</tr>
<tr>
<td>for (j = 0; j &lt; M; j++) descriptor ()</td>
<td></td>
<td>var</td>
</tr>
<tr>
<td><code>reserved</code></td>
<td>4</td>
<td>uint8bf</td>
</tr>
<tr>
<td><code>descriptors_length</code></td>
<td>12</td>
<td>uint8bf</td>
</tr>
<tr>
<td>for (i = 0; i &lt; N; i++) descriptor ()</td>
<td></td>
<td>var</td>
</tr>
<tr>
<td><code>CRC_32</code></td>
<td>32</td>
<td>rphcush</td>
</tr>
</tbody>
</table>
Bit Stream Syntax for the Channel Information Table

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Bits</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>channel_guide_table_section() {</td>
<td></td>
<td></td>
</tr>
<tr>
<td>table_id</td>
<td>8</td>
<td>0xE3</td>
</tr>
<tr>
<td>section_syntax_indicator</td>
<td>1</td>
<td>'1'</td>
</tr>
<tr>
<td>private_indicator</td>
<td>1</td>
<td>'1'</td>
</tr>
<tr>
<td>reserved</td>
<td>2</td>
<td>'11'</td>
</tr>
<tr>
<td>section_length</td>
<td>12</td>
<td>uimsbf</td>
</tr>
<tr>
<td>table_id_extension</td>
<td>16</td>
<td>uimsbf</td>
</tr>
<tr>
<td>reserved</td>
<td>2</td>
<td>'11'</td>
</tr>
<tr>
<td>version_number</td>
<td>5</td>
<td>uimsbf</td>
</tr>
<tr>
<td>current_next_indicator</td>
<td>1</td>
<td>'1'</td>
</tr>
<tr>
<td>section_number</td>
<td>8</td>
<td>uimsbf</td>
</tr>
<tr>
<td>last_section_number</td>
<td>8</td>
<td>uimsbf</td>
</tr>
<tr>
<td>num_channels_in_section</td>
<td>8</td>
<td>uimsbf</td>
</tr>
<tr>
<td>for (k=0; k&lt;num_channels_in_section;k++) cha_info(k){</td>
<td></td>
<td></td>
</tr>
<tr>
<td>short_name</td>
<td>8*6</td>
<td>ISO-639</td>
</tr>
<tr>
<td>channel_visibility</td>
<td>32</td>
<td>bslbf</td>
</tr>
<tr>
<td>bundle_channel_number{</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bundle_number</td>
<td>12</td>
<td>uimsbf</td>
</tr>
<tr>
<td>channel_number_in_bundle</td>
<td>12</td>
<td>uimsbf</td>
</tr>
<tr>
<td>}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channel_PTC</td>
<td>8</td>
<td>uimsbf</td>
</tr>
<tr>
<td>channel_id</td>
<td>16</td>
<td>uimsbf</td>
</tr>
<tr>
<td>channel_type</td>
<td>8</td>
<td>uimsbf</td>
</tr>
<tr>
<td>reserved</td>
<td>3</td>
<td>'111'</td>
</tr>
<tr>
<td>ETM_flag</td>
<td>1</td>
<td>bslbf</td>
</tr>
<tr>
<td>descriptors_length</td>
<td>12</td>
<td>uimsbf</td>
</tr>
<tr>
<td>for (i=0;i&lt;N;i++){</td>
<td></td>
<td></td>
</tr>
<tr>
<td>descriptors()</td>
<td></td>
<td></td>
</tr>
<tr>
<td>}</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CRC_32</td>
<td>32</td>
<td>rpchof</td>
</tr>
</tbody>
</table>

**FIGURE 3**
Bit Stream Syntax for the Service Location Descriptor

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Bits</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>service_location_descriptor()</td>
<td>8</td>
<td>uimsbf</td>
</tr>
<tr>
<td>descriptor_tag</td>
<td>8</td>
<td>uimsbf</td>
</tr>
<tr>
<td>descriptor_length</td>
<td>16</td>
<td>uimsbf</td>
</tr>
<tr>
<td>program_number</td>
<td>3</td>
<td>'111'</td>
</tr>
<tr>
<td>reserved</td>
<td>13</td>
<td>uimsbf</td>
</tr>
<tr>
<td>PCR_PID</td>
<td>6</td>
<td>uimsbf</td>
</tr>
<tr>
<td>number_PIDs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>for (i=1;i&lt;number_PIDs;i++)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stream_type</td>
<td>8</td>
<td>uimsbf</td>
</tr>
<tr>
<td>reserved</td>
<td>3</td>
<td>bslbf</td>
</tr>
<tr>
<td>elementary_PID</td>
<td>13</td>
<td>uimsbf</td>
</tr>
<tr>
<td>ISO_639_language_code</td>
<td>8*3</td>
<td>uimsbf</td>
</tr>
</tbody>
</table>

FIGURE 4
Bit Stream Syntax for the Extended Text Table

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Bits</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>extended_text_table_section    ()</td>
<td>8</td>
<td>0xE5</td>
</tr>
<tr>
<td>table_id</td>
<td></td>
<td></td>
</tr>
<tr>
<td>section_syntax_indicator</td>
<td>1</td>
<td>'0'</td>
</tr>
<tr>
<td>private_indicator</td>
<td>1</td>
<td>'1'</td>
</tr>
<tr>
<td>reserved</td>
<td>2</td>
<td>'11'</td>
</tr>
<tr>
<td>private_section_length</td>
<td>12</td>
<td>uimsbf</td>
</tr>
<tr>
<td>ETM_id</td>
<td>32</td>
<td>bsbf</td>
</tr>
<tr>
<td>extended_text_message          ()</td>
<td></td>
<td>var</td>
</tr>
</tbody>
</table>

FIGURE 5

<table>
<thead>
<tr>
<th>Bit</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>18</th>
<th>19</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>channel ETM_id</td>
<td>0</td>
<td>0</td>
<td>channel_id</td>
<td>111...11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>event ETM_id</td>
<td>1</td>
<td>0</td>
<td>channel_id</td>
<td>event_id</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FIGURE 6
Bit Stream Syntax for multiple compressed strings

Syntax | Bits  | Format |
--------|-------|--------|
`multiple_compressed_strings () {` | | |
`number_strings` | 8 | uimbsf |
`for (i = 0;i< number_strings;i++) {` | | |
`number_bytes` | 16 | uimbsf |
`ISO_639_language_code` | 8*3 | uimbsf |
`coding_indicator` | 8 | bs1bf |
`compression_type` | 8 | uimbsf |
`for (j = 0;j<number_bytes;j++)` | | |
`compressed_string_byte [j]` | 8 | uimbsf |
`}` | | |
`}` | | |

FIGURE 7

<table>
<thead>
<tr>
<th>compression_type</th>
<th>compression method</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>No compression</td>
</tr>
<tr>
<td>0x01</td>
<td>Huffman coding based on the default Huffman table</td>
</tr>
<tr>
<td>0x02</td>
<td>LZW</td>
</tr>
<tr>
<td>0x03 to 0xAF</td>
<td>reserved</td>
</tr>
<tr>
<td>0x0B0 to 0xFF</td>
<td>user private</td>
</tr>
</tbody>
</table>

FIGURE 8

<table>
<thead>
<tr>
<th>coding_indicator</th>
<th>coding method</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00</td>
<td>Unicode</td>
</tr>
<tr>
<td>0x01</td>
<td>Latin-1</td>
</tr>
<tr>
<td>0x02</td>
<td>Latin-2</td>
</tr>
<tr>
<td>0x03 to 0xAF</td>
<td>reserved</td>
</tr>
<tr>
<td>0x0B0 to 0xFF</td>
<td>user private</td>
</tr>
</tbody>
</table>

FIGURE 9
FIGURE 10

START

800

GENERATE CHANNEL INFORMATION TABLE (CIT)
INCORPORATING:
1) DUAL CHANNEL IDENTIFICATION NUMBERS, &
2) A SERVICE LOCATION DESCRIPTOR (SLD)

810

GENERATE AN EVENT INFORMATION TABLE (EIT)
INCORPORATING PROGRAM GUIDE INFORMATION
DESCRIBING AVAILABLE PROGRAMS AND CHANNELS

815

GENERATE AN EXTENDED TEXT TABLE (ETT) INCORPORATING:
1) SEGMENTED TEXT MESSAGES, &
2) COMPRESSION, LANGUAGE AND CODING TYPE
INDICATORS

820

GENERATE MASTER GUIDE TABLE (MGT)
INCORPORATING IDENTIFIERS FOR USE
IN ASSEMBLING OTHER TABLES

822

FORMAT PROGRAM SPECIFIC INFORMATION
INCORPORATING MGT, CIT, EIT, ETT AND DESCRIPTORS

825

INCORPORATE PROGRAM SPECIFIC INFORMATION
INTO VIDEO PROGRAM DATASTREAM TO FORM
VIDEO OUTPUT DATA

830

PROCESS VIDEO OUTPUT DATA
FOR TRANSMISSION

835

END 840
A1

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(21) International Application Number: PCT/US99/21597

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(57) Abstract

An interactive television program guide system with digital storage is provided. The program guide gives users the ability to store information associated with recorded programs in a directory in the digital storage device thereby providing easy access to program information. The program guide may also provide a global media library for indicating the programs stored on removable storage media used with the program guide. The guide may also allow the user to manage and maintain a user media library to do the same. Non-time-sensitive data associated with recorded programs may be stored in a way that allows the user to interact with the data on playback as if the program were being originally aired. The program guide also allows the user to define "super-programs" for playback of a sequence of stored programs or program segments.
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ELECTRONIC PROGRAM GUIDE WITH DIGITAL STORAGE

Background of the Invention

This invention relates to video systems, and more particularly, to interactive television program guide systems which allow for digital storage of programs and program related information.

Cable, satellite, and broadcast television systems provide viewers with a large number of television channels. Users have traditionally consulted printed television program schedules to determine the programs being broadcast at a particular time. More recently, interactive electronic television program guides have been developed that allow television program information to be displayed on a user's television.

Interactive program guides allow the user to navigate through television program listings using a remote control. In a typical program guide display, television listings are organized into subsets of listings according to multiple organization criteria and are sorted in various ways. One approach is to organize program listings into a program listings grid. Each row in the grid contains television program listings for a different channel. The columns in the
grid correspond to a series of scheduled broadcast times. The user can scroll up or down to view program listings for different channels or may pan left or right to view information about programs being broadcast at different times.

Recently, interactive program guides have been developed that allow for storage of programs selected within the program guide on an independent storage device, typically a videocassette recorder. Usually, a control path involving an infrared transmitter coupled to an infrared receiver in the videocassette recorder is used to control the videocassette recorder. The use of independent analog storage devices like videocassette recorders, however, does not allow for the more advanced features that might be implemented if a digital storage device were associated with the program guide.

It is therefore an object of the present invention to provide an interactive television program guide with digital storage.

Summary of the Invention

This and other objects of the invention are accomplished in accordance with the principles of the present invention by providing an interactive program guide system with digital storage that allows the program guide to be used to provide more advanced features than previously offered by interactive program guide systems.

Program guide data is provided by a data source in a satellite uplink facility. This information is transmitted to a television distribution
facility such as a cable headend via satellite link. The television distribution facility distributes the information (and television programming signals) to user television equipment on which an interactive television program guide is implemented. One suitable distribution scheme involves transmitting television channels and distributing the information for program listings in the vertical blanking interval of one of the channels or a sideband.

The user television equipment for receiving and processing the television program listings and program data may include a set-top box. The set-top box is also able to receive the television programming distributed by the television distribution facility. The program guide implemented on the set-top box processes television program listings information and generates display screens (e.g., an interactive television program guide grid) for display, e.g., on a standard television monitor. The user can interact with the television program guide by entering commands via a user input interface. An illustrative input interface is an infrared remote control with cursor keys, a "guide" button, a "record" button, a "play" button, an "exit" button, an "info" button, and an "enter", "select", or "OK" button. The set-top box may store television programming and program information in a digital storage device associated with the program guide. The digital storage device may be an optical or a magnetic storage device (e.g., a device using writable digital video discs, magnetic disks, or a hard drive or random access memory (RAM), etc.).

The use of a digital storage device
associated with the program guide provides the user with more advanced features than could be performed using an independent analog storage device. For example, the current invention gives the user the ability to store information associated with recorded programs in a directory in the digital storage device thereby providing easy access to program information. The program guide may also provide a global media library for indicating the programs stored on removable storage media used with the program guide. Non-time-sensitive data associated with recorded programs may be stored in a way that allows the user to interact with the data on playback as if the program were being originally aired. The program guide also allows the user to define "super-programs" for playback of a sequence of stored programs or program segments. The program guide may also provide for the transfer of programs and super-programs to other volumes of the digital storage device or to a secondary storage device.

Further features of the invention, its nature and various advantages will be more apparent from the accompanying drawings and the following detailed description of the preferred embodiments.

Brief Description of the Drawings

FIG. 1 is a schematic block diagram of a system in accordance with the present invention.

FIG. 2 is a schematic block diagram of illustrative user television equipment in accordance with the present invention.

FIG. 3 is a generalized schematic block
diagram of portions of the illustrative television equipment of FIG. 2.
FIGS. 4-14 are illustrative display screens in accordance with the present invention.
FIGS. 15-22 are flow charts of steps involved in the operation of the present invention.

Detailed Description of the Preferred Embodiments

An illustrative system 10 in accordance with the present invention is shown in FIG. 1. Main facility 12 provides data from program guide data source 14 to television distribution facility 16 via communications link 18. There are preferably numerous television distribution facilities 16, although only one such facility is shown in FIG. 1 to avoid over-complicating the drawing. Link 18 may be a satellite link, a telephone network link, a cable or fiber optic link, a microwave link, a combination of such links, or any other suitable communications path. If it is desired to transmit video signals over link 18 in addition to data signals, a relatively high bandwidth link such as a satellite link may generally be preferred to a relatively low bandwidth link such as a telephone line. Television distribution facility 16 may be any suitable distribution facility (e.g., a cable system headend, a broadcast distribution facility, a satellite television distribution facility, or any other suitable distribution facility.

The data transmitted by main facility 12 to television distribution facility 16 includes television program listings data (e.g., program times, channels, titles, and descriptions) and other program data for
additional services other than television program listings (e.g., weather information, associated Internet web links, computer software, etc.).

Television distribution facility 16 distributes the television program listings and additional data to multiple users via communications paths 20. Each user has user television equipment 22 for displaying the television program listings information using an interactive television program guide. Communication paths 20 preferably have sufficient bandwidth to allow television distribution facility 16 to distribute television programming to user television equipment 22. If desired, television programming may be provided over separate communications paths (not shown).

An illustrative arrangement for user television equipment 22 is shown in FIG. 2. Television equipment 22 of FIG. 2 receives video and data from television distribution facility 16 (FIG. 1) at input 26. During normal television viewing, the user tunes set-top box 28 to a desired television channel. The signal for that television channel is then provided at video output 30. The outputted signal is typically either a radio-frequency (RF) signal on a predefined channel (e.g., channel 3 or 4), or a demodulated video signal, but may also be a digital signal provided to television 36 on an appropriate digital bus (e.g., a bus using the IEEE 1394 standard, (not shown)). The video signal at output 30 is received by optional secondary storage device 32. Secondary storage device 32 can be any suitable type of analog or digital program storage device (e.g., a videocassette recorder,
a digital video disc (DVD) player with the ability to record DVD discs, etc.). Program recording and other features may be controlled by set-top box 28 using control path 34. If secondary storage device 32 is a videocassette recorder, for example, a typical control path 34 involves the use of an infrared transmitter coupled to the infrared receiver in the videocassette recorder that normally accepts commands from a remote control such as remote control 40. Remote control 40 may be used to control set-top box 28, secondary storage device 32, and television 36.

The user may also record programs and program data in digital form on digital storage device 31. Digital storage device 31 may be a writable optical storage device (such as a DVD player capable of handling recordable DVD discs), a magnetic storage device (such as a disk drive or digital tape), or any other digital storage device. Digital storage device 31 preferably supports a directory structure containing information associated with stored entries. This directory information can be stored in one location, for example at the beginning or the end of the storage device. The directory information can also be distributed (e.g., by storing a portion of such information at the same location as each entry). For removable storage media like DVDs, each storage unit may have its own directory information, and the program guide may keep a global media library (discussed below).

Digital storage device 31 can be contained in set-top box 28 or it can be an external device connected to set-top box 28 via an output port and
appropriate interface. If necessary, processing circuitry in set-top box 28 formats the received video, audio and data signals into a digital file format. Preferably, the file format is an open file format such as the Motion Pictures Expert Group (MPEG) MPEG-2 standard. The resulting data is streamed to digital storage device 31 via an appropriate bus (e.g., a bus using the IEEE 1394 standard), and is stored on digital storage device 31.

Television 36 receives video signals from secondary storage device 32 via communications path 38. The video signals on communications path 38 may either be generated by secondary storage device 32 when playing back a prerecorded storage medium (e.g., a videocassette or a recordable digital video disc), by digital storage device 31 when playing back a pre-recorded digital medium, may be passed through from set-top box 28, may be provided directly to television 36 from set-top box 28 if secondary storage device 32 is not included in user television equipment 22, or may be received directly by television 36. During normal television viewing, the video signals provided to television 36 correspond to the desired channel to which the user has tuned with set-top box 28. The video signals provided to television 36 may also be by set-top box 28 when set-top box 28 is used to play back information stored on digital storage device 31.

When the user wishes to access the features of the program guide, the user may use a "menu" key on remote control 40 or an appropriate key corresponding to the desired feature. For example, if the user wishes to view programming information, a "guide" key
on remote control 40 can be used. When set-top box 28 receives commands from remote control 40 that inform set-top box 28 that the menu or other feature button has been pressed, processing circuitry within set-top box 28 supplies information that is displayed on television 36 as described further below.

A more generalized embodiment of user television equipment 22 (FIG. 2) is shown in FIG. 3. As shown in FIG. 3, program listings, programming and program data associated with the programming (hereinafter "associated program data") from television distribution facility 16 (FIG. 1) are received by control circuitry 42 of user television equipment 22. Video signals are typically provided on multiple television channels. Associated program data and program listings may be provided on a television channel sideband, in the vertical blanking interval of a television channel, using an in-band digital channel, using an out-of-band digital signal, or by any other suitable data transmission technique.

The user controls the operation of user television equipment 22 with user input interface 46. User input interface 46 may be a pointing device, wireless remote control, keyboard, touch-pad, voice recognition system, or any other suitable user input device. To watch television, the user instructs control circuitry 42 to display a desired television channel on monitor 45. To access the features of the program guide, the user instructs the program guide implemented on user television equipment 22 to generate a main menu or a desired program guide display screen for display on monitor 45.
The functions of control circuitry 42 may be provided using the set-top box arrangement of FIG. 2. Alternatively, these functions may be integrated into an advanced television receiver, personal computer - television (PC/TV), or any other suitable arrangement. If desired, a combination of such arrangements may be used.

When a user indicates a desire to access the main menu or other feature of the program guide (e.g., by entering a command with user interface 46), the program guide generates an appropriate program guide display screen for display on monitor 45. An illustrative main-menu screen 50 is shown in FIG. 4. From the main menu, the user can access any one of a number of features of the program guide. Features indicated by main-menu screen 50 may include program listings, recording schedules, the digital storage medium directory, program guide setup, transferring stored entries and super-programs to another volume or device, and global media library. These and other features will be described below.

When main-menu screen 50 is displayed on monitor 45, the user may access a feature by indicating a desire to do so. This can be done, for example, by using user interface 46 to position movable highlight region 56 over the desired feature. If user input interface 46 is a remote control such as remote control 40 of FIG. 2, the user can position highlight region 56 by, for example, using "up", "down", "left", and "right" cursor keys. The user can then access the desired feature by entering an appropriate command by, for example, using a "select" or "OK" key (hereinfter
referred to as "selecting" the entry). The main-menu screen may also consist of "buttons" which the user "pushes" by entering appropriate commands with user interface 46 (e.g., by highlighting a button and selecting it). The program guide then generates the appropriate program guide display screen for display on monitor 45.

When a user indicates a desire to view television programming information (e.g., by selecting program listings option 48 from main-menu screen 50, or by using a "guide" key on remote control 40), the program guide generates an appropriate program listings screen for display on monitor 45. A program listings screen may contain one or more lists of programs organized according to multiple organization criteria (e.g., by program type, theme, or any other pre-defined or user defined and selectable criteria) and sorted in various ways (e.g., alphabetically). The program listings screen may be overlaid over a program being viewed by the user or overlaid over a portion of the program in a "browse" mode.

One approach is to organize program listings into a program listings grid. An illustrative program listings grid 60 is shown in FIG. 5a. Program listings grid 60 has program listings rows 62, 64, 66, and 68. Program listings row 62 contains selectable program listings for programs 1 and 2 on channel 2 (Public Television). Program listings row 64 contains selectable program listings for programs 1 and 2 on channel 3 (HBO). Program listings row 66 contains selectable program listings for programs 1, 2, and 3 on channel 4 (NBC). Program listings row 68 contains a
selectable program listing for program 1 on channel 5 (FOX). The programs on each channel are typically different.

Program listings grid 60 preferably has movable cell highlight region 61, which highlights the current grid cell. The range of movement of highlight region 61 is typically bounded by column 63 on the left, by program listings time cells 65 on the top, by screen boundary 67 on the right, and by lower screen boundary 69 on the bottom.

The user may position highlight region 61 by entering appropriate commands with user interface 46. For example, if user input interface 46 is a remote control such as remote control 40 of FIG. 2, the user can position highlight region 61 using "up", "down", "left", and "right" cursor keys. If the user repeatedly moves highlight region 61 until it reaches lower screen boundary 69, further attempts at downward movement cause the program listings to scroll in the vertical direction.

Similarly, the listings in grid 60 are moved when highlight region 61 is panned (i.e., moved to the right or left). Panning highlight region 61 to the right causes the program listings in all of the program listings rows 62, 64, 66, and 68 to pan to the left by an equal amount. This allows new program listings to be displayed. Time cells 65 are adjusted accordingly (i.e., by incrementing each cell by 30 minutes). If highlight region 61 is panned to the left, the program listings in rows 62, 64, 66, and 58 pan to the right.

After a user positions highlight region 61 on a desired selectable program listing, the user may
access a number of program guide features. For example, the user may access additional information (typically text or graphics, but possible video) about the listing by selecting that listing. The user may obtain this information without exiting grid 60. The user makes selections by entering appropriate selection commands with user interface 46 (FIG. 3). If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a "select", "OK", or "info" key to make a selection.

Making a selection directs the program guide to generate a program listing information screen for display on monitor 45. An illustrative program listing information screen 70 is shown in FIG. 6. Information displayed in information screen 70 may include any information associated with the listing supplied by main facility 12. The information may include, for example, the title of the selection, a description, episode information, the channel, cast members, parental control ratings, categories, available language(s), available video formats, or other information like associated Internet web sites or computer software.

The user can exit program listing information screen 70 by indicating a desire to exit the screen by, for example, entering appropriate commands with user interface 46 (FIG. 3). If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may for example, use an "exit" or "last" key to exit the screen. The program guide may respond to a "last" command by generating the previous program guide display screen for display on monitor 45. The program
guide may respond to an "exit" command by returning the user to normal television viewing.

In an alternative embodiment, the program guide may also provide selectable listings of programs currently stored on digital storage device 49 in any form of list, table, or grid. The listings may be organized according to selectable organization criteria and sorted. One approach is to use a program listings grid, as shown in FIG. 5b. This may be done, for example, by using row 145 of program listings grid 141 to indicate currently stored programs, thereby treating digital storage device 49 like an additional channel. Multiple rows may be used to organize listings according to organization criteria (e.g., by theme, program type, or any other pre-defined or user-defined selectable organization criteria). In each row, the listings may be sorted (e.g., alphabetically).

Each entry in a different column 147 of row 145 may correspond to a different movie stored on digital storage device 49. To view additional titles, the user may, for example, pan right or left by using "right" and "left" cursor keys on remote control 40 of FIG. 2.

Just like program listings grid 60 of FIG. 5a, program listings grid 141 of FIG. 5b may contain highlight region 149 to select listings in any of the rows, including row 145, and thereby access program listings information screen 70 (FIG. 6) for a selected listing. If the user selects a program stored on digital storage device 49 (i.e., a listing in row 145), the program guide responds by obtaining the information associated with the listing for display in program
listings information screen 70 from digital storage device 49, and by displaying program listings information screen 70. The information for program listings information screen 70 may be stored as a directory entry on digital storage device 49.

The user may also select a program stored on digital storage device 49 from grid 141 for playback. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a digital "play" key to select the program whose listing in row 145 is surrounded by highlight region 61. The program guide responds by issuing appropriate commands to digital storage device 49 to read the selected program and to display the program. Any non-time-sensitive data associated with the program stored on digital storage device 49 may be presented to the viewer by the program guide just as it was presented when the program was originally aired. This will be described more fully below. The program guide may also provide features during playback which are similar to those provided for by current analog storage technologies (e.g., "fast-forward", "rewind", "pause", and "stop").

The program guide may also display an options screen in response to the user selection of any program listing. Such an option screen may include options like "playback", "delete", and "record" that the user may select on-screen by issuing appropriate commands with user interface 46 (e.g., by positioning a highlight region over the desired feature and selecting the feature, or by pushing an on-screen "button" that represents the option).

The user may select a program and associated
program data for recording on digital storage device 49 without leaving grid 60 or grid 141. The user makes selections for digital recording by entering appropriate selection commands with user interface 46 (FIG. 3). If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a digital "record" key to select the program whose listing is surrounded by highlight region 61 for digital recording. If desired, the default recording techniques used by the program guide may be digital recording.

Making a selection for digital recording causes the program guide to gather information from the currently loaded digital storage medium. Such information may include the estimated amount of time remaining on the storage medium (if, for example, the digital storage medium is a partially full disk). The program guide may also check directory information on the digital storage medium and compare it to the selected program listing to determine if the selected program has already been recorded. If the program guide determines that the selection has already been recorded, re-recording is not necessary. The program guide may retain the information associated with the selected program listing (supplied by main facility 12 of FIG. 1) for access by the user (e.g., using the recording schedule screen described below).

In response to an indication by the user to digitally record a selection, the programming guide may generate a recording schedule screen for display on monitor 45. The recording schedule screen lists the programs currently scheduled for recording on digital
storage device 49. An illustrative recording schedule screen 80 is shown in FIG. 7a. Recording schedule screen 80 contains a number of pieces of information which may include, for example, the volume name of the currently loaded medium, an estimate of the amount of time remaining on the medium, and a grid 81 or other suitable list or table listing the programs currently scheduled for recording and relevant recording information. Grid 81 may include the title of the selections, the channel for recording, the recording date and time, and the duration of the selection.

The user can access the associated program data supplied by main facility 12 of FIG. 1 of the programs scheduled to be recorded by indicating a desire to do so (e.g., by positioning highlight region 82 on a desired program listing and pressing an "OK" key). In response to such an indication, the program guide generates a selected program listing information screen for display on monitor 45. An illustrative selected program listing information screen 84 is shown in FIG. 7b. A selected program listing information screen is similar to a program listing information screen (see FIG. 6), but may also contain user fields that the user may edit to add information that the user desires to associate with the program. FIG. 7b shows illustrative user description field 85, user category field 86, and user other field 88. The user may edit the contents of these user fields by, for example, using user interface 46 to position highlight region 89 over the desired field and indicating the information that the user desires to associate with the program. If user interface 46 is a remote control such as remote
control 40 of FIG. 2, alphanumeric keys on remote
control 40 may be used, or the user may scroll through
the alphabet using "up" and "down" keys to select
individual letters and thereby form words in the user-
fields.

If all of the information does not fit on a
single screen, the user can scroll downward (and
upward) to view the non-displayed information by
indicating a desire to so by, for example, using "up"
and "down" keys on remote control 40. The program
guide responds to such an indication by scrolling the
screen accordingly and showing the non-displayed
information.

Recording schedule screen 80 of FIG. 7a may
also indicate which of the selections currently
scheduled for recording will fit on the currently
loaded storage medium (e.g., when a DVD is loaded in a
DVD player). This may be done, for example, by using
bold text or text of a different color (see, e.g.,
M*A*S*H and TERMINATOR listings 89). Selections that
cannot fit may be indicated as such by a different
indicator, like dotted line 83. Either or both
indicators can be used and the types shown in FIG. 7a
are for illustration purposes only.

The user can exit recording schedule screen
80 by indicating a desire to do so (e.g., by entering
appropriate commands with user interface 46 of FIG. 3).
If user interface 46 is a remote control such as remote
control 40 of FIG. 2, the user may use, for example, an
"exit" key to exit the screen. When the command is
given, the program guide may respond by generating the
previous screen for display on monitor 45.
The user may also view recording schedule screen 80 when not in a program listings screen. For example, if user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may access recording schedule screen 80 when in main-menu screen 50 of FIG. 4 by positioning highlight region 56 (FIG. 4) over recording schedule option 52 and selecting recording schedule option 52. The user may also access recording schedule screen 80 by selecting a program from the program listings screen and selecting an on-screen "recording schedule" option from a list of on-screen options.

The user may also select programs and associated program data for digital recording when not in program listings grid 60 by indicating a desire to do so during normal television operation (e.g., by entering appropriate commands with user interface 46 of FIG. 3). If user interface 46 is a remote control such as remote control 40, this can be done by using a "record" key during television viewing. The program guide responds by generating a recording screen for display on monitor 45. An illustrative recording screen 87 is shown in FIG. 8. Recording schedule screen 87 may display information of the program currently being viewed by the user, such as the current channel, begin time, and end time for recording. The program guide may provide the user with the opportunity to edit the displayed information (e.g., the start and end time) by issuing appropriate commands with user interface 46. When finished, the program guide may return the user to normal television viewing and begin recording the selection, the program guide may generate
a recording schedule screen for display on monitor 45 so that the viewer may see the recording schedule.

Before recording a new program and associated program data, the program guide may automatically cause digital storage device 49 to search for available space, and may store the program and associated program data anywhere on digital storage device 49 (e.g., between two other programs). The program and associated program data may even be stored in non-contiguous space on the storage medium. A best-fit algorithm may be used to determine where to store the program based on available free space and the length and format of the program.

The program guide may also store associated program data in a directory entry of digital storage device 49. This data can include, for example, the date and time the program was recorded, the channel the program was recorded on, the time duration of the program, the program title and description, cast members, parental control ratings, program categories, episode information, recorded languages and video formats, Internet links, graphics, or any other information supplied by main facility 12 of FIG. 1, the user, or the programmer.

Along with the program and associated program data, the program guide may also store additional components of a program on digital storage device 49. This can include additional video formats, additional languages, additional subtitles, or other data that cannot be stored in a directory entry. The program guide will either store all of the supplied video formats and languages, or store only the variant that
matches the current viewer profile preferences (described below).

Unless associated program data is time sensitive, the user may interact with the data stream during playback just as when the program was originally aired. If, for example, associated program data is computer software that the user could have accessed when the program was originally aired, the software may be stored on digital storage device 49, so that the user can access the software during playback. Such software may be, for example, shopping software that allows the user to place orders for purchasing goods offered in the program. Or, a program may have associated with it an Internet link that the user can select and access an Internet site.

The program guide may also allow a user to view the directory information of the currently loaded storage medium. The user can access this feature by indicating a desire to do so by, for example, issuing the appropriate commands with user interface 46. If user interface 46 is a remote control like remote control 40 of FIG. 2, this may be done by using a "directory" or "list" key. This can also be done by accessing the main menu 50 (FIG. 4) and positioning highlight region 56 over medium directory option 53 and selecting medium directory option 53.

When the user indicates a desire to view the directory information for the currently loaded storage medium, the program guide obtains directory information from digital storage device 49 and generates a directory listing screen for display on monitor 45. An illustrative directory listing screen 90 is shown in
FIG. 9. Directory listing screen 90 may indicate, for example, the volume name and available time left on the currently loaded storage medium. Directory listing screen 90 may also include directory listing grid 91.

Directory listing grid 91 contains information about entries stored on digital storage device 49. This information may include any of the directory information stored on the medium and may be presented according to the current viewer preferences (described below). It may include, for example, the title, channel, record date, record time and duration of the entries. It may also include an indication of whether the entries have been viewed. Because the directory information for directory listing screen 90 is stored digitally, it may generally be accessed rapidly (e.g., in a fraction of a second). This fast access capability makes the directory feature easy to use to quickly check the status of stored entries. This would not be possible if an analog storage device such as a standard videocassette recorded were used.

The program guide may allow the user to access a full view of all of the directory information stored for an entry. The user may access this feature while in directory listing screen 90 by indicating a desire to do so by, for example, entering appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, this can be done by positioning highlight region 95 over the desired entry using "up" and "down" keys, and then selecting the entry, or by selecting an on-screen "info" option.

Once the user indicates a desire to view the
full directory entry information of an entry, the
program guide generates a full entry information screen
for display on monitor 45. An illustrative full entry
information screen 100 is shown in FIG. 10. If the
full directory information does not fit on one screen,
the user can scroll downward (and upward) by indicating
a desire to do so by, for example, using "up" and
"down" keys on remote control 40. In addition, user-
defined fields may be edited by positioning highlight
region 101 over any user-defined field and entering
information into the highlighted field (e.g., with
alphanumeric keys on remote control 40).

To exit full entry information screen 100,
the user indicates a desire to do so by, for example,
using an "exit" key on remote control 40. The program
guide responds by saving the directory information to
digital storage device 49 if the information has
changed and generating the previous screen for display
on monitor 45.

The program guide allows a user to play back
a stored entry when the user indicates a desire to do
so by entering appropriate commands with user interface
46. This can be done, for example, by selecting an
entry from directory listing grid 91 and using a "play"
button on remote control 40, or by selecting an on-
screen "play" option from a list of on-screen options
generated by the program guide in response to the
selection of an entry by the user. Any non-time
sensitive data associated with the program may be
presented to the viewer by the program guide just as it
was presented when the program was originally aired.

The program guide may also edit a program and
its associated data when the user indicates a desire to do so. This can by done, for example, by entering appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, then this can be done by using "delete" keys in a particular way (such as by using the "delete" key twice), or by using a "partial" key, when the user is in directory listing screen 90. This may also be accomplished by selecting an on-screen "edit" option provided by the program guide in response to the selection of a program listing or directory entry.

Once the user indicates a desire to edit a program, the program guide generates an edit screen for display on monitor 45. An illustrative edit screen 110 is shown in FIGS. 11a, 11b, and 11c. Screen 110 indicates the entry to be edited and other relevant information. This information may include, for example, the title, channel, record date, record time, and duration of the entry. Screen 110 may also contain edit indicator 115 for indicating the portion of the entry for deletion. Indicator 115 may have start time 116, end time 117, markers 118 and 140, and highlight region 119. Screen 110 may also have video feedback area 113 for showing the user the portion of the program corresponding to the position of markers 118 and 140.

Highlight region 119 is initially positioned by the program guide so as to surround one of the markers, for example marker 118. The user may indicate a desired starting time for deleting by positioning marker 118 (FIG. 11b). This may be done, for example, by entering appropriate commands with user interface
46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, this can be done by using "left" and "right" buttons of remote control 40 to slide marker 118 left and right. As the position of marker 118 is changed, its current time position ("marker time") 120 is displayed as shown in FIGS. 11b and 11c. The beginning portion of a program is edited by leaving marker 118 in its initial position.

When the desired start time position is indicated by marker 118, the user can select marker 140 to define the end of the program segment by, for example, using the "OK" key of remote control 40. The program guide responds by positioning highlight region 119 around marker 140. The user may indicate the end time of the portion of the program to be deleted by, for example, positioning marker 140 in the same way that marker 118 was positioned, as shown in FIG. 11c.

Video feedback area 113 may display the portion of the program corresponding to markers 118 and 140 as the markers are positioned by the user. The program guide may also provide the user with the opportunity to view the portion of the program selected for deletion in a "fast-forward" playback mode, once the program portion is selected.

After the user is finished, the program guide may allow the user to continue to edit additional segments. The program guide may also return the user to a previous screen (e.g., directory listing screen 90) or to normal television viewing, when the user indicates a desire to do so (e.g., using a "last" or "exit" key on remote control 40). The program guide may also provide the user with the opportunity to
confirm that the portion selected for deletion is properly defined.

Once the program portion or portions are defined, the program guide issues appropriate commands to digital storage device 49 to delete the selected program segment, additional components, and associated data as appropriate. For example, the program guide may immediately display directory listing screen 90 and issue appropriate commands to digital storage device 49 to delete the selected portion and update the directory information associated with that portion, if appropriate.

The program guide may also allow the user to define "super-programs". Super-programs are sequences of programs or program segments that the guide will play back sequentially in a specified order. The user may indicate the desire to access the super-program feature by, for example, entering appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a "super-program" key on remote control 40 after positioning a highlight region such as highlight region 95 of directory listing screen 90 (FIG. 9) over a desired program listing (e.g., M*A*S*H*), or by selecting an on-screen "super-program" option from a list of on-screen options which are provided by the program guide when a program is selected.

The program guide may also provide the user with the ability to name super-programs and to store them on digital storage device 49. Entries for the named super-programs may be kept in the directory maintained on digital storage device 49, and may be
displayed in screens which list directory entries (e.g., directory listing screen 90), along with the directory entries for program listings. For example, when directory listing screen 90 is displayed by the program guide, the program guide may provide the user with the opportunity to select a named super-program.

In response to the user selection of a named super-program, the program guide may generate a super-program screen for display on monitor 45. The program guide may also provide the user with an on-screen list of options for performing super-program functions (e.g., playing, transferring or editing the super-program).

When the user indicates a desire to define a super-program, the program guide generates a super-program screen for display on monitor 45. An illustrative super-program screen 130 is shown in FIGS. 12a and 12b.

Super-program screen 130 is organized into three areas. Area 131 indicates the selections stored on digital storage device 49 (or the currently loaded digital storage medium of digital storage device 49). Area 132 indicates the super-program sequence. Video feedback area 137 displays the portion of the program included in the super-program. Super-program screen 130 may also indicate the volume name of and time remaining on the currently loaded storage medium.

The three areas of super-program screen 130 may also be presented only when needed. For example, area 131 may be displayed only when the program guide is providing the user with the opportunity to select a program stored on digital storage device 49. Once the
user has selected a program, area 131 may be removed and area 132 may replace it while the program guide is providing the user with the opportunity to define a program segment for inclusion in the super-program. Video feedback area 137 may be displayed only in response to an indication by the user to the program guide to display the program segment. Thus, it may not be necessary for all three areas to be displayed at once.

To define a super-program, the user indicates which program is to be included in the super-program sequence. The program guide may also give the user the ability to include in the current super-program other previously defined super-programs. Area 131 includes a directory listing grid 133 for listing the programs and super-programs stored on digital storage device 49. If the user interface is a remote control such as remote control 40 of FIG. 2, the user may use "up" and "down" keys to position highlight region 134 on top of the desired program or super-program. The user may then select a program or super-program by using a "select" or "OK" key on remote control 40. The user may also access other information associated with the entry by using an "info" key on remote control 40, or by selecting a suitable option from an on-screen options list provided by the super-program. The program guide generates a full entry information screen containing information associated with the selected program when the "info" key is pressed.

Whenever the user selects a program, the program guide places the selected entry in the super-program sequence at a defined point in the sequence.
(e.g., at the end of the sequence). As shown in FIG. 12a, for example, a first segment entry has been selected by the user and the user is currently selecting the second segment entry. The segment entries are listed in second area 132. The user then has the option of defining the play segment of the program to be played. Indicators 135 indicate the currently defined play segment.

If the user wishes to define a play segment, the user may do so, for example, by using markers 136 to define the segment in the same manner described for editing programs. As shown in FIG. 12b, the user uses highlight region 134 (positioned by the program guide over one of the markers) to move the markers 136 to define the play segment. Video feedback area 137 displays the portion of the program corresponding to markers 136 as markers 136 are individually positioned. The user may indicate he or she is finished defining the play segment by, for example, using an "OK" key on remote control 40. The program guide then responds to this indication by positioning highlight region 134 (FIG. 12a) in first area 131 to allow the user to define another entry in the super-program sequence.

The user may indicate that he or she is finished defining the super-program by issuing appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a "play" key to finish editing the super-program and play the super-program. The user may also select an on-screen "play" option from a list of on-screen options provided by the program guide.
The program guide responds by issuing the appropriate instructions to digital storage device 49 to read the programs and associated program data of the defined super-program sequence. The program guide then instructs television equipment 22 to provide the program and any associated data (e.g., software) in the appropriate format for display on monitor 45 and use by the user as if the user were viewing the program when it was originally aired. If monitor 45 is a television, for example, user television equipment 22 may convert the program from its digital format to the appropriate RF or demodulated video signal for display on monitor 45.

The user may also store the super-program for playback or editing at a later time. The user may indicate a desire to postpone playback by, for example, issuing appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use an "exit" key on remote control 40 or select an on-screen "exit" option. Control circuitry 42 responds to an indication to postpone playback by storing the playback sequence (either in memory or on the digital storage device). The user may later access the super-program by, for example, selecting the super-program while in directory listing screen 90. The program guide may respond by providing an on-screen list of options (e.g., edit, play back, transfer) that the user may select from. The program guide may also respond by generating a super-program screen with the previously entered selections and defined play-segments, providing the user with the opportunity to add, edit or re-order the
programs and program segments.

The program guide may also allow the user to transfer programs and super-programs stored on digital storage device 49 to other volumes of digital storage device 49 or to secondary storage device 47 (FIG. 3.). Secondary storage device 47 may be another storage device available in the home network system like a videocassette recorder, a recordable digital video disc device, a computer (with an appropriate storage device), or other digital storage device. This feature may be accessed by, for example, issuing appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a "record" or "transfer" key when in the super-program screen, or, for example, the user may select a "transfer" option from an on-screen list of options provided by the program guide in response to the user selecting a super-program from directory listing screen 90.

The program guide responds to this indication by issuing appropriate instructions to digital storage device 49 to read the selected programs and associated data or the programs and associated data of the selected super-program sequence. The program guide then transfers the programs and associated data (if possible) in an appropriate format to secondary program data storage device 47. If, for example, secondary storage device 47 is a videocassette recorder, the program guide directs user television equipment 22 to convert the digitally stored program or super-program into an appropriate analog format.

Transferring the data (e.g., software)
associated with a program or super-program may not be possible with some analog secondary storage devices, so the program guide may accordingly ignore the associated data during transfer. The program guide may, however, provide for the labeling of analog storage media with associated data. Program guides that provide for labeling videocassettes with program information are described, for example, in Blackwell U.S. patent application Serial No. 08/924,813, which is hereby incorporated by reference herein in its entirety.

The programs and data may also be transferred directly from digital storage device 49 to secondary storage device 47 via channel 43 if desired. The program guide may also transfer the programs and data to another volume of digital storage device 49.

If digital storage device 49 is a device that uses removable recording media (e.g., floppy disks or recordable optical discs) the program guide may also allow a user to view a global media library screen which indicates directory information of removable storage media used with the program guide. The user may access this feature by indicating a desire to do so by, for example entering appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, this may be done by, for example, using a "library" key. This may also be done by accessing main menu 50 (FIG. 4) and positioning highlight region 56 over global media library option 57 and selecting media library option 57.

The global media library may be maintained automatically by the program guide. For example, the
program guide may store or update directory entry
information according to the current viewer preferences
(described below) in a central storage area (e.g.,
random access memory (RAM) or a central hard disk
drive) each time directory information is stored or
updated on a removable storage medium. The program
guide may also store unique identifiers identifying the
removable storage medium on which programs are stored
(e.g., volume names or media numbers).

An illustrative global media library screen
250 is shown in FIG. 13. Global media library screen
250 may display program listings in any list, table,
grid or other suitable form that contains information
about stored entries on removable storage media used in
digital storage device 49. Listings may be grouped
into subsets of listings according to multiple
organization criteria and sorted in various ways.
Another approach is to display the listings in a
library listing grid, such as library listing grid 251.

Library listing grid 251 may include a row for each
removable storage medium used with digital storage
device 49 (e.g., rows 261, 262, 263, 264, and 265), and
columns for each program stored on each removable
storage medium (e.g., columns 271, 272, and 273). A
user may access additional storage media and additional
programs not displayed by, for example, scrolling up
and down or panning left and right.

Just like directory listing screen 90 of FIG.
9, global media library screen 250 of FIG. 13 allows
the user to access features of the program guide
already described (e.g., by positioning highlight
region 257 around a listing and selecting the listing),
which may include accessing a full entry information screen, playing back, deleting and partially deleting programs, and defining super-programs containing programs from different storage media. These features may also be accessed by the user by selecting the desired feature from a list of on-screen options provided by the program guide in response to the selection of a listing by the user.

If the user indicates a desire to access a feature of the program guide which operates on a medium that is not currently loaded in digital storage device 49, the program guide may automatically change the loaded storage medium if digital storage device 49 has the ability to do so. Digital storage device 49 may be, for example, an optical jukebox with multiple recordable optical discs. If the user selects a program on a disc not currently positioned before a read/write head of the jukebox, the jukebox re-arranges the discs until the disc with the selected program is positioned for reading or writing. If the disc with the selected program is not in the jukebox, the program guide may display indication 255 to the user that the disc must be loaded. The program guide may also display such an indication if, for example, digital storage device 49 is a floppy disk drive and the disk with the selected program is not in the drive. Indication 255 may include a unique identifier identifying the unloaded storage medium. Preferably, the unique identifier is not displayed for the user unless the required removable storage medium is not loaded.

If digital storage device 49 uses removable
storage media (e.g., floppy disks or recordable optical disks), the program guide may provide the user with the opportunity to enter an identifier that identifies the removable storage medium on which the program is stored. The identifier may be a volume name, a medium number, or other suitable unique indicator.

The program guide may also allow the user to choose various selectable options and select the types of information for display in various screens. The user can access this feature by indicating a desire to do so by, for example, using user interface 46 to enter appropriate commands. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user can indicate a desire to access this feature by selecting set-up option 54 from the main menu screen of FIG. 4, or by using a "set-up" key on remote control 40.

When the user indicates a desire to access the set-up feature of the program guide, control circuitry 42 generates a set-up screen for display on monitor 45. The set-up feature allows a user to select options and set user preferences. An illustrative set-up screen 120 is shown in FIG. 14. Set-up screen 120 can be organized into parts. For example, one part may be used to handle entry information display options, another may be used to handle storage options, and another may be used to handle playback options.

Entry information area 121 is an example of how set-up screen 120 may be used to display selectable components that the user may select for display in screens that display program information (e.g., program listings grid 50, recording schedule screen 80, and
directory listing screen 90). Unselected directory components cannot be viewed from such screens, and can only be viewed in full information view (e.g., program listing entry information screen 70 and full entry information screen 100).

Storage option area 122 allows the user to select options relating to storage. For example, the user can select the language tracks or video formats for storing with a program. The user can also set whether a parental control feature applies to the recording of programs which do not meet certain parental control criteria. The user may also choose whether the program guide automatically erased entries from digital storage device 49 once the entries are viewed. When erased, an entry's directory information and additional components are also removed from digital storage device 49.

Playback option area 133 allows the user to select options related to playback. One selectable feature, for example, is a skip commercial feature. If active, the program guide attempts to distinguish program material from advertisements based on data recorded with the programming or other suitable cues. Any material identified as advertising is automatically skipped during playback. The user may also set default languages and video formats for playback.

Steps involved in operating the program guide of the present invention are set forth in FIGS. 15-20. FIG. 15 illustrates an overview of steps involved in accessing a number of features of the program guide. The steps illustrated by FIGS. 15-20 are illustrative and may be performed in any order.
At step 400 of FIG. 15, the programs and associated program data are stored on digital storage device 49 using the program guide. At step 402, additional components are digitally stored. At step 404, the programs and associated program data are displayed on monitor 45 (FIG. 3) using the program guide. The programs and associated program data may be displayed on monitor 45 so as to provide the user with access to the programs and associated program data as if the programs and associated program data were being originally aired, as set forth in step 406.

At steps 408, 410, 412, and 414 the program guide displays on monitor 45 a set-up screen (such as set-up screen 120 of FIG. 14), a recording schedule screen (such as recording schedule screen 80 of FIG. 7a), a program listings screen (such as a screen containing program listings grid 60 of FIGS. 5a and 5b), and an edit screen (such as edit screen 110 of FIGS. 11a, 11b, and 11c). At step 416, the program guide transfers the programs and associated program data (if possible) to another volume of digital storage device 49 or to secondary storage device 47 (FIG. 3).

FIG. 16 illustrates steps involved providing the user with the ability to define selectable options. At step 424, the program guide provides the user with the opportunity to define storage options. If language, video format, enforcement of parental control, and auto-erase storage options are provided (FIG. 15), the program guide stores the programs and associated program data on digital storage device 49 according to how the storage options are defined as set forth in steps 426, 428, 430, and 432 respectively.
The program guide may also provide the user with the opportunity to define playback options, as set forth in step 434. If default language, default video format, and skip advertising playback options are provided, the program guide displays the programs and associated program data on monitor 45 according to how the options are defined as set forth in steps 436, 438, 440, respectively.

FIG. 17 illustrates steps involved in providing a user with the opportunity to record programs and associated program data on digital storage device 49. At step 410, the program guide displays a recording schedule screen, such as recording schedule screen 80 of FIG. 7a, on monitor 45. At step 450, the program guide indicates on monitor 45 the programs currently scheduled for storage on digital storage device 49. At step 452, the program guide provides the user with the opportunity to select one of the indicated programs.

The program guide may also display a selected program listing information screen, such as selected program listing information screen 84 of FIG. 7b, for a selected program on monitor 45 as set forth in step 454. The program guide displays one or more fields of associated program data in step 456, and may also display one or more user fields in step 458. At step 460, the program guide provides a user with the opportunity to enter information into user fields 460. At step 462, the program, associated data and additional components are stored on digital storage device 49.

The program guide may also provide the user
with the opportunity to record programs during television viewing at step 464. At step 466, the program guide generates a recording screen for display on monitor 45. At step 468, the program guide provides the user with the opportunity to edit recording information, such as begin and end time. At step 470, the program guide provides the user with the opportunity to access the recording schedule screen. The program guide displays the recording schedule screen (step 410) or begins recording programs, associated data, and components (step 462) depending on the indication from the user.

FIG. 18 illustrates steps involved in displaying program listings and program listing information on monitor 45. The program guide may display a program listings screen on monitor 45 at step 412. The program guide may include in the program listings screen a program listings grid (sub-step 470). At step 472, the program guide provides the user with the opportunity to define and select organization criteria (e.g., theme, program type, etc.) and chose a sorting method (e.g., alphabetically) for organizing and sorting the listings. At step 474, the program guide provides the user with the opportunity to select a program listing. The program guide may also display on monitor 45 a program listings information screen, such as program listings information screen 70 of FIG. 6, indicating associated program listing information.

At step 478, the program guide may provide a list of on-screen options that the user can select to access program guide features. For example, there may be on-screen "record" and "super-program" options. If
super-programs and stored entries are included in the program listings screen, the program guide may also provide on-screen "transfer" and "playback" options. The program guide displays programs, associated data, and additional components at step 480. This may be program, data, and components of the selected listing. At step 480 the program guide may also return the user to the program being viewed before the program listings screen was accessed. Step 480 may also correspond to where the user watches television programming before having accessed the program listings screen.

Other steps involved in accessing programs and associated data stored on digital storage device 49 are set forth in FIG. 19. The program guide stores programs and associated program data on digital storage device 49 at step 406. At step 488, the program guide maintains a directory of the stored associated program data. At step 490, the program guide displays a directory listing screen, such as directory listing screen 90 of FIG. 9, on monitor 45. The program guide indicates directory entry information at step 492 (by, for example, displaying directory listing grid 92 of FIG. 9 on monitor 45), and provides a user with the opportunity to select directory entry information at step 494. At step 495, the program guide provides the user with an on-screen list of options (e.g., "playback", "transfer", "super-program", etc.).

Steps involved in displaying additional information for a selected entry are set forth in steps 496, 498, 500, and 502. At step 496 the program guide displays a full entry information screen, such as full entry information screen 100 of FIG. 10, on monitor 45.
At step 498, the program guide displays fields of directory entry information on monitor 45, and at step 500 the program guide displays user-defined fields on monitor 45. At step 502, the program guide provides the user with the opportunity to enter user information in the user-defined fields.

Steps involved in editing programs and associated program data associated with directory entry information are set forth in steps 504, 506, 508, and 510 of FIG. 20. The program guide displays an edit screen, such as edit screen 110 of FIGS. 11a, 11b, and 11c, on monitor 45. At step 506, the program guide provides a user with the opportunity to define the portions of stored programs and associated program data to be edited by the program guide. At step 508 the program guide displays a video feedback area on monitor 45. The program guide edits the portions of stored programs and associated data from digital storage device 45 at step 510.

Steps involved in providing the global media library feature of the present invention are set forth in FIG. 21. At step 522, the program guide stores programs and associated program data on removable digital storage media in digital storage device 49. At step 524, the program guide maintains a global media library of the stored associated program data. The program guide displays a global media library screen, such as global media library screen 250 of FIG. 13, on monitor 45 at step 526. At step 528 the program guide provides a user with the opportunity to select a program indicated by the global media library screen. If the digital storage medium containing the selected
program is not loaded in digital storage device 49, the
program guide displays on monitor 45 an indication that
the storage medium is not loaded at step 530.

Steps involved in providing the super-program
feature of the present invention are set forth in FIG.
22. The program guide stores programs and associated
program data on digital storage device 45 at step 532.
At step 534, the super-program sequence is defined.
This may be done by displaying a super-program screen,
such as super-program screen 130 of FIGS. 12a and 12b,
on monitor 45 as set forth in step 536. Stored
programs are indicated by the program guide on monitor
45 at step 538, and the program guide provides a user
with the opportunity to select the indicated programs
at step 540. The program guide displays the programs
and associated program data which are part of the
super-program sequence on monitor 45 according to the
super-program sequence at step 550.

Further steps involved in providing the
super-program feature are set forth in steps 524, 544,
546, and 548. At step 542, the program guide provides
the user with the opportunity to define play segments.
The program guide may display a play segment indicator
and marker for defining the play segment, as indicated
by
step 544. At step 546, the program guide displays a
video feedback area on monitor 45. The program guide
displays the play segments of programs and associated
program data on monitor 45 according to the super-
program sequence at step 548.

The foregoing is merely illustrative of the
principles of this invention and various modifications
can be made by those skilled in the art without departing from the scope and spirit of the invention.
What is claimed is:

1. A system in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising:

   means for displaying the programs and associated program data on the user television equipment using the interactive television program guide; and

   means for digitally storing the programs and associated program data in a digital storage device contained in the user television equipment using the interactive television program guide.

2. The system defined in claim 1 wherein the display means further comprises means for displaying a set-up screen on the user television equipment using the interactive television program guide.

3. The system defined in claim 2 wherein the set-up screen comprises means for providing a user with an opportunity to define one or more storage options.

4. The system defined in claim 3 wherein the storage options comprise one or more storage options selected from the group consisting of: languages, video format, enforcement of parental control on storage, and auto-erasing viewed entries.

5. The system defined in claim 4 further
comprising means for digitally storing the programs in a language on a digital storage device with the interactive television program guide using the language storage option.

6. The system defined in claim 4 further comprising means for digitally storing the programs in a video format on a digital storage device with the interactive television program guide using the video format storage option.

7. The system defined in claim 4 further comprising means for digitally storing the programs and associated program data on a digital storage device with the interactive television program guide using the enforcement of parental control on storage option.

8. The system defined in claim 4 further comprising means for automatically deleting programs and associated program data from a digital storage device with the interactive television program guide using the auto-erase viewed entries storage option.

9. The system defined in claim 2 wherein the set-up screen comprises means for providing a user with an opportunity to define playback options.

10. The system defined in claim 9 wherein the playback options comprise one or more playback options selected from the group consisting of: default language, default video format, skip commercials.
11. The system defined in claim 10 wherein the display means displays the digitally stored programs and associated program data in a language on the user television program equipment with the interactive television program guide using the default language playback option.

12. The system defined in claim 10 wherein the display means displays the digitally stored programs and program data in a video format on the user television equipment with the interactive television program guide using the default video format playback option.

13. The system defined in claim 10 further comprising:

means for determining whether the digitally stored programs contain advertising using the interactive television program guide; and

wherein the display means skips displaying the advertising information when displaying the digitally stored programs and programming data with the interactive television program guide using the skip commercials playback option.

14. The system defined in claim 2 wherein the set-up screen comprises means for providing a user with an opportunity to select components for display in screens that display program information.

15. The system defined in claim 1 wherein the display means further comprises means for
displaying a recording schedule screen on the user television equipment using the interactive television program guide.

16. The system defined in claim 15 wherein the recording schedule screen comprises:
   an indication of the programs currently scheduled for storage by the digital storage means;
   means for providing a user with an opportunity to select one of the programs; and
   wherein the display means further comprises means for displaying a selected program listing information screen for the selected program on the user television equipment using the interactive television program guide.

17. The system defined in claim 16 wherein the selected program listing information screen comprises one or more fields of associated program data for the selected program.

18. The system defined in claim 17 wherein the selected program listing information screen further comprises:
   one or more user fields; and
   means for providing a user with an opportunity to enter user information into one or more of the user fields.

19. The system defined in claim 1 wherein the display means further comprises means for displaying a program listings screen on the user
television equipment using the interactive television program guide, the program listings screen comprising means for providing the user with an opportunity to select a program listing.

20. The system defined in claim 19 wherein the means for displaying a program listings screen further comprises means for displaying program listings in subsets of listings according to one or more organization criteria.

21. The system defined in claim 20 further comprising means for providing a user with an opportunity to select the organization criteria.

22. The system defined in claim 20 further comprising means for providing a user with an opportunity to define the organization criteria.

23. The system defined in claim 19 wherein the means for displaying a program listings screen further comprises means for displaying program listings in sorted lists according to sorting criteria.

24. The system defined in claim 23 further comprising means for providing the user with an opportunity to select the sorting criteria.

25. The system defined in claim 19 wherein the program listing screen comprises listings of programs stored by the digital storage means.
26. The system defined in claim 19 wherein the display means further comprises means for displaying a program listings information screen for the selected program listing on the user television equipment using the interactive television program guide.

27. The system defined in claim 26 wherein the program listings information screen comprises one or more fields of associated program data selected from the group consisting of: title, description, episode, channel, duration, viewed, cast members, category(ies), language, video format, start and end time, date, rerun indicator, stereo indicator, close-captioned indicator, and other information.

28. The system defined in claim 25 wherein: the display means further comprises means for displaying one or more on-screen options; and further comprising means for providing a user with an opportunity to select an on-screen option.

29. The system defined in claim 19 wherein the means for displaying program listings further comprises means for displaying program listings in a program listings grid.

30. The system defined in claim 29 wherein the program listings grid contains one or more rows of listings of programs stored by the digital storage means.
31. The system defined in claim 1 wherein the display means further comprises means for displaying the digitally stored programs and associated program data on the user television equipment using the interactive television program guide to provide users with an opportunity to access the associated program data as if the programs and program data were being originally aired.

32. The system defined in claim 1 wherein the digital storage means further comprises means for digitally storing additional program components on a digital storage device.

33. The system defined in claim 1 wherein the associated program data comprises program listings data supplied by a main facility.

34. The system defined in claim 1 wherein the associated program data comprises user added information.

35. The system defined in claim 1 further comprising means for transferring the digitally stored programs to a secondary storage device using the interactive television program guide.

36. A system in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising:
   a digital storage device in the user
television equipment for digitally storing the programs and associated program data using the interactive television program guide; and means for maintaining a directory of the digitally stored associated program data using the interactive television program guide.

37. The system defined in claim 36 further comprising a means for displaying a directory listing screen on the user television equipment using the interactive television program guide.

38. The system defined in claim 37 wherein the directory listing screen comprises: means for indicating directory entry information; and means for providing a user with an opportunity to select directory entry information; wherein the display means further comprises means for displaying a full entry information screen in response to the selection by a user of directory information.

39. The system defined in claim 38 wherein the full entry information screen comprises a plurality of fields of directory entry information selected from the group consisting of: title, description, episode, channel, duration, viewed, cast members, category(ies), language, video format, start and end time, date, re-run indicator, stereo indicator, close-captioned indicator, and other information.
40. The system defined in claim 39 wherein the full entry information screen further comprises: one or more user-defined fields; and means for providing a user with an opportunity to enter user information in one or more of the user-defined fields.

41. The system defined in claim 36 further comprising: means for displaying an edit screen; and means for editing portions of the digitally stored programs and associated program data from the digital storage device using the interactive television program guide.

42. The system defined in claim 41 wherein the edit screen comprises means for providing a user with an opportunity to define the portions of the digitally stored programs and associated program data edited by the editing means.

43. The system defined in claim 42 wherein the partial edit screen further comprises a video feedback area.

44. The system defined in claim 36 wherein: the digital storage device digitally stores the programs and associated program data on removable digital storage media using the interactive television program guide; and the maintaining means maintains the digitally stored associated program data in a global
media library using the interactive television program guide.

45. The system defined in claim 44 further comprising means for displaying a global media library screen on the user television equipment using the interactive television program guide.

46. The system defined in claim 45 wherein: the global media library screen comprises means for providing a user with an opportunity to select a program stored on the removable storage media; and means for displaying an indication that the removable storage medium containing the selected program is not loaded in the digital storage device.

47. A system in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising:
a digital storage device in the user television equipment for digitally storing the programs and associated program data using the interactive television program guide;
means for defining a super-program sequence; and
means for displaying the programs and segments of the programs and associated program data according to the defined super-program sequence on the user television equipment using the interactive television program guide.
48. The system defined in claim 47 wherein the defining means further comprises means for displaying a super-program screen on the user television equipment using the interactive television program guide.

49. The system defined in claim 48 wherein the super-program screen comprises:

an area indicating programs stored on the digital storage device; and

means for providing a user with an opportunity to select a program to be included in the super-program sequence.

50. The system defined in claim 48 wherein:

the super-program screen further comprises an area for providing a user with an opportunity to define play segments; and

the display means further comprises means for displaying play segments of the programs and associated program data according to the super-program sequence on the user television equipment using the interactive television program guide.

51. The system defined in claim 50 wherein the area for providing a user with an opportunity to define play segments comprises:

a play segment indicator; and

one or more markers for defining the play segment.

52. The system defined in claim 48 wherein
the super-program screen further comprises a video feedback area.

53. The system defined in claim 47 further comprising means for transferring the digitally stored programs according to the defined super-program to a secondary storage device using the interactive television program guide.

54. A method in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising the steps of:
   displaying the programs and associated program data on the user television equipment using the interactive television program guide; and
   digitally storing the programs and associated program data in a digital storage device contained in the user television equipment using the interactive television program guide.

55. The method defined in claim 54 further comprising the step of displaying a set-up screen on the user television equipment using the interactive television program guide.

56. The method defined in claim 55 wherein the step of displaying a set-up screen further comprises the step of providing a user with an opportunity to define one or more storage options.

57. The method defined in claim 56 wherein
the step of displaying a set-up screen further comprises the step of providing a user with an opportunity to define one or more storage options selected from the group consisting of: languages, video format, enforcement of parental control on storage, and auto-erasing viewed entries.

58. The method defined in claim 57 further comprising the step of digitally storing the programs in a language on a digital storage device with the interactive television program guide using the language storage option.

59. The method defined in claim 57 further comprising the step of digitally storing the programs in a video format on a digital storage device with the interactive television program guide using the video format storage option.

60. The method defined in claim 57 further comprising the step of digitally storing the programs and associated program data on a digital storage device with the interactive television program guide using the enforcement of parental control on storage option.

61. The method defined in claim 57 further comprising the step of automatically deleting programs and associated program data from a digital storage device with the interactive television program guide using the auto-erase viewed entries storage option.

62. The method defined in claim 55 wherein
the step of displaying a set-up screen further comprises the step of providing a user with an opportunity to define playback options.

63. The method defined in claim 55 wherein the step of displaying a set-up screen further comprises the step of providing a user with an opportunity to define one or more playback options selected from the group consisting of: default language, default video format, skip commercials.

64. The method defined in claim 63 further comprising the step of displaying the digitally stored programs and associated program data in a language on the user television program equipment with the interactive television program guide using the default language playback option.

65. The method defined in claim 63 further comprising the step of displaying the digitally stored programs and program data in a video format on the user television equipment with the interactive television program guide using the default video format playback option.

66. The method defined in claim 63 further comprising the steps of:

determining whether the digitally stored programs contain advertising using the interactive television program guide; and

skipping the advertising information when displaying the digitally stored programs and
programming data with the interactive television program guide using the skip commercials playback option.

67. The method defined in claim 55 further comprising the step of providing a user with an opportunity to select components for display in screens that display program information.

68. The method defined in claim 54 further comprising the step of displaying a recording schedule screen on the user television equipment using the interactive television program guide.

69. The method defined in claim 68 further comprising the steps of:
   indicating the programs currently scheduled for storage by the digital storage means;
   providing a user with an opportunity to select one of the programs; and
   displaying a selected program listing information screen for the selected program on the user television equipment using the interactive television program guide.

70. The method defined in claim 69 wherein the step of displaying a selected program listing information screen comprises the step of displaying one or more fields of associated program data for the selected program.

71. The method defined in claim 70 further
comprising the steps of:
  
  displaying one or more user fields; and

  providing a user with an opportunity to

  enter user information into one or more of the user —

  fields.

72. The method defined in claim 54 further
comprising the steps of:
  
  displaying a program listings screen on the
user television equipment using the interactive
television program guide; and

  providing the user with an opportunity to
select a program listing.

73. The method defined in claim 72 wherein
the means for displaying program listings further
comprises means for displaying program listings in
subsets of listings according to one or more
organization criteria.

74. The method defined in claim 73 further
comprising the step of providing a user with an
opportunity to select the organization criteria.

75. The method defined in claim 73 further
comprising the step of providing a user with an
opportunity to define the organization criteria.

76. The method defined in claim 72 further
comprising the step of displaying program listings in
sorted lists according to sorting criteria.
77. The method defined in claim 76 further comprising the step of providing the user with an opportunity to select the sorting criteria.

78. The method defined in claim 72 wherein the step of displaying a program listings screen further comprises the step of displaying listings of programs stored on a digital storage device.

79. The method defined in claim 78 further comprising the step of displaying a program listings information screen for the selected program listing on the user television equipment using the interactive television program guide.

80. The method defined in claim 79 wherein the step of displaying a program listings information screen further comprises the step of displaying one or more fields of associated program data selected from the group consisting of: title, description, episode, channel, duration, viewed, cast members, category(ies), language, video format, start and end time, date, re-run indicator, stereo indicator, close-captioned indicator, and other information.

81. The method defined in claim 78 further comprising the steps of:
   displaying one or more on-screen options; and
   providing a user with an opportunity to select an on-screen option.
82. The method defined in claim 72 wherein
the step of displaying program listings further
comprises the step of displaying program listings in a
program listings grid.

83. The method defined in claim 72 wherein
the step of displaying a program listings grid further
comprises the step of displaying one or more rows of
listings of programs stored by the digital storage
means.

84. The method defined in claim 54 further
comprising the step of displaying the digitally stored
programs and associated program data on the user
television equipment using the interactive television
program guide to provide users with an opportunity to
access the associated program data as if the programs
and program data were being originally aired.

85. The method defined in claim 54 further
comprising the step of digitally storing additional
program components on a digital storage device.

86. The method defined in claim 54 further
comprising the step of providing a user with an
opportunity to provide user added information.

87. The method defined in claim 54 further
comprising the step of transferring the digitally
stored programs to a secondary storage device using the
interactive television program guide.
88. A method in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising the steps of:

- digitally storing the programs and associated program data using the interactive television program guide; and

- maintaining a directory of the digitally stored associated program data using the interactive television program guide.

89. The method defined in claim 88 further comprising the step of displaying a directory listing screen on the user television equipment using the interactive television program guide.

90. The method defined in claim 89 further comprising the steps of:

- indicating directory entry information;

and

- providing a user with an opportunity to select directory entry information;

- displaying a full entry information screen in response to the selection by a user of directory information.

91. The method defined in claim 90 further comprising the step of displaying a plurality of fields of directory entry information selected from the group consisting of: title, description, episode, channel, duration, viewed, cast members, category(ies), language, video format, start and end time, date, re-
run indicator, stereo indicator, close-captioned indicator, and other information.

92. The method defined in claim 91 further comprising the steps of:
   displaying one or more user-defined fields; and
   providing a user with an opportunity to enter user information in one or more of the user-defined fields.

93. The method defined in claim 88 further comprising the steps of:
   displaying an edit screen; and
   editing portions of the digitally stored programs and associated program data from the digital storage device using the interactive television program guide.

94. The method defined in claim 93 further comprising the step of providing a user with an opportunity to define the portions of the digitally stored programs and associated program data edited by the editing means.

95. The method defined in claim 94 further comprising the step of providing a video feedback area.

96. The method defined in claim 88 further comprising the steps of:
   digitally storing the programs and associated program data on removable digital storage
media using the interactive television program guide; and

maintaining the digitally stored associated program data in a global media library using the interactive television program guide.

97. The method defined in claim 96 further comprising the step of displaying a global media library screen on the user television equipment using the interactive television program guide.

98. The method defined in claim 97 further comprising the steps of:

providing a user with an opportunity to select a program stored on the removable storage media; and

displaying an indication that the removable storage medium containing the selected program is not loaded in the digital storage device.

99. A method in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising the steps of:

digitally storing the programs and associated program data using the interactive television program guide;

defining a super-program sequence; and
displaying the programs and segments of the programs and associated program data according to the defined super-program sequence on the user television equipment using the interactive television
program guide.

100. The method defined in claim 99 further comprising the step of displaying a super-program screen on the user television equipment using the interactive television program guide.

101. The method defined in claim 100 further comprising the steps of:
   indicating programs stored on the digital storage device; and
   providing a user with an opportunity to select a program to be included in the super-program sequence.

102. The method defined in claim 100 further comprising the steps of:
   providing a user with an opportunity to define play segments; and
   displaying play segments of the programs and associated program data according to the super-program sequence on the user television equipment using the interactive television program guide.

103. The method defined in claim 102 further comprising the steps of:
   displaying a play segment indicator; and
   providing one or more markers for defining the play segment.

104. The method defined in claim 100 further comprising the step of providing a video feedback area.
105. The method defined in claim 99 further comprising the step of transferring the digitally stored programs according to the defined super-program to a secondary storage device using the interactive television program guide.
FIG. 1
FIG. 2
**FIG. 4**
FIG. 5b

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<td>7:00 PM</td>
<td>HBO</td>
<td>NBC</td>
<td>FOX</td>
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<tr>
<td>3</td>
<td>8:00 PM</td>
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<tr>
<td>PROGRAM LISTING INFORMATION</td>
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<tr>
<td>-----------------------------</td>
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<td></td>
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<tr>
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<td></td>
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<tr>
<td>DESCRIPTION: SITUATION COMEDY ABOUT LIFE IN A MASH UNIT DURING THE KOREAN WAR</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPISODE: 1975 EPISODE 5</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>DURATION: 30 MIN.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>VIEWED: NO</td>
<td></td>
<td></td>
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<td></td>
</tr>
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<td>CAST MEMBERS: ALAN ALDA, LORETTA SWIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>LANGUAGE(S): ENGLISH</td>
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<td>VIDEO FORMAT: NORMAL TV</td>
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<td>OTHER INFORMATION: MASH WEBSITE</td>
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**FIG. 6**
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<td>5/1/98</td>
<td>8:00PM</td>
<td>30 MIN</td>
</tr>
<tr>
<td>TERMINATOR</td>
<td>4</td>
<td>5/2/98</td>
<td>8:00PM</td>
<td>120 MIN</td>
</tr>
<tr>
<td>WILD-AFRICA</td>
<td>--</td>
<td>5/3/98</td>
<td>7:00PM</td>
<td>60 MIN</td>
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EST. TIME REMAINING: 50 MIN

VOLUME NAME: DISC ONE

FIG. 7a
PROGRAM LISTING INFORMATION

TITLE: M*A*S*H

DESCRIPTION: SITUATION COMEDY ABOUT LIFE IN A MASH UNIT DURING THE KOREAN WAR

USER DESCRIPTION: PARTY EPISODE

EPISODE: 1975 EPISODE 5

CHANNEL: 11

DURATION: 30 MIN.

VIEWED: NO

CAST MEMBERS: ALAN ALDA, LORETTA SWITT

CATEGORY(IES): COMEDY, WAR

USER CATEGORY(IES): DAD'S FAVORITES

LANGUAGE(S): ENGLISH

VIDEO FORMAT: NORMAL TV

OTHER INFORMATION: MASH WEB SITE

USER OTHER: 

FIG. 7b
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FIG. 8
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<tr>
<td>M<em>A</em>S*H</td>
<td>11</td>
<td>5/1/98</td>
<td>8:00PM</td>
<td>30 MIN</td>
<td>NO</td>
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<tr>
<td>TERMINATOR</td>
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<td>5/2/98</td>
<td>8:00PM</td>
<td>120 MIN</td>
<td>YES</td>
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<td>18</td>
<td>5/3/98</td>
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<td>YES</td>
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SUPPLEMENT PROGRAM

FIG. 9
FULL ENTRY INFORMATION

TITLE: M*A*S*H

DESCRIPTION: SITUATION COMEDY ABOUT LIFE IN A MASH UNIT DURING THE KOREAN WAR

USER DESCRIPTION: PARTY EPISODE

EPISODE: 1975 EPISODE 5

CHANNEL: 11

DURATION: 30 MIN.

VIEWED: NO

CAST MEMBERS: ALAN ALDA, LORETTA SWIT

CATEGORY(IES): COMEDY, WAR

USER CATEGORY(IES): DAD'S FAVORITES

LANGUAGE(S): ENGLISH

VIDEO FORMAT: NORMAL TV

OTHER INFORMATION: MASH WEBSITE

USER OTHER:
SUPER-PROGRAM

VOLUME NAME: DISC ONE
EST. TIME REMAINING: 500 MIN

MEDIA DIRECTORY

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<th>RECORD DATE</th>
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<tbody>
<tr>
<td>M<em>A</em>S*H</td>
<td>11</td>
<td>5/1/98</td>
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ENTRY TITLE PLAY-SEGMENT

1 M*A*S*H 0:00 30:00
2 WILD AFRICA 0:00 60:00

VIDEO FEEDBACK AREA

FIG. 12a
### ENTRY INFORMATION DISPLAY OPTIONS

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### STORAGE OPTIONS

- **Languages**: English
- **Video Format**: HDTV
- **Enforce Parental Control on Storage**: Yes
- **Auto-Erase Viewed Entries**: Yes

### AVAILABLE LANGUAGES

- English
- German
- French
- Italian
- Spanish
- All

### PLAYBACK OPTIONS

- **Default Language**: English
- **Default Video**: HDTV
- **Skip Commercials**: Yes

**Fig. 14**
FIG. 15

DIGITALLY STORE PROGRAMS AND ASSOCIATED DATA

DIGITALLY STORE ADDITIONAL COMPONENTS

DISPLAY PROGRAMS AND ASSOCIATED PROGRAM DATA

ALLOW ACCESS AS IF ORIGINALLY AIREO

DISPLAY SET-UP SCREEN

DISPLAY RECORDING SCHEDULE SCREEN

DISPLAY PROGRAM LISTINGS SCREEN

DISPLAY EDIT SCREEN

TRANSFER PROGRAMS
DISPLAY SET-UP SCREEN

PROVIDE USER WITH OPPORTUNITY TO DEFINE STORAGE OPTIONS

DIGITALLY STORE PROGRAMS AND ASSOCIATED DATA ACCORDING TO LANGUAGE STORAGE OPTION

DIGITALLY STORE PROGRAMS AND ASSOCIATED DATA ACCORDING TO VIDEO FORMAT OPTION

DIGITALLY STORE PROGRAMS AND ASSOCIATED DATA ACCORDING TO ENFORCE PARENTAL CONTROL ON STORAGE OPTION

AUTOMATICALLY DELETE PROGRAMS AND ASSOCIATED DATA ACCORDING TO AUTO-ERASE VIEWED ENTRIES OPTION

PROVIDE USER WITH OPPORTUNITY TO DEFINE PLAYBACK OPTIONS

PLAY BACK PROGRAMS AND ASSOCIATED DATA ACCORDING TO DEFAULT LANGUAGE OPTION

PLAY BACK PROGRAMS AND ASSOCIATED DATA ACCORDING TO DEFAULT VIDEO FORMAT OPTION

PLAY BACK PROGRAMS AND ASSOCIATED DATA SKIPPING ADVERTISING ACCORDING TO SKIP COMMERCIALS OPTION

FIG. 16
FIG. 17

DISPLAY RECORDING SCHEDULE SCREEN

INDICATE PROGRAMS CURRENTLY SCHEDULED FOR STORAGE

PROVIDE USER WITH OPPORTUNITY TO SELECT ONE OF THE PROGRAMS

DISPLAY SELECTED PROGRAM LISTING INFORMATION SCREEN FOR SELECTED PROGRAM

DISPLAY ONE OR MORE FIELDS OF ASSOCIATED PROGRAM DATA

DISPLAY ONE OR MORE USER FIELDS

PROVIDE USER WITH OPPORTUNITY TO ENTER USER INFORMATION INTO USER FIELDS

RECORD PROGRAMS AND ASSOCIATED PROGRAM DATA AND PROGRAM COMPONENTS

PROVIDE USER WITH OPPORTUNITY TO RECORD PROGRAMS DURING TELEVISION VIEWING

DISPLAY RECORDING SCREEN

PROVIDE USER WITH OPPORTUNITY TO EDIT RECORDING INFORMATION

PROVIDE USER WITH OPPORTUNITY TO ACCESS RECORDING SCHEDULE SCREEN
DISPLAY PROGRAM LISTINGS SCREEN

DISPLAY PROGRAM LISTINGS GRID 470

PROVIDE USER WITH OPPORTUNITY TO DEFINE AND SELECT CATEGORIES AND SORT LISTINGS 472

PROVIDE USER WITH OPPORTUNITY TO SELECT A PROGRAM LISTING 474

DISPLAY PROGRAM LISTINGS INFORMATION SCREEN FOR THE SELECTED LISTING 476

DISPLAY LIST OF ON-SCREEN OPTIONS 478

DISPLAY PROGRAMS, ASSOCIATED PROGRAM DATA, AND COMPONENTS 480

FIG. 18
DIGITALLY STORE PROGRAMS AND ASSOCIATED DATA

MAINTAIN DIRECTORY OF DATA

DISPLAY DIRECTORY LISTING SCREEN

INDICATE DIRECTORY ENTRY INFORMATION

PROVIDE USER WITH OPPORTUNITY TO SELECT DIRECTORY ENTRY

PROVIDE ON-SCREEN OPTIONS

DISPLAY FULL ENTRY INFORMATION SCREEN FOR SELECTION

DISPLAY FIELDS OF DIRECTORY ENTRY INFORMATION

DISPLAY USER-DEFINED FIELDS

PROVIDE USER WITH OPPORTUNITY TO ENTER USER INFORMATION IN USER-DEFINED FIELDS

FIG. 19
FIG. 20

DISPLAY EDIT SCREEN 504

PROVIDE USER WITH OPPORTUNITY TO DEFINE PORTIONS OF STORED PROGRAMS AND ASSOCIATED DATA TO BE EDITED 506

DISPLAY VIDEO FEEDBACK AREA 508

EDIT PORTIONS OF STORED PROGRAMS AND ASSOCIATED DATA 510
DIGITALLY STORE PROGRAMS AND ASSOCIATED DATA ON REMOVABLE DIGITAL STORAGE MEDIA

MAINTAIN GLOBAL MEDIA LIBRARY OF ASSOCIATED DATA

DISPLAY GLOBAL MEDIA LIBRARY SCREEN

PROVIDE USER WITH OPPORTUNITY TO SELECT STORED PROGRAM

DISPLAY INDICATION THAT REMOVABLE STORAGE MEDIUM IS NOT LOADED WHEN THE REMOVABLE STORAGE MEDIUM WITH SELECTED PROGRAM IS NOT LOADED

FIG. 21
DIGITALLY STORE PROGRAMS AND ASSOCIATED DATA

DEFINE SUPER-PROGRAM SEQUENCE

DISPLAY SUPER-PROGRAM SCREEN

INDICATE STORED PROGRAMS

PROVIDE USER WITH OPPORTUNITY TO SELECT PROGRAMS FOR SUPER-PROGRAM SEQUENCE

PROVIDE USER WITH OPPORTUNITY TO DEFINE PLAY SEGMENTS

DISPLAY A PLAY SEGMENT INDICATOR
DISPLAY MARKERS FOR DEFINING PLAY SEGMENT

DISPLAY VIDEO FEEDBACK AREA

DISPLAY PLAY SEGMENTS OF PROGRAMS AND ASSOCIATED DATA ACCORDING TO SUPER-PROGRAM SEQUENCE

DISPLAY PROGRAMS AND ASSOCIATED DATA ACCORDING TO SUPER-PROGRAM SEQUENCE

FIG. 22
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7  H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7  H04N

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

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

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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Further documents are listed in the continuation of box C. Patent family members are listed in annex.

* Special categories of cited documents:
  * "A" document defining the general state of the art which is not considered to be of particular relevance
  * "E" earlier document published on or after the international filing date
  * "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
  * "O" document referring to an oral disclosure, use, exhibition or other means
  * "P" document published prior to the international filing date but later than the priority date claimed

* Special categories of cited documents:
  * "I" later document published after the international filing date or priority data 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 novel or 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
  * "S" document member of the same patent family

Date of the actual completion of the international search: 7 January 2000

Date of mailing of the international search report: 13/01/2000

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk
Tel. (+31-70) 342-8240, Tx 31 651 apo nt, Fax: (+31-70) 340-3016

Authorized officer: Fuchs, P
## DOCUMENTS CONSIDERED TO BE RELEVANT

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<td><strong>Customer Number:</strong></td>
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If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.
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CONFIRMATION NO. 3177

34610
KED & ASSOCIATES, LLP
P.O. Box 221200
Chantilly, VA 20153-1200

**Title:** PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

**Publication No.** US-2008-0155606-A1

**Publication Date:** 06/26/2008

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The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

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Pre-Grant Publication Division, 703-605-4283
34610
KED & ASSOCIATES, LLP
P.O. Box 221200
Chantilly, VA 20153-1200

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Applicant(s)
Seung-Kwan HA, Seoul, KOREA, REPUBLIC OF;

Power of Attorney: The patent practitioners associated with Customer Number 34610

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 11/01/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 11/874,770

Projected Publication Date: 06/26/2008

Non-Publication Request: No

Early Publication Request: No
PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

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Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED
The applicant has been granted a license under 35 U.S.C. 184, if the phrase “IF REQUIRED, FOREIGN FILING LICENSE GRANTED” followed by a date appears on this form. Such licenses are issued in all applications where
the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Seung-Kwan HA

Confirmation No.: 3177

Group Art Unit: 2622

Serial No.: 11/874,770

Examiner: To Be Assigned

Filed: October 18, 2007

Customer No.: 34610

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

REPLY TO NOTICE TO FILE MISSING PARTS OF APPLICATION FILING DATE GRANTED

U.S. Patent and Trademark Office
Customer Service Window, MAIL STOP MISSING PARTS
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

In reply to the Notice of Missing Parts of Application dated November 6, 2007, submitted herewith are the following documents for filing in the above-referenced application:

☒ Declaration and Power of Attorney.
☒ Filing Fee of $1,030.00.
☐ Additional claim fee of $________.
☒ Late filing surcharge of ☑ $130.00 (large entity) ☐ $65.00 (small entity).
☐ Transmittal of certified priority document(s).
☐ Copy of Form PTO-1533 (Notice of Missing Parts).
☒ Authorization to Treat a Reply as Incorporating An Extension of Time under 37 C.F.R. §1.136(a)(3).
☐ A check in the amount of $________ (Check #_______) is enclosed.
☒ Please charge my Credit Card in the amount of $1,160.00.
☐ Verified English language translation.
☐ Surcharge for filing non-English Specification ☐ $130.00 (large entity) ☐ $65.00 small entity.
Assignment Recording Coversheet and Assignment.

A check in the amount of $40.00 (Check # )

Please charge my Credit Card $40.00, representing the recording fee for the Assignment. (See completed form PTO-2038 enclosed).

It is requested that an Official Filing Receipt showing the data contained herewith now be issued.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
KED & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 36,186

Correspondence Address:
P.O. Box 221200
Chantilly, VA 20153-1200
703 766-3777 DYK/dak

Date: December 21, 2007
Please direct all correspondence to Customer Number 34610

\Fl4\Documents\2309\2309-002\143601.doc
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of
Seung-Kwan HA
Serial No.: 11/874,770
Filed: October 18, 2007

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

AUTHORIZATION TO TREAT A REPLY AS INCORPORATING AN EXTENSION OF TIME UNDER 37 C.F.R. §1.136(a)(3)

U.S. Patent and Trademark Office
Customer Service Window, Mail Stop Missing Parts
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

The U.S. Patent and Trademark Office is hereby authorized to treat any concurrent or future reply that requires a petition for an extension of time under this paragraph for its timely submission, as incorporating a petition for extension of time for the appropriate length of time under 37 C.F.R. 1.136(a)(3). The U.S. Patent and Trademark Office is hereby authorized to charge all required extension of time fees to our Deposit Account No. 16-0607, if such fees are not otherwise provided for in such reply. A duplicate copy of this sheet is enclosed.

Respectfully submitted,
KED & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 36,186

Correspondence Address:
P.O. Box 221200
Chantilly, VA 20153-1200
703 766-3777 DYK/dak

Date: December 21, 2007
Please direct all correspondence to Customer Number 34610
DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter claimed and for which a patent is sought on the invention entitled PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS, the specification of which

☐ is attached hereto    ☒ was filed on October 18, 2007 as Application Serial No. 11/874,770 and was amended on ______________________ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is known to me to be material to patentability in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365 (b) of any foreign application(s) for patent or inventor’s certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor’s certificate, or of any PCT international application having a filing date before that of the application on which priority is claimed.

<table>
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<td>10-2006-0133932</td>
<td>Korea</td>
<td>December 26, 2006</td>
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I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.

<table>
<thead>
<tr>
<th>Application Number(s):</th>
<th>Filing Date (Month/Day/Year)</th>
</tr>
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</table>

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

<table>
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<tr>
<th>Prior U. S. Application or PCT Parent Number</th>
<th>Filing Date (Month/Day/Year)</th>
<th>Parent Patent Number (if applicable)</th>
</tr>
</thead>
</table>

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the attorney(s) and/or agent(s) associated with Customer Number 34610 to prosecute this application and transact all business in the Patent and Trademark Office.

Direct all correspondence to Customer Number 34610
<table>
<thead>
<tr>
<th>Full name of sole or first inventor: Seung-Kwan HA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventor's signature: [Signature] Date: NOV 30, 2007</td>
</tr>
<tr>
<td>Mailing Address: 42-145, Mia-dong, Gangbuk-gu, Seoul 142-100, Republic of Korea</td>
</tr>
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Seung-Kwan HA

Serial No.: 11/874,770

Confirmation No.: 3177

Group Art Unit: 2622

Filed: October 18, 2007

Examiner:

Customer No.: 34610

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

INFORMATION DISCLOSURE STATEMENT

U.S. Patent and Trademark Office
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

Pursuant to 37 C.F.R. § 1.56, the attention of the Patent and Trademark Office is hereby directed to the references listed on the attached PTO-1449. One copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the “References Cited” on any patent to issue therefrom.

Applicants have listed publication dates on the attached PTO-1449 based on information presently available to the undersigned. However, the listed publication dates should not be construed as an admission that the information was actually published on the indicated date. Applicant reserves the right to establish the patentability of the claimed invention over any of the information provided herewith, and/or to prove that this information may not be prior art, and/or to prove that this information may not be enabling for the teachings purportedly offered. This statement should not be construed as a representation that a search has been made, that information cited in the statement is considered to be and/or is material to patentability, or that information more material to the examination of the present patent application does not exist. The Examiner is specifically requested not to rely solely on the materials submitted herewith. It is further understood that the Examiner will consider information that was cited or submitted to the U.S. Patent and Trademark Office in a prior application relied on under 35 U.S.C. § 120. 1138 OG 37, 38 (May 19, 1992).

☐ 1. This Information Disclosure Statement is being filed (i) within three months of the U.S. filing date of a U.S. application other than a CPA continued prosecution application under §1.53(d) OR (ii) within three months of the date of entry of the national stage as set forth in §1.491 in an international application OR (iii) before the mailing date of a first Office Action on the merits OR (iv) before the mailing of a first Office Action after the filing of a Request for continued examination under §1.114. No certification or fee is required. 37 C.F.R. §1.97(b).

☐ 2. This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date of the first Office Action on the merits, but before the mailing date of a Final Rejection OR Notice of Allowance OR an action that otherwise closes prosecution in the application. 37 C.F.R. §1.97(c).

☐ a. I hereby state that each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. §1.97(c)(1). No fee is required.

The undersigned is aware of the modifications in Rule 1.97(c) issued in September 2007 which allow applicants to file Information Disclosure Statements after the mailing date of a Final Rejection or Notice of Allowance, or an action that otherwise closes prosecution in the application. In this regard, please note that the undersigned is aware of the limitations in Rule 1.97 on the use of Information Disclosure Statements as a substitute for a search conducted under Rule 1.97(e). While the undersigned is using these rules to the fullest extent possible, it is also understood that the undersigned may be required to file a separate search report in accordance with Rule 1.97(e).
b. I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. §1.97(e)(2).

c. Attached is our check no. _____ in the amount of $180.00 in payment of the fee under 37 C.F.R. §1.17(p). Please credit or debit Deposit Account No. 16-0607 as needed to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached.

d. Please charge our Credit Card in the amount of $180.00 in payment of the fee under 37 C.F.R. §1.17(p) per the attached PTO 2038 form. Please credit or debit Deposit Account No. 16-0607 as needed to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached.

3. This Information Disclosure Statement is being filed after the mailing date of a Final Rejection OR Notice of Allowance OR an action that otherwise closes prosecution in the application, but on or before payment of the Issue Fee.

a. Attached is our check no. _____ in the amount of $180.00 in payment of the fee under 37 C.F.R. §1.17(p). Please credit or debit Deposit Account No. 16-0607 as needed to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached. 37 C.F.R. §1.97(d).

b. Please charge our Credit Card in the amount of $180.00 in payment of the fee under 37 C.F.R. §1.17(p) per the attached PTO 2038 form. Please credit or debit Deposit Account No. 16-0607 as needed to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached. 37 C.F.R. §1.97(d).

c. I hereby state that each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. §1.97(e)(1).

d. I hereby state that no item of information in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. §1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 C.F.R. §1.97(e)(2).

4. The reference was cited in a corresponding Korean application. A copy of the Office Action issued by the Korean Intellectual Property Office dated October 25, 2007 is attached for the Examiner’s information. An English language version of the Office Action is not currently available.

5. To the extent necessary, a petition for an extension of time under 37 C.F.R. §1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
KED & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 36,186

Correspondence Address:
P.O. Box 221200
Chantilly, VA 20153-1200
Telephone: (703) 766-3777
Date: December 21, 2007

Please direct all correspondence to Customer Number 34610
DYK/djk
\\Fl4\Documents\2309\2309-002\143608.doc
## U.S. Patent Documents

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## Other Art (Including Author, Title, Date, Pertinent Pages, Publisher, Place of Publication, Etc.)

ABSTRACT
A method and a device for producing program guide by a preview are provided to conveniently select or watch corresponding contents by producing program guide with preview in a digital television, a personal video recorder, and a set-top box. CONSTITUTION: A method for producing program guide by preview includes the steps of extracting preview data from received broadcasting signals and storing the preview data to the first storing part(410), and making a list of the stored previews on a screen for the manipulation such as selection or deletion by a user(420). The user manipulates an edition or reservation function by selecting a desired preview and deleting the others from the list(430). Programs among the received broadcasting signals are stored to a second storing part(440). A program guide is produced by linking the selected preview with a corresponding program(450). The program guide is linked with reference to PID or position information recorded together with the preview or programs stored in the first and second storing parts.
공개특허 제2003-78217호 (2003.10.08.) 1부

(19) 대한민국특허청 (KR)
(12) 공개특허공보 (A)
(51) int. Cl. 7
H04N 5/445
(11) 공개번호 2003-0078217
(43) 공개일자 2003년10월08일

(21) 출원번호 10-2002-0017106
(22) 출원일자 2002년03월28일
(71) 출원인 삼성전자주식회사
경기도 수원시 팔달구 매진3동 416번지
(72) 발명자 박세혁
서울특별시 은평구 별관3동 445번지 185
(74) 대리인 이영우, 이해영

실시장구: 없음

(54) 프리뷰모드를 이용한 프로그램 가이드 생성 방법 및 그 장치

요약

방송에서 제공되는 프리뷰모드를 이용하여 프로그램 가이드를 생성하는 방법 및 그 장치가 개발되어 있다. 본 발명은 수신되는 전송스트림에서 프리뷰모드 데이터를 추출하여 순서적으로 저장하는 과정, 저장된 프리뷰모드를 정렬하는 과정, 정렬된 프리뷰모드 리스트와 수신되는 해당 프로그램을 링크시켜 프로그램 가이드를 생성하는 과정을 포함한다.

대표도

도 4

영세서

도면의 간단한 설명

도 1은 본 발명에 따른 프로그램 가이드 생성 절차를 보이는 도면이다.
도 2는 본 발명에 따른 프리뷰모드를 이용한 프로그램 가이드의 작성이전도이다.
도 3은 도 1의 제2자정부에서 프리뷰와 프로그램을 링크시켜 저장한 실시예를 도시한 것이다.
도 4는 본 발명에 따른 프로그램 가이드 생성 방법을 보이는 전체 흐름도이다.
도 5는 도 4의 프리뷰모드 기능 설명을 보이는 상세 흐름도이다.
도 6은 도 4의 프로그램 가이드 생성 과정을 보이는 상세 흐름도이다.
도 7은 도 4의 분할 형태의 프로그램 가이드를 생성하는 과정을 보이는 상세 흐름도이다.
도 8은 도 6의 프리뷰모드 리스트 정렬 과정을 보이는 상세 흐름도이다.

발명의 상세한 설명

발명의 목적

발명이 속하는 기술분야 및 그 분야의 종류간에 본 디지털 방송 수신 시스템에 관한 것이며, 특히 방송에서 제공되는 프리뷰모드 (preview: 미리보기)를 이용하여 프로그램 가이드를 생성하는 방법 및 그 장치에 관한 것이다.

동영상으로 디지털 테레비전 방송과 같은 방송 네트워크에서 프로그램 제공자는 자체 또는 자국의 이후에 제공되는 콘텐츠 (content)에 대한 프리뷰모드와 시청자에게서 서비스의 서비스 제공은 유도하게된다. 이 프리뷰모드는 콘텐츠의 전달 시간, 구성의 재생적인 정보와 같은 콘텐츠 내용을 보관한 시간에 확인할 수 있는 특성을 가지고 있다. 저작권에 대한 프리뷰모드와 같은 시간에 화면에 표시되기 때문에 사용자는 실시간으로 판단할 수 있으며, 예를 들면 프로그램의 예를 활용한 장비 시청을 이용하기 때문에 제공하는 장비라는 개념이 있었다.

발명이 이루어지는 기술적 과정

본 발명이 이루어지는 기술적 과정은 방송에서 제공되는 프리뷰모드를 수신하여 해당 콘텐츠의 선택이나 사
화요일, 2008년 07월 21일

제목: 프로그램의 가이드 생성 방법의 정제

요약: 본 논문은 프로그램의 가이드 생성 방법의 정제를 목표로 제작되었습니다. 본 논문의 주요 내용은 다음과 같습니다.

1. 프로그램의 가이드 생성 방법의 정제에 대한 필요성과 중요성
2. 가이드 생성 방법의 정제에 대한 전반적인 이해
3. 가이드 생성 방법의 정제를 위한 원칙과 방법
4. 가이드 생성 방법의 정제의 결과와 관찰

본 논문은 가이드 생성 방법의 정제에 대한 공단을 제공하기 위한 작업으로 진행되었습니다.
다시 프리뷰를 수신하고 그렇지 않으면 수신된 프리뷰를 저장한다.

이어서, 화면상에 사용자에게 선택 및 삭제등의 주의를 위해 저장된 프리뷰 리스트를 표시한다(420 과정).

이어서, 화면상에 표시된 프리뷰 리스트중에서 사용자가 선호하는 프리뷰만을 선택하고 나머지는 삭제하는 작업이 과정이며 예약 기능이나 예약 기능을 허용하는 것과 같이 프로그램 메뉴를 설정한다(410 과정).

이어서, 수신된 도움말 상호등에서 도움말을 수신하여 제2장정부(140)에 저장한다(440 과정).

이어서, 사용자가 중에서 선택된 프리뷰를 해당 프로그램을 확인하기 위해 프로그램 가이드를 생성한다(450 과정). 이때, 프로그램 가이드는 제1장정부(150) 및 제2장정부(140)에 저장된 프리뷰 및 프로그램에 편리하게 기록되어 있는 제목이나 위치 정보등을 참조하여 얻는다.

도 5는 도 4의 프리뷰 모델 선택을 보이는 상세 화면이다.

먼저, 사용자가 입력에 따라 저장된 프리뷰 리스트를 화면에 표시한다(510 과정).

이어서, 표시된 프리뷰를 사용자 입력에 따라 리스트를 재설정한다(520 과정).

이어서, 재설정된 프리뷰 리스트에 대해 예약이나 관광등의 기능에 선택 되었는지를 판단한다(530 과정).

이어서 사용자가 선택이 없으면 다시 프리뷰 리스트를 표시하고, 사용자 기능 선택이 있으면 선택된 기능을 수행한 후 프리뷰 리스트를 표시한다(540 과정).

도 6은 도 4의 프로그램 가이드 생성 과정을 보이는 상세 화면이다.

먼저, 빈손 상호에 표시되어 있는 프로그램을 수신한다(610 과정).

이어서, 이미 저장되어 있는 프리뷰 리스트와 수신한 프로그램을 비교한다(620 과정). 이때 수신된 프로그램과 동일한 프리뷰가 리스트에 존재하지 않으면 다시 프로그램을 수신하고, 수신된 프로그램과 동일한 프리뷰가 리스트에 존재하면 그 프로그램을 재설정하고 동시에 화면에 표시한다(630 과정).

이어서, 프리뷰와 해당 프로그램을 백스케어 도 2에 도시된 설계에 같은 프로그램 가이드를 생성한 후 (640 과정) 프로그램을 저장함과 동시에 화면에 표시한다.

이어서, 저장된 프리뷰 리스트를 재 저장한다(650 과정).

도 7은 도 2와 같은 형태의 프로그램 가이드를 생성하는 과정을 보이는 상세 화면이다.

먼저, 해당 프로그램의 프리뷰를 프로그램 가이드의 프리뷰 리스트(210)에 입력시킨다(710 과정).

이어서, 해당 프로그램에 대한 정보가 존재하는지를 체크한다(720 과정).

이어서, 해당 프로그램에 대한 정보가 존재하면 해당 프로그램(콘텐츠)의 정보를 도 3의 저장에 같이 콘텐츠 정보(310)에 추가적으로 저장한다(730 과정).

이어서, 해당 프로그램의 프리뷰를 도 3의 저장과 같이 콘텐츠 프리뷰(320)에 추가적으로 저장한다 (730 과정).

이어서, 도 2에 도시된 프로그램 가이드와 이미 저장된 프로그램을 서로 백스케어한다(750 과정).

도 8은 도 6의 프리뷰 리스트 정렬 과정을 보이는 상세 화면이다.

먼저, 프리뷰 리스트에 새로운 프리뷰 정보를 추가한다(810 과정).

이어서, 저장된 이전 프리뷰 정보(채널, 시간)와 새로운 프리뷰 정보(채널, 시간)가 중복되는 것을 체크한다(820 과정).


본 방법은 상술한 상세에 한정되지 않으며, 본 방법의 상장내에서 당연한의 예외 상황에 가능함을 물론 이다.

발원의 효과
상술한 바와 같이 본 발원에 의하면, 디지털 채널, PVR(Personal Video Recorder), STB(SettopBox) 등에서 프리뷰를 이용한 프로그램 가이드를 생성함으로써 해당 채널의 선택 및 시청등을 편리하게 이용할 수 있다.

(57) 총론의 발원

형구령 1
프로그램에 방송되기 이전에 비디오, 오디오와 함께 전송 스트림으로 다중화되어 수신된 프리뷰를 이용한 프로그램 가이드 생성 방법에 있어서,

(a) 싱기 수신되는 전송 스트림중에서 프리뷰 데이터를 추출하여 저장하는 과정,
(b) 싱기 (a)과정에서 저장된 프리뷰 데이터를 소정의 순서에 따라 정렬하는 과정,

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(c) 상기 (b)항의 정부의 프로그램 데이터와 수신된 해당 프로그램을 확인시켜 프로그램 가이드 생성 방법.

청구항 2
제1항에 있어서, 상기 저장된 프로그램 데이터를 확인하여 선택 사항에 따라 편집하는 과정을 더 포함하는 것을 특징으로 하는 프로그램 가이드 생성 방법.

청구항 3
제1항에 있어서, 상기 (a)항의 과정은 수신된 프로그램의 동일한 프로그램이 있는지를 확인하여 동일한 프로그램이 존재하면 다른 프로그램을 수신하고 그렇지 않으면 수신된 프로그램을 저장하는 과정.
상기 저장된 프로그램을 확인하는 과정을 포함하는 것을 특징으로 하는 프로그램 가이드 생성 방법.

청구항 4
제3항에 있어서, 상기 프로그램 정정과정은 프로그램 정보를 비교하여 각 프로그램들의 중점을 확인하는 과정.
상기 과정에서 확인된 프로그램들의 중점 이외에 따라 프로그램 데이터를 제정정하는 과정을 더 포함하는 것을 특징으로 하는 프로그램 가이드 생성 방법.

청구항 5
제1항에 있어서, 상기 (c)항의 과정은 수신된 프로그램과 저장되어 있는 프로그램을 비교하는 과정.
상기 과정에서 수신된 프로그램과 동일한 프로그램이 있으면 프로그램을 저장함과 동시에 확인에 표시하는 과정.
상기 과정에서 저장된 프로그램과 해당 프로그램을 확인시켜 프로그램을 포함하는 것을 특징으로 하는 프로그램 가이드 생성 방법.

청구항 6
제5항에 있어서, 상기 프로그램 가이드 생성 과정은 해당 프로그램의 프로그램을 프로그램 리스트에 평가하는 과정.
상기 과정에서 평가된 프로그램 리스트에 해당하는 정보를 프로그램 정보에 입력하는 과정.
상기 과정에서 입력된 프로그램 리스트에 해당하는 프로그램의 내용을 정보를 포함하는 것을 특징으로 하는 프로그램 가이드 생성 방법.

청구항 7
프로그램의 비디오, 오디오와 함께 전송 스트림에 디지털화되는 프로그램을 이용한 프로그램 가이드 생성 장치에 있어서.
상기 전송 스트림으로부터 프로그램 데이터를 추출함과 함께 비디오 및 오디오 데이터를 편집하는 디코딩.
상기 디코딩에서 추출된 복수개의 프로그램 데이터를 저장하는 제1저장부.
상기 디코딩에서 추출된 복수개의 프로그램 데이터에 해당되는 프로그램 정보 및 내용을 저장하는 제2저장부.
상기 디코딩부로부터 추출된 프로그램 데이터를 상기 제1저장부에 순차대로 저장시키며, 상기 제1저장부에 저장된 프로그램 데이터의 위치에 상기 제2저장부에 저장된 해당 프로그램의 위치를 평가시켜 프로그램 가이드 생성 장치를 포함하는 프로그램 가이드 생성 장치.

청구항 8
제7항에 있어서, 상기 제1저장부에 저장되는 프로그램 데이터를 체크 및 삭제하는 기능을 더 포함하는 것을 특징으로 하는 프로그램 가이드 생성 장치.
도면 1

도면 2

도면 3

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- **RAM confirmation Number:** 815
- **Deposit Account**
- **Authorized User**

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**Total Files Size (in bytes):** 2432876
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant of Confirmation No.: 3177

Seung-Kwan HA Group Art Unit: 2622

Serial No.: 11/874,770 Examiner: To Be Assigned

Filed: October 18, 2007 Customer No.: 34610

For: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

TRANSMITTAL OF CERTIFIED PRIORITY DOCUMENT

U.S. Patent and Trademark Office
Customer Service Window, MAIL STOP MISSING PARTS
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

At the time the above application was filed, priority was claimed based on the following application:


A copy of the priority application listed above is enclosed.

Respectfully submitted,
KEDY & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 36,186

Correspondence Address:
P.O. Box 221200
Chantilly, VA 20153-1200
703 766-3777 DYK/dak

Date: December 21, 2007
Please direct all correspondence to Customer Number 34610
This is to certify that the following application annexed hereto is a true copy from the records of the Korean Intellectual Property Office.

Application Number

10-2006-0133932

Filing Date

DECEMBER 26, 2006

Applicant(s)

주식회사 휴맥스

2007년 08월 03일

COMMISSIONER

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[서지사항]
[출원인]

[성명] 하승관
[성명의 영문표기] Ha, Seungkwan
[주민등록번호] 790719-1XXXXXXX
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[출원인코드] 1-1998-000063-1
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[대리인코드] 9-1998-000651-6
[포괄위임등록번호] 2004-073908-7

【발명의 국문명칭】 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치, 방법 및 이를 구현하기 위한 프로그램을 기록한 기록매체
【발명의 영문명칭】 Device and method for providing information of recording data in digital picture display device and record media recorded program for realizing the same

【출원일자】 2006.12.26
【권리구분】 특허출원
【수신처】 특허청장
【취지】 특허법 제42조의 규정에 의한 출원, 특허법 제60조의 규정에 의한 심사청구를 합니다.

대리인 이경란 (인)

【수수료】
【기본출원료】 0 면 38,000 원
【가산출원료】 36 면 0 원
【우선권추장료】 0 건 0 원
【심사청구료】 19 황 717,000 원
【합계】 755,000 원
【요약서】

【요약】

디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치, 방법 및 이를 구현하기 위한 프로그램을 기록한 기록매체가 개시된다. 본 발명의 바람직한 일 실시예에 따르면, 디지털 영상 장치를 통해 수신되는 방송 채널을 검색하여 채널 리스트 데이터를 생성하는 채널 리스트 생성부와 디지털 영상 장치에서 방송 선택 신호 및 방송 데이터 저장 신호에 따라 저장되는 방송 데이터에 포함된 영상 데이터 및 정보 데이터를 상기 채널 리스트 데이터와 각각 링크하는 링크부를 포함하여, 채널 리스트 데이터는 디지털 영상 장치를 통해 출력되어 영상 데이터 및 정보 데이터의 링크 정보를 표시하고, 채널 리스트 데이터와 링크된 정보 데이터를 이용하여 영상 데이터의 정보를 제공하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치가 제공된다.

본 발명에 따르면, 사용자가 녹화한 방송 중 저장된 영상 데이터를 사용자가 일일이 검색하지 않아도 저장된 영상 데이터의 정보를 사용자에게 제공할 수 있는 장점이 있다.

【대표도】

도 1

【색인어】

디지털영상장치, PVR, 셋톱박스, DMB, 채널리스트, 부가정보
【명세서】

【발명의 명칭】

디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치, 방법 및 이를 구현하기 위한 프로그램을 기록한 기록매체{Device and method for providing information of recording data in digital picture display device and record media recorded program for realizing the same}

【도면의 간단한 설명】

<1> 도 1은 본 발명의 바람직한 일 실시예에 따른 저장된 영상 데이터의 정보 제공 장치를 포함할 수 있는 디지털 영상 장치의 구성을 예시한 구성도.

<2> 도 2는 본 발명의 바람직한 일 실시예에 따라 디지털 영상 장치에 영상 데이터를 저장하는 과정을 예시한 순서도.

<3> 도 3은 본 발명의 바람직한 일 실시예에 따른 디지털 영상 장치에 저장되는 채널 리스트 데이터의 영역 구성을 도시한 블록도.

<4> 도 4는 본 발명의 바람직한 일 실시예에 따라 디지털 영상 장치에 저장되는 채널 리스트 데이터와 링크되는 전송 스트림 정보 데이터의 구성을 예시한 블록도.

<5> 도 5는 본 발명의 바람직한 일 실시예에 따라 디지털 영상 장치에 저장되는 채널 리스트 데이터와 링크되는 녹화 정보 데이터의 구성을 예시한 블록도.

<6> 도 6은 본 발명의 바람직한 일 실시예에 따라 생성된 채널 리스트 데이터를 이용하여 디지털 영상 장치에 저장된 영상 데이터의 녹화 정보를 표시하는 과정을.
도시한 순서도.

도 7은 본 발명의 바람직한 일 실시예에 따라 생성된 채널 리스트 데이터를 이용하여 저장된 영상 데이터 중 장르가 영화인 영상 데이터와 각각의 영상 데이터가 방송되었던 채널의 목록을 표시하는 과정을 예시한 순서도.

【발명의 상세한 설명】

【발명의 목적】

【발명이 속하는 기술분야 및 그 분야의 종래기술】

본 발명은 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치, 방법 및 이를 구현하기 위한 프로그램을 기록한 기록매체에 관한 것으로서, 보다 상세하게는 디지털 영상 장치에 저장된 영상 데이터의 다양한 부가 정보를 채널 리스트를 통해 제공할 수 있는 장치, 방법 및 이를 구현하기 위한 프로그램을 기록한 기록매체에 관한 것이다.

본 명세서에서 디지털 영상 장치는 디지털 데이터를 이용하여 고품질의 동영상 서비스를 제공하는 장치를 말하며, 특히 영상 데이터를 저장할 수 있는 장치이다.

디지털 영상 장치는 예를 들면, 디지털 텔레비전 방송, 디지털 미디어 방송 (DMB : Digital Multimedia Broadcasting, 이하 DMB 방송이라 함) 등의 디지털 방송을 수신하고 디지털 방송을 녹화할 수 있는 기능을 포함하는 시트톱 박스(set-top box)
box), 디지털 TV 그리고 녹화된 디지털 방송을 재생할 수 있는 PVR(Personal Video Recorder) 등이 있으나 이에 한정되는 것은 아니다.

그리고 영상 데이터는 시각적으로 인식할 수 있는 비디오 데이터와 청각적으로 인식할 수 있는 오디오 데이터를 포함하는 데이터를 의미한다.

한편, 디지털 방송의 가장 큰 특징 중 하나는 사용할 수 있는 채널의 수가 현재의 아날로그 방식의 방송보다 훨씬 더 많다는 점이다.

현재의 아날로그 방송의 경우 공중파 채널 수는 4~5개 정도이고, 케이블이나 위성을 이용한 방송의 채널 수를 모두 합쳐도 그 수가 50개 정도에 불과하다.

그러나 디지털 방송에서는 기존의 아날로그 방송과 같이 채널마다 각기 다른 주파수를 사용하여야 한다는 한계가 없으므로, 현재의 아날로그 방송의 채널 수보다 엄청나게 많은 수의 채널을 사용할 수 있게 된다.

이러한 디지털 방송에서 채널의 수가 증가함에 따라 그만큼 사용자는 시청 가능한 채널이 증가하게 되며 따라서 녹화할 수 있는 방송의 숫자도 증가하게 된다.

이러한 채널 수의 증가에 따라 사용자의 편의를 위해 시청 가능한 채널을 검색하기 위해서 사용자가 원하는 특정 채널의 번호를 미리 기억하여 두는 채널 기억 기능과 시청 가능한 수많은 채널 정보를 제공하는 채널 리스트를 제공하는 방법 등이 제공되고 있다.

채널 리스트의 경우 EPG(Electric Program Guide) 등의 다른 명칭으로도 불
리우며 시청 가능한 채널 정보와 각각의 현재 방송 중인 방송 프로그램의 다양한 정보를 전달하는 기능을 수행한다.

예를 들어, 현재 방송 중인 영화의 주연 배우의 정보를 알고 싶으면 시청자는 방송을 통해 제공되는 주연 배우의 정보 목록만을 선택하면 주연 배우의 � экономическ정보를 획득할 수 있다.

그러나 방송된 영화를 녹화하고 녹화된 영화를 재생하는 경우에는 주연 배우의 정보 목록이 제공되지 않는다.

즉 디지털 방송을 녹화한 경우에는 디지털 방송을 통해 제공되던 부가 서비스를 제공받지 못하는 문제점이 있다.

또한, 사용자가 녹화한 방송 즉 저장된 영상 데이터 중 원하는 영상 데이터를 검색하기 위해서는 녹화 정보가 따로 제공되지 않아 사용자가 영상 데이터의 이름이나 정보를 일일이 기억하여야만 하는 문제점이 있다.

【발명이 이루어지지 하는 기술적 과제】

상기한 바와 같은 종래의 문제점을 해결하기 위해, 본 발명은 사용자가 녹화한 방송 즉 저장된 영상 데이터를 사용자가 일일이 검색하지 않아도 저장된 영상 데이터의 정보를 사용자에게 제공할 수 있는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치, 방법 및 이를 구현하기 위한 프로그램을 기록한 기록매체를 제안하는 것이다.
또한, 디지털 방송을 녹화한 경우에도 디지털 방송을 통해 제공되는 다양한 부가 서비스를 제공받을 수 있는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치, 방법 및 이를 구현하기 위한 프로그램을 기록한 기록매체를 제안하는 것이다.

본 발명의 또 다른 목적들은 이하의 실시예에 대한 설명을 통해 쉽게 이해될 수 있을 것이다.

【발명의 구성】

상기한 바와 같은 목적을 달성하기 위해, 본 발명의 일 실시예에 따르면 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치가 제공된다.

본 발명의 바람직한 일 실시예에 따르면, 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치에 있어서, 상기 디지털 영상 장치를 통해 수신되는 방송 채널을 검색하여 채널 리스트 데이터를 생성하는 채널 리스트 생성부; 및 상기 디지털 영상 장치에서 방송 선택 신호 및 방송 데이터 저장 신호에 따라 저장되는 상기 방송 데이터에 포함된 영상 데이터 및 정보 데이터를 상기 채널 리스트 데이터와 각각 링크하는 링크부를 포함하여, 상기 채널 리스트 데이터는 상기 디지털 영상 장치를 통해 출력되어 상기 영상 데이터 및 정보 데이터의 링크 정보를 표시하고, 상기 채널 리스트 데이터와 링크된 상기 정보 데이터를 이용하여 상기 영상 데이터의 정보를 제공하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터.
티의 정보 제공 장치가 제공된다.

상기 채널 리스트 생성부는 수신 가능한 새로운 방송 채널이 검색되는 경우, 저장된 채널 리스트 데이터를 갱신할 수 있다.

상기 링크부는 상기 채널 리스트 데이터의 일정 영역에 태그를 삽입하고 상기 태그(tag)와 연결되는 링크 포인트를 상기 영상 데이터 및 정보 데이터에 포함하여 상기 영상 데이터 및 정보 데이터를 상기 채널 리스트 데이터와 각각 링크할 수 있다.

상기 정보 제공 장치는 상기 디지털 영상 장치에 포함될 수 있다.

상기 디지털 영상 장치는 방송 데이터를 수신하는 방송 수신부; 입력되는 키에 상응하는 입력 신호를 출력하는 입력부; 상기 입력부에서 출력된 입력 신호에 상응하여 상기 디지털 영상 장치의 동작을 제어하는 제어 신호를 생성하는 제어부; 상기 수신되는 방송 데이터의 비디오 데이터가 출력되는 표시부; 상기 수신되는 방송 데이터의 오디오 데이터가 출력되는 음성출력부; 상기 방송 데이터가 저장되는 저장부; 및 방송 데이터 처리부를 포함할 수 있다.

또한, 상기 방송 데이터 처리부는 상기 방송 데이터에서 반송파를 제거하고 반송파가 제거된 방송 데이터를 디지털 데이터 스트림으로 복조하는 복조부; 상기 방송 데이터를 오디오 데이터와 비디오 데이터로 파생하는 TS(transfer Stream) 파생부; 상기 파생된 비디오 데이터를 상기 표시부를 통해 출력하기 위해 일시 저장하는 비디오 ES(Element Stream) 버퍼; 및 상기 파생된 오디오 데이터를 상기 음
항 처리부를 통해 출력하기 위해 일시 저장하는 오디오 ES 버퍼를 포함할 수 있다.

상기 정보 데이터는 상기 영상 데이터의 전송 스트림(stream) 정보와 녹화 정보를 포함하는 정보일 수 있으며, 상기 전송 스트림 정보는 상기 방송 데이터의 주파수(frequency) 정보, 방송 신호 속도(symbolrate) 정보, 방송 신호의 복류 신호(polar) 및 순방향 오류 정정(FEC : forward error correction)의 정보 중 하나 이상의 정보를 포함하는 정보일 수 있다.

또한, 상기 녹화 정보는 채널 정보, 상기 방송 데이터의 저장 시작 시간 및 종료 시간 정보, 영상 데이터의 장르 정보 및 시청 제한 정보 중 하나 이상의 정보를 포함하는 정보일 수 있다.

본 발명의 다른 측면에 따르면 디지털 영상 장치에서의 녹화 영상의 정보 제공 방법이 제공된다.

본 발명의 바람직한 일 실시예에 따르면, 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법에 있어서, 상기 디지털 영상 장치에서 수신 가능한 방송 채널을 검색하여 채널 리스트 데이터를 생성하는 단계(a); 및 상기 디지털 영상 장치에서 방송 선택 신호 및 방송 데이터의 저장 신호에 따라 저장되는 상기 방송 데이터에 포함되는 영상 데이터 및 정보 데이터와 각각 링크하는 단계(b)를 포함하되, 상기 채널 리스트 데이터는 상기 디지털 영상 장치를 통해 출력되어 상기 영상 데이터 및 정보 데이터의 링크 정보를 표시하고, 상기 채널 리스트 데이터와 링크된 상기 정보 데이터를 이용하여 상기 영상 데이터의 정보를 제공하는 것을
특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법이 제공된다.

본 발명의 다른 측면에 의하면, 디지털 영상 장치에서의 녹화 영상의 정보 제공 방법을 구현하기 위한 프로그램을 기록한 기록매체가 제공된다.

본 발명의 바람직한 일 실시예에 따르면, 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법이 구현되도록, 상기 디지털 영상 장치에 의해 실행될 수 있는 명령어들의 프로그램이 유형적으로 구현되어 있으며 상기 디지털 영상 장치에 의해 판독될 수 있는 프로그램을 기록한 기록매체에 있어서, 상기 디지털 영상 장치에서 수신 가능한 방송 채널을 검색하여 채널 리스트 데이터를 생성하는 단계 (a); 및 상기 디지털 영상 장치에서 방송 선택 신호 및 방송 데이터의 저장 신호에 따라 저장되는 상기 방송 데이터에 포함되는 영상 데이터 및 정보 데이터와 각각 링크하는 단계(b)를 포함하되, 상기 채널 리스트 데이터는 상기 디지털 영상 장치를 통해 출력되어 상기 영상 데이터 및 정보 데이터의 링크 정보를 표시하고, 상기 채널 리스트 데이터와 링크된 상기 정보 데이터를 이용하여 상기 영상 데이터의 정보를 제공하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법을 구현하기 위한 프로그램을 기록한 기록매체가 제공된다.

상기 단계(a)에서 상기 채널 리스트 데이터는 수신 가능한 새로운 방송 채널이 검색되는 경우 저장된 채널 리스트를 갱신하여 생성될 수 있다.

상기 단계(d)는 상기 채널 리스트 데이터의 일정 영역에 태그를 삽입하고 상
기 태그(tag)와 연결되는 링크 포인트를 상기 영상 데이터 및 정보 데이터에 포함하여 수행될 수 있다.

상기 단계(e)는 상기 영상 데이터의 저장 정보가 추가된 채널 리스트 데이터를 저장하는 단계를 더 수행할 수 있다.

상기 채널 리스트 데이터는 상기 방송 데이터의 수신이 가능한 채널 정보, 상기 방송 데이터의 종류 정보 및 상기 정보 데이터와 링크되는 태그 정보 중 적어도 하나 이상을 포함할 수 있다.

상기 정보 데이터는 상기 영상 데이터의 전송 스트림(stream) 정보와 녹화 정보를 포함하는 정보일 수 있으며, 상기 전송 스트림 정보는 상기 방송 데이터의 주파수(frequency) 정보, 방송 신호 속도(symbolrate) 정보, 방송 신호의 복류 신호(polar) 및 순방향 오류 경정(FEC : forward error correction)의 정보 중 적어도 하나 이상의 정보를 포함하는 정보일 수 있고.

상기 녹화 정보는 채널 정보, 상기 방송 데이터의 저장 시작 시간 및 종료 시간 정보, 영상 데이터의 장르 정보 및 시청 제한 정보 중 적어도 하나 이상의 정보를 포함하는 정보일 수 있다.

상기 정보 데이터를 이용하여 상기 영상 데이터의 정보를 제공하는 것은 영상 데이터 및 정보 데이터의 선택 신호를 입력받는 단계, 상기 선택된 영상 데이터를 검색하는 단계, 및 상기 검색된 영상 데이터와 링크된 정보 데이터를 검색하는 단계를 수행하여 제공할 수 있다.
본 발명은 다양한 변경을 가할 수 있고 여러 가지 실시예를 가질 수 있는 바, 특정 실시예들을 도면에 예시하고 상세한 설명에 상세하게 설명하고자 한다.

그러나, 이는 본 발명을 특정한 실시 형태에 대해 한정하려는 것이 아니며, 본 발명의 사상 및 기술 범위에 포함되는 모든 변경, 근본을 내지 대체물을 포함하는 것으로 이해되어야 한다.

각 도면을 설명하면서 유사한 참조부호를 유사한 구성요소에 대해 사용하였 다. 본 발명을 설명함에 있어서 관련된 공지 기술에 대한 구체적인 설명이 본 발명의 요지를 흐릴 수 있다고 판단되는 경우 그 상세한 설명을 생략한다.

제1, 제2 등의 용어는 다양한 구성 요소들을 설명하는데 사용될 수 있지만, 상기 구성 요소들은 상기 용어들에 의해 한정되어서는 안 된다. 상기 용어들은 하나의 구성요소를 다른 구성요소로부터 구별하는 목적으로만 사용된다.

예를 들어, 본 발명의 권리 범위를 벗어나지 않으면서 제1 구성요소는 제2 구성요소로 명명될 수 있고, 유사하게 제2 구성요소도 제1 구성요소로 명명될 수 있다.

및/또는 이라는 용어는 복수의 관련된 기재된 항목들의 조합 또는 복수의 관련된 기재된 항목들을 중의 어느 항목을 포함한다.

어떤 구성요소가 다른 구성요소에 "연결되어" 있다거나 "접속되어" 있다고 언급된 때에는, 그 다른 구성요소에 직접적으로 연결되어 있거나 또는 접속되어 있
을 수도 있지만, 중간에 다른 구성요소가 존재할 수도 있다고 이해되어야 할 것이 데.

반면에, 어떤 구성요소가 다른 구성요소에 "직접 연결되어" 있다거나 "직접 접속되어" 있다고 언급될 때에는, 중간에 다른 구성요소가 존재하지 않는 것으로 이해되어야 할 것이다.

본 출원에서 사용한 용어는 단지 특정한 실시예를 설명하기 위해 사용된 것으로, 본 발명을 한정하려는 의도가 아니다.

단수의 표현은 문맥상 명백하게 다르게 뜻하지 않는 한, 복수의 표현을 포함 한다. 본 출원에서, "포함하라" 또는 "가지다" 등의 용어는 명세서상에 기재된 특 징, 숫자, 단계, 동작, 구성요소, 부품 또는 이들을 조합한 것이 존재함을 지정하 려는 것이지, 하나 또는 그 이상의 다른 특징들이나 숫자, 단계, 동작, 구성요소, 부품 또는 이들을 조합한 것들의 존재 또는 부가 가능성을 미리 배제하지 않는 것으로 이해되어야 한다.

다르게 정의되지 않는 한, 기술적이거나 파학적인 용어를 포함해서 여기서 사용되는 모든 용어들은 본 발명이 속하는 기술 분야에서 통상의 지식을 가진 자에 의해 일반적으로 이해되는 것과 동일한 의미를 가지고 있다.

일반적으로 사용되는 사전에 정의되어 있는 것과 같은 용어들은 관련 기술의 문맥상 가지는 의미와 일치하는 의미를 가지는 것으로 해석되어야 하며, 본 출원에서 명백하게 정의하지 않는 한, 이상적이거나 과도하게 형식적인 의미로 해석되지
이하, 첨부된 도면을 참조하여 본 발명에 따른 바람직한 실시예를 상세히 설명하되, 도면 부호에 관계없이 동일하거나 대응하는 구성 요소는 동일한 참조 번호를 부여하고 이에 대한 증복되는 설명은 생략하기로 한다.

먼저 채널 리스트를 통해 저장된 영상 데이터 뿐만 아니라 영상 데이터의 다양한 정보도 제공받을 수 있는 본 발명의 바람직한 실시예에 따른 저장된 영상 데이터의 정보를 제공할 수 있는 장치를 포함하는 디지털 영상 장치의 구성은 도 1을 참조하여 살펴본다.

전문한 바와 같이 본 명세서에서 디지털 영상 장치는 디지털 영상 데이터를 이용하여 고품질의 동영상 서비스를 제공하는 장치를 말하며, 특히 영상 데이터를 저장할 수 있는 기능을 포함하는 장치로서, 예를 들면, 디지털 텔레비전 방송, 디지털 미디어 방송(DMB : Digital Multimedia Broadcasting, 이하 DMB 방송이라 함) 등의 디지털 방송을 수신하고 디지털 방송을 녹화할 수 있는 기능을 포함하는 셋톱 박스(set-top box), 디지털 TV 그리고 녹화된 방송인 디지털 영상 데이터를 재생할 수 있는 PVR(Personal Video Recorder) 등이 있으나 이에 한정되는 것은 아니다.

또한, 영상 데이터는 시각적으로 인식할 수 있는 비디오 데이터와 청각적으로 인식할 수 있는 오디오 데이터를 포함하는 데이터를 의미한다.

도 1에 도시된 바와 같이, 본 발명의 바람직한 실시예에 따른 저장된 영
상 데이터의 정보를 제공할 수 있는 장치를 포함하는 디지털 영상 장치(100)는 방송 수신부(110), 입력부(120), 표시부(130), 음성출력부(140), 제어부(150), 저장부(160), 방송 데이터 처리부(170) 및 정보 제공부(180)를 포함할 수 있다.

방송 수신부(110)는 디지털 방송 장치 등으로부터 수신된 방송 신호 즉, 디지털 방송 데이터를 수신한다.

입력부(120)는 손자키와 각종 기능키 등을 구비할 수 있으며 사용자가 입력하는 키에 대응하는 입력 신호를 제어부(130)로 출력한다.

표시부(130)는 수신된 방송 데이터의 비디오 데이터가 출력되고, 음성출력부(140)는 수신된 방송 데이터의 오디오 데이터가 출력되는 부분이다.

제어부(150)는 입력부(120)에서 출력된 입력 신호에 상응하여 디지털 영상 장치(100)의 동작을 제어하는 제어 신호를 생성한다.

저장부(160)에는 디지털 영상 장치의 동작 제어에 필요한 각종 정보와 방송 데이터가 저장된다.

방송 데이터 처리부(170)는 수신된 방송 데이터를 표시부(140)와 음향출력부(150)를 통해 시청할 수 있도록 방송 데이터를 처리한다.

방송 데이터 처리부(170)는 복조부(172), TS 파일부(174), 비디오 ES (Element Stream) 버퍼(176) 및 오디오 ES 버퍼(178)를 포함할 수 있다.

복조부(172)는 수신된 방송 데이터에서 반송파를 제거하고 반송파가 제거된 방송 데이터를 디지털 데이터 스트림으로 복조한다.
TS(Transfer Stream) 파싱부(174)는 복조부에서 복조된 방송 데이터를 오디오 데이터와 비디오 데이터로 파싱(parsing)한다.

비디오 ES(Element Stream) 버퍼(176)는 파싱된 비디오 데이터를 표시부(140)를 통해 출력하기 위해 일시 저장하고, 오디오 ES 버퍼(178)는 파싱된 오디오 데이터를 상기 음향출력부(150)를 통해 출력하기 위해 일시 저장하는 부분이다.

정보 제공부(180)는 본 발명의 특징인 채널 리스트를 통해 저장된 영상 데이터의 정보 제공이 가능하게 하기 위한 부분이다.

정보 제공부(180)는 채널 리스트 생성부(182)와 링크부(184)를 포함할 수 있다.

채널 리스트 생성부(182)는 디지털 영상 장치를 통해 수신되는 방송 채널을 검색하여 검색된 채널 목록을 이용하여 채널 리스트 데이터를 생성하고, 수신 가능한 새로운 방송 채널이 검색되는 경우 저장된 채널 리스트 데이터를 갱신하도록 하는 기능을 수행한다.

링크부(184)는 방송 데이터에 포함된 영상 데이터 및 정보 데이터를 채널 리스트 데이터와 각각 링크되도록 한다.

링크부(184)는 채널 리스트 생성부(182)에서 생성된 채널 리스트 데이터의 일정 영역에 테그를 삽입하고 테그(tag)와 연결되는 링크 포인트를 방송 데이터에 포함되는 영상 데이터 및 정보 데이터에 각각 포함하여 영상 데이터 및 정보 데이터를 채널 리스트 데이터와 각각 링크되도록 한다.
한편, 도 1에서는 정보 제공부(184)가 디지털 영상 장치(100)에 포함되어 구성되는 것으로 예시하였으나 정보 제공부(184)가 별도의 장치로 구성되어 디지털 영상 장치(100)에 연결되어 디지털 영상 장치(100)에 저장된 영상 데이터의 정보를 제공하도록 할 수도 있음은 자명하다.

이러한 본 발명의 바람직한 일 실시예에 따른 디지털 영상 장치에 저장된 영상 데이터의 정보를 제공할 수 있는 장치를 포함하는 디지털 영상 장치의 구성을 참조하여 디지털 영상 장치에서 영상 데이터를 저장하는 과정을 살펴본다.

도 2는 디지털 영상 장치에서 영상 데이터를 저장하는 과정을 예시한 순서도이다.

도 2에 도시된 바와 같이 디지털 영상 장치에 영상 데이터를 저장하기 위해서 먼저 디지털 영상 장치를 이용하여 수신 가능한 채널을 검색한다(S200).

채널이 검색되면 검색된 채널의 목록은 일반적으로 채널 리스트 데이터를 생성하고(S202), 생성된 채널 리스트 데이터는 사용자에게 디지털 영상 장치에 포함된 또는 디지털 영상 장치와 연결되는 장치(예를 들면, 텔레비전)의 표시부를 통해 사용자에게 채널 리스트로 제공된다(S204).

한편, 사용자는 채널 리스트에서 원하는 채널을 선택함으로써 해당 채널의 시청이 가능하게 된다.

사용자에 의해 검색된 채널의 목록을 표시하는 채널 리스트에서 특정 채널이
선택되어 특정 채널의 선택 신호가 수신되면(S206) 해당 채널에서 방송되고 있는 방송 데이터가 수신된다(S208).

방송 데이터는 컨텐츠에 해당하는 영상 데이터와 함께 해당 방송의 장르나 방송 시간, 방송의 주인공 정보 등의 부가 정보를 포함하는 정보 데이터가 함께 수신된다.

이러한 디지털 방송에서 선택된 채널을 통해 방송되는 방송 프로그램의 녹화를 선택하면 녹화되는 방송은 영상 데이터로 별도로 저장되고 사용자가 저장된 영상 데이터의 확인을 위해서는 채널 리스트와는 별도의 다른 녹화 목록 등을 통해 확인하여야만 한다.

그러나 본 발명에서는 채널 리스트 데이터에 해당 방송의 녹화 여부를 표시하는 영역을 추가로 생성하고 해당 채널의 방송이 녹화된 경우 채널 리스트 데이터의 해당 영역에 녹화 여부를 표시하도록 한다.

한편, 전술한 바와 같이 디지털 방송에서는 영상 데이터 뿐만 아니라 영상 데이터와 관련된 부가 정보를 포함하는 정보 데이터가 수신된다.

본 발명에서는 녹화된 방송의 영상 데이터 뿐만 아니라 녹화된 방송의 부가 정보를 포함하는 정보 데이터를 포함하여 디지털 영상 처리 장치에 저장한다.

그리고 채널 리스트 데이터와 저장된 영상 데이터와 정보 데이터를 링크시켜 채널 리스트를 통해 저장된 영상 데이터 뿐만 아니라 영상 데이터의 다양한 정보도 제공할 수 있게 된다.
한편 영상 데이터의 녹화 정보 뿐만 아니라 영상 데이터의 부가 정보 제공이 가능한 채널 리스트 데이터의 구성은 도 3을 참조하여 살펴본다.

도 3은 본 발명의 바람직한 일 실시예에 따라 디지털 영상 장치에 저장되는 채널 리스트 데이터의 구성은 예시한 블록도이다.

도 3에 도시된 바와 같이, 본 발명의 바람직한 일 실시예에 따른 디지털 영상 장치에 저장되는 채널 리스트 데이터는 SVC Name(300), Type(302), Number(304), TS Info(306), Rec Info(308) 등의 영역으로 구분되어 저장될 수 있다.

SVC Name(300) 영역은 디지털 방송이 수신되는 서비스 채널의 이름을 표시하는 영역이다.

Type(302) 영역은 영상 데이터와 음성 데이터를 모두 포함하는 즉 디지털 TV 방송인지 음성 데이터만을 포함하는 라디오 방송인지 여부를 표시하는 영역이며, Number(304) 영역은 검색되어 채널 리스트를 통해 제공되는 채널의 순서를 표시하는 영역이다.

전송 스트림(Transport Stream)에 관한 정보를 표시하는 영역인 TS Info(306) 영역과 녹화 정보를 표시하는 영역인 Rec Info(308) 영역은 전송 스트림(Transport Stream) 데이터와 녹화 정보 데이터에 연결될 수 있게 하기 위한 태그(tag)가 저장될 수 있다.
테그(tag)를 이용하여 영상 데이터와 정보 데이터와 연결되도록 링크 포인트를 생성 데이터와 정보 데이터에 생성하고 영상 데이터와 정보 데이터를 저장할 수 있다.

도 4를 참조하면 TS Info(306) 영역과 링크되는 전송 스트림 데이터는 SVC Name(400), Freq(402), SymbolRate(404), Polar(406), FEC(408) 등의 영역으로 구성될 수 있다.

전송 스트림 정보는 동영상 재생과 관련되어 MPEG(Moving Picture Experts Group) 표준에 의하는 경우 영상 데이터와 오디오 데이터를 하나의 스트림에 전송하는 전송 스트림(Transport Stream)에 관한 정보이다.

SVC Name(400) 영역은 디지털 방송이 주신되는 서비스 채널의 이름을 표시하는 영역이고, Freq(402) 영역은 방송이 주신되는 채널의 주파수 정보를 표시하는 영역이다.

SymbolRate(404) 영역은 채널을 통해 방송 신호를 보내는 속도 정보를 표시하는 영역이며, Polar(406) 영역은 방송 신호의 복류 신호 정보를 표시하는 영역이다.

FEC(408) 영역은 전송 데이터에서 발생한 오류의 검출 수정도 가능하도록 부호화하여 수신 측에서 수정이 가능하게 하는 순방향 오류 정정(forward error correction)의 정보를 표시하는 영역이다.

한편 도 5를 참조하면 Rec Info(308) 영역에서 링크되는 녹화 정보 데이터는
SVC Name(500), Start Time(502), End Time(504), Genre(506), Parentlock(508) 등의 영역으로 구분될 수 있다.

SVC Name(500) 영역은 디지털 방송이 수신되는 서비스 채널의 이름을 표시하는 영역이고, Start Time(502)와 End Time(504)은 녹화되는 방송의 시작 시간과 종료 시간 정보가 저장되는 영역이다.

Genre(506)는 녹화되는 방송의 장르(예를 들면, 영화, 드라마, 뉴스 등) 정보가 저장되는 영역이며, Parentlock(508)은 성인물 등의 경우 청소년의 시청이 제한되었는지 여부가 저장되는 영역이다.

이러한 채널 리스트 데이터와 채널 리스트 데이터와 링크되는 정보 데이터의 구성을 이용하여 사용자는 해당 채널에 대해 녹화를 하였는지 여부를 알 수 있고, 해당 채널에서 녹화 정보의 표시가 있는 경우 채널 리스트에서 녹화 정보를 선택함으로써 녹화된 영상 데이터의 부가 정보를 획득할 수 있게 된다.

도 6을 참조하여 본 발명의 바람직한 일 실시예에 따라 생성된 채널 리스트 데이터를 이용하여 디지털 영상 장치에 저장된 영상 데이터의 녹화 정보를 표시하는 과정을 보다 상세하게 살펴보기로 한다.

도 6에 도시된 바와 같이, 먼저 디지털 영상 장치가 동작되면 디지털 영상 장치는 먼저 새로운 채널이 존재하는 검색을 수행한다(S600).

새로운 채널이 검색되는지 판단하여(S602) 새로운 채널이 검색되면 새로운 검
색된 채널 정보를 채널 리스트 데이터에 추가한다(S604).

사용자가 선택한 채널의 녹화 신호가 입력되는데 따라 S606, 선택된 채널의 녹화 신호가 입력되면 선택된 채널에서 수신되는 영상 데이터 및 정보 데이터를 저장한다(S608).

저장된 영상 데이터와 정보 데이터는 채널 리스트 데이터와 각각 링크되고 (S610), 채널 리스트 데이터에는 영상 데이터가 저장되었음을 표시하는 정보가 추가되어 출력된다(S612).

한편, 도 6에서 살펴본 방법과 같은 순서에 의해 채널 리스트 데이터를 생성하고 채널 리스트 데이터와 링크되는 정보 데이터를 저장한 후 채널 리스트를 이용하여 영상 데이터가 저장되었는지 여부를 나타내는 녹화 정보를 확인하고, 저장된 영상 데이터의 부가 정보를 확인하는 과정을 도 7을 참조하여 살펴본다.

도 7은 본 발명의 바람직한 일 실시예에 따라 생성된 채널리스트 데이터를 이용하여 디지털 영상 장치에 저장된 영상 데이터의 부가 정보를 표시하는 과정을 도시한 순서도이다.

도 7은 본 발명의 바람직한 일 실시예에 따라 생성된 채널리스트 데이터를 이용하여 저장된 영상 데이터 중 장르가 영화인 영상 데이터와 각각의 영상 데이터가 방송되었던 채널의 목록을 표시하는 과정을 예시한 것이다.

도 7에 도시된 바와 같이 채널리스트를 이용하여 영상 데이터의 녹화 정보와
부가 정보를 확인하기 위해서는 먼저 디지털 영상 장치에서 채널 리스트 데이터를 독출하여 채널리스트를 디지털 영상 장치 또는 디지털 영상 장치와 연결되는 장치(예를 들면, 텔레비전)의 표시부에 표시하는 채널 리스트 데이터의 출력을 수행한다(S700).

사용자가 채널 리스트에서 녹화 정보를 선택하고 장르를 영화로 선택하면 디지털 영상 장치는 녹화 정보 선택 신호 및 장르 선택 정보를 수신한다(S702).

녹화 정보 선택 신호에 따라 저장된 영상 데이터를 검색하고(S704), 검색된 영상 데이터와 링크된 정보 데이터를 검색한다(S706).

검색된 정보 데이터에서 장르 선택 정보와 일치하는 정보 데이터만을 선택하고 선택된 정보 데이터와 연결된 영상 데이터만을 선택한다(S708).

선택된 영상 데이터에서 채널 정보에 해당하는 SVC Name 영역에서 채널 정보를 독출하여(S710) 디지털 영상 장치에 포함된 또는 디지털 영상 장치와 연결되는 장치(예를 들면, 텔레비전)의 표시부에 표시함으로써 사용자에게 채널 리스트를 통하여 저장된 영상 데이터의 부가 정보를 포함한 정보의 제공이 가능하게 된다.

상기한 본 발명의 바람직한 실시예는 예시의 목적을 위해 개시된 것이고, 본 발명에 대해 통상의 지식을 가진 당업자라면 본 발명의 사상과 범위 안에서 다양한 수정, 변경, 부가가 가능한 것이며, 이러한 수정, 변경 및 부가는 하기의 특허청구 범위에 속하는 것으로 보아야 할 것이다.
【발명의 효과】

이상에서 설명한 바와 같이, 본 발명에 의한 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법 및 이를 구현하기 위한 프로그램을 기록한 기록매체에 의하면, 사용자가 녹화한 방송 즉 저장된 영상 데이터를 사용자가 일일이 검색하지 않아도 저장된 영상 데이터의 정보를 사용자에게 제공할 수 있는 장점이 있다.

또한, 디지털 방송을 녹화한 경우에도 디지털 방송을 통해 제공되는 다양한 부가 정보의 제공 등의 서비스를 제공받을 수 있는 장점이 있다.
【특허청구범위】

【청구항 1】

디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치에 있어서,

상기 디지털 영상 장치를 통해 수신되는 방송 채널을 검색하여 채널 리스트 데이터를 생성하는 채널 리스트 생성부; 및

상기 디지털 영상 장치에서 방송 선택 신호 및 방송 데이터 저장 신호에 따라 저장되는 상기 방송 데이터에 포함된 영상 데이터 및 정보 데이터를 상기 채널 리스트 데이터와 각각 링크하는 링크부를 포함하되,

상기 채널 리스트 데이터는 상기 디지털 영상 장치를 통해 출력되어 상기 영상 데이터 및 정보 데이터의 링크 정보를 표시하고, 상기 채널 리스트 데이터와 링크된 상기 정보 데이터를 이용하여 상기 영상 데이터의 정보를 제공하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치.

【청구항 2】

제1항에 있어서,

상기 채널 리스트 생성부는,

수신 가능한 새로운 방송 채널이 검색되는 경우 저장된 채널 리스트 데이터를 생성하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치.
【청구항 3】

제1항에 있어서,

상기 링크부는,

상기 채널 리스트 데이터의 일정 영역에 태그를 삽입하고 상기 태그(tag)와 연결되는 링크 포인트를 상기 영상 데이터 및 정보 데이터에 포함하여 상기 영상 데이터 및 정보 데이터를 상기 채널 리스트 데이터와 각각 링크하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치.

【청구항 4】

제1항에 있어서,

상기 정보 제공 장치는 상기 디지털 영상 장치에 포함되는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치.

【청구항 5】

제1항에 있어서,

상기 디지털 영상 장치는,

방송 데이터를 수신하는 방송 수신부;

입력되는 키에 상응하는 입력 신호를 출력하는 입력부;
상기 입력부에서 출력된 입력 신호에 상응하여 상기 디지털 영상 장치의 동작을 제어하는 제어 신호를 생성하는 제어부;
상기 수신되는 방송 데이터의 비디오 데이터가 출력되는 표시부;
상기 수신되는 방송 데이터의 오디오 데이터가 출력되는 음성출력부;
상기 방송 데이터가 저장되는 저장부; 및
방송 데이터 처리부를 포함하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치.

【청구항 6】

제5항에 있어서,
상기 방송 데이터 처리부는,
상기 방송 데이터에서 반송파를 제거하고 반송파가 제거된 방송 데이터를 디지털 데이터 스트림으로 복조하는 복조부;
상기 방송 데이터를 오디오 데이터와 비디오 데이터로 파싱하는 TS(transfer Stream) 파싱부;
상기 파싱된 비디오 데이터를 상기 표시부를 통해 출력하기 위해 일시 저장하는 비디오 ES(Element Stream) 버퍼; 및
상기 파싱된 오디오 데이터를 상기 음향 처리부를 통해 출력하기 위해 일시 저장하는 오디오 ES 버퍼를 포함하는 것을 특징으로 하는 디지털 영상 장치에 저장.
된 영상 데이터의 정보 제공 장치.

【청구항 7】

제1항에 있어서,

상기 정보 데이터는 상기 영상 데이터의 전송 스트림(stream) 정보와 녹화 정보를 포함하는 정보인 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치.

【청구항 8】

제7항에 있어서,

상기 전송 스트림 정보는 상기 방송 데이터의 주파수(frequency) 정보, 방송 신호 속도(symbolrate) 정보, 방송 신호의 복률 신호(polar) 및 순방향 오류 정정(FEC : forward error correction)의 정보 중 하나 이상의 정보를 포함하는 정보인 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치.

【청구항 9】

제7항에 있어서,

상기 녹화 정보는,

채널 정보, 상기 방송 데이터의 저장 시작 시간 및 종료 시간 정보, 영상 데이터
이터의 장르 정보 및 시청 제한 정보 중 하나 이상의 정보를 포함하는 정보인 것을
특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 장치.

【청구항 10】
디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법에 있어서,
상기 디지털 영상 장치에서 수신 가능한 방송 채널을 검색하여 채널 리스트
데이터를 생성하는 단계(a) 및

상기 디지털 영상 장치에서 방송 선택 신호 및 방송 데이터의 저장 신호에
따라 저장되는 상기 방송 데이터에 포함되는 영상 데이터 및 정보 데이터와 각각
링크하는 단계(b)를 포함하여,

상기 채널 리스트 데이터는 상기 디지털 영상 장치를 통해 출력되어 상기 영
상 데이터 및 정보 데이터의 링크 정보를 표시하고, 상기 채널 리스트 데이터와 링
크된 상기 정보 데이터를 이용하여 상기 영상 데이터의 정보를 제공하는 것을 특징
으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법.

【청구항 11】
제10항에 있어서,
상기 단계(a)에서,
상기 채널 리스트 데이터는 수신 가능한 새로운 방송 채널이 검색되는 경우
저장된 채널 리스트를 생성하여 생성되는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법.

【청구항 12】

제10항에 있어서,

상기 단계(b)는,

상기 채널 리스트 데이터의 일정 영역에 태그를 삽입하고 상기 태그(tag)와 연결되는 링크 포인트를 상기 영상 데이터 및 정보 데이터에 포함하여 수행되는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법.

【청구항 13】

제10항에 있어서,

상기 단계(b)는,

상기 영상 데이터 및 정보 데이터와 각각 링크된 상기 채널 리스트 데이터를 저장하는 단계를 더 수행하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법.

【청구항 14】

제10항에 있어서,
상기 채널 리스트 데이터는,

상기 방송 데이터의 수신이 가능한 채널 정보, 상기 방송 데이터의 종류 정보 및 상기 정보 데이터와 링크되는 테그 정보를 포함하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법.

【청구항 15】

제10항에 있어서,

상기 정보 데이터는 상기 영상 데이터의 전송 스트림(stream) 정보와 녹화 정보를 포함하는 정보인 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법.

【청구항 16】

제15항에 있어서,

상기 전송 스트림 정보는 상기 방송 데이터의 주파수(frequency) 정보, 방송 신호 속도(symbolrate) 정보, 방송 신호의 복류 신호(polar) 및 순방향 오류 정정 (FEC : forward error correction)의 정보 중 하나 이상의 정보를 포함하는 정보인 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법.
【청구항 17】

제15항에 있어서,

상기 녹화 정보는,

채널 정보, 상기 방송 데이터의 저장 시작 시간 및 종료 시간 정보, 영상 데이터의 장르 정보 및 시청 제한 정보 중 하나 이상의 정보를 포함하는 정보인 것을 특성으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법.

【청구항 18】

제10항에 있어서,

상기 정보 데이터를 이용하여 상기 영상 데이터의 정보를 제공하는 것은,

영상 데이터 및 정보 데이터의 선택 신호를 입력받는 단계;

상기 선택된 영상 데이터를 검색하는 단계; 및

상기 검색된 영상 데이터와 링크된 정보 데이터를 검색하는 단계를 수행하여 제공하는 것을 특성으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법.

【청구항 19】

디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법이 구현되도록, 상기 디지털 영상 장치에 의해 실행될 수 있는 명령어들의 프로그램이 유형적으로 구
현되어 있으며 상기 디지털 영상 장치에 의해 판독될 수 있는 프로그램을 기록한 기록 매체에 있어서,

상기 디지털 영상 장치에서 수신 가능한 방송 채널을 검색하여 채널 리스트 데이터를 생성하는 단계(a); 및

상기 디지털 영상 장치에서 방송 선택 신호 및 방송 데이터의 저장 신호에 따라 저장되는 상기 방송 데이터에 포함되는 영상 데이터 및 정보 데이터와 각각 링크하는 단계(b)를 포함하되,

상기 채널 리스트 데이터는 상기 디지털 영상 장치를 통해 출력되어 상기 영상 데이터 및 정보 데이터의 링크 정보를 표시하고, 상기 채널 리스트 데이터와 링크된 상기 정보 데이터를 이용하여 상기 영상 데이터의 정보를 제공하는 것을 특징으로 하는 디지털 영상 장치에 저장된 영상 데이터의 정보 제공 방법을 구현하기 위한 프로그램을 기록한 기록 매체.
【도 2】

시 작 → 채널 검색 S200 → 채널리스트 데이터 검색 S202 → 표시부에 채널리스트 제공 S204 → 특정 채널 선택 신호 수신 S206 → 방송 데이터 수신 S208 → 종료

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채널 검색.

S600

새로운 채널 존재?

예

채널리스트 데이터 추가

S604

아니오

선택 채널 녹화?

S606

예

영상 데이터 및 정보 데이터 저장

S608

채널리스트 데이터, 영상 데이터 및 정보 데이터 링크

S610

채널리스트 데이터 출력

S612

종료
【도 7】

시 작

채널리스트 데이터 출력 ～ S700

녹화 정보 선택 신호 및 장르 선택 정보 수신 ～ S702

저장된 영상 데이터 검색 ～ S704

검색된 영상 데이터와 링크된 정보 데이터 검색 ～ S706

장르 선택 정보와 일치하는 정보 데이터와 연결된 영상 데이터만 선택 ～ S708

영상 데이터의 SVC Name 영역에서 채널 정보 독출 ～ S710

종 료
NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given TWO MONTHS from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The statutory basic filing fee is missing. Applicant must submit $310 to complete the basic filing fee for a non-small entity. If appropriate, applicant may make a written assertion of entitlement to small entity status and pay the small entity filing fee (37 CFR 1.27).
- The oath or declaration is missing. A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- To avoid abandonment, a surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of $130 for a non-small entity, must be submitted with the missing items identified in this notice.

SUMMARY OF FEES DUE:

Total additional fee(s) required for this application is $1160 for a non-small entity

- $310 Statutory basic filing fee.
- $130 Surcharge.
- The application search fee has not been paid. Applicant must submit $510 to complete the search fee.
- The application examination fee has not been paid. Applicant must submit $210 to complete the examination fee for a non-small entity.
Replies should be mailed to:
Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.
https://sporal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at http://www.uspto.gov/ebc.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/ly/

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Office of Initial Patent Examination (571) 272-4000 or 1-800-PTO-9199
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CONFIRMATION NO. 3177

FILING RECEIPT

Date Mailed: 11/06/2007

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections.

Applicant(s)
Seung-Kwan HA, Residence Not Provided;

Power of Attorney: None

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 11/01/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 11/874,770

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No
PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

348

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process simplifies the filing of patent applications on the same invention in member countries, but does not result in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where
the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

**NOT GRANTED**

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).
UTILITY PATENT APPLICATION TRANSMITTAL UNDER 37 C.F.R. §1.53(b)

U.S. Patent and Trademark Office
Customer Service Window, MAIL STOP PATENT APPLICATION
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Docket No.: EZ-0002

Sir:

Transmitted herewith for filing is the patent application of
INVENTORS: Seung-Kwan HA

FOR: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

Enclosed are:

1. ☒ 31 pages of specification, claims, abstract
2. ☒ 7 sheets of FORMAL drawings
3. ☐ ______ pages of newly executed Declaration & Power of Attorney (copy or original)
4. ☒ Priority claimed to Appln. No. 10-2006-0133932 filed on December 26, 2006 in Korea, whose entire disclosure is incorporated herein by reference.
5. ☐ Applicant claims Small Entity Status
6. ☐ Information Disclosure Statement, Form PTO-1449 and ______ references
7. ☐ Assignment papers for HUMAX Co., Ltd._____cover sheet, assignment and assignment fee) (To Follow)
8. ☐ Certified copy of Priority Application No. 10-2006-0133932 filed on December 26, 2006 in Korea (To Follow)
9. ☐ Two (2) return postcards
   ☐ Stamp & Return with Courier
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10. ☐ Authorization under 37 C.F.R. §1.136(a)(3)
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☐ Please charge my Credit Card.

☐ Please charge my Deposit Account No. 16-0607 in the amount of $_______ A duplicate copy of this sheet is enclosed.

☐ The Commissioner is hereby authorized to charge payment of following fees during the pendency of this application or credit any overpayment to Deposit Account No. 16-0607.

☐ Any additional filing fees required under 37 C.F.R. 1.16.

☐ Any patent application processing fees under 37 C.F.R. 1.17.

☐ Any filing fees under 37 C.F.R. 1.16 for presentation of extra claims.

Respectfully submitted,
KED & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 36,186

Correspondence Address:
P.O. Box 221200
Chantilly, Virginia 20153-1200
703 766-3777 DYK/dak
Date: October 18, 2007

Please direct all correspondence to Customer Number 34610
UTILITY PATENT APPLICATION TRANSMITTAL UNDER 37 C.F.R.$1.53(b)

U.S. Patent and Trademark Office
Customer Service Window, MAIL STOP PATENT APPLICATION
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Docket No.: EZ-0002

Sir:

Transmitted herewith for filing is the patent application of
INVENTORS: Seung-Kwan HA

FOR: PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

Enclosed are:
1. □ 31 pages of specification, claims, abstract
2. □ 7 sheets of FORMAL drawings
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□ Stamp & Return with Courier
□ Prepaid postcard-stamped filing date & returned with unofficial Serial Number
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Multiple Dependent Claims (If applicable)
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☐ Any filing fees under 37 C.F.R. 1.16 for presentation of extra claims.

Respectfully submitted,
KED & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 36,186

Correspondence Address:
P.O. Box 221200
Chantilly, Virginia 20153-1200
703-766-3777 DYK/dak
Date: October 18, 2007
Please direct all correspondence to Customer Number 34610
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**Warnings:**

**Information:**

Total Files Size (in bytes): 2512959

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

**New Applications Under 35 U.S.C. 111**
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

**National Stage of an International Application under 35 U.S.C. 371**
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

**New International Application Filed with the USPTO as a Receiving Office**
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.
PROVIDING INFORMATION OF IMAGE DATA STORED IN DIGITAL IMAGE DISPLAY APPARATUS

CROSS-REFERENCE TO RELATED PATENT APPLICATIONS

This application claims the benefit of Korean Patent Application No. 10-2006-0133932, filed on December 26, 2006, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein in its entirety by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a device and a method for providing information of image data stored in a digital image display apparatus and a recording medium recorded with a program for realizing the same, more specifically to a device and a method capable of providing a variety of additional information of image data, stored in a digital image display apparatus, through a channel list, and a recording medium recorded with a program for realizing the same.

2. Background Art

In this specification, a digital image display apparatus refers to an apparatus providing a high-quality moving picture service by using digital data, and particularly,
capable of storing image data.

The digital image display apparatus is a set-top box, having functions which can receive a digital broadcast such as a digital television broadcast and a digital multimedia broadcasting (hereinafter, referred to as DMB) and can record the digital broadcast, a digital TV or a personal video recorder (PVR), capable of playing back the recorded digital broadcasting, but not limited thereto.

The image data includes video data, capable of being visually recognized, and audio data, capable of being aurally recognized.

One of the greatest benefits of digital broadcasting is that it has a much greater number of usable channels than the commonly used analog broadcast.

For example, the analog broadcast is merely used through approximately 50 channels by using a cable or a satellite, including 4 or 5 ground wave broadcasting channels.

The digital broadcast, however, can be used through a great deal of channels as compared with the analog broadcast because there is no restriction that different frequencies are required for each channel, unlike the existing analog broadcast.

As the number of channels of the digital broadcast increases, the number of channels capable of being used by a user also increases, to thereby increase the number of recordable broadcasts.

In accordance with the increase in the number of channels, for user’s
convenience, a channel memorizing function, which memorizes a desired channel number in advance for a user to make it easy to search usable channels, and a channel list providing function, which provides information related to a lot of usable channels, are being developed.

The channel list, which is alternatively called an electric program guide (EPG), provides usable channel information and a variety of information related to programs that are being broadcasted.

For example, when a user desires to know details related to a leading character of a movie that is being broadcasted, if the user selects an information list of the leading character, the user can acquire the details related to the leading character.

However, if the user plays back a movie that was recorded earlier, the user is unable to acquire the details related to the leading character.

In other words, in the case of having already recorded the digital broadcast, the user is unable to receive an additional service that was provided through the digital broadcast.

Further, if the user tries to search for desired image data of recorded broadcast programs, that is, stored image data, since their recording information is not separately provided, it is required for the user to memorize every name or information of the image data.
SUMMARY OF THE INVENTION

The present invention provides a device and a method for providing information of image data stored in a digital image display apparatus and a recording medium recorded with a program for realizing the same that can supply information of a recorded broadcast, which is stored image data, to a user without user’s searching through the stored image data.

The present invention also provides a device and a method for providing information of image data stored in a digital image display apparatus and a recording medium recorded with a program for realizing the same that can allow a user to receive various additional services provided through a digital broadcast in spite of having already recorded the digital broadcast.

An aspect of the present invention features a device for providing information of image data stored in a digital image display apparatus.

According to an embodiment of the present invention, there is provided a device for providing information of image data stored in a digital image display apparatus, including a channel list generating unit, searching for a broadcast channel received through the digital image display apparatus and generating channel list data; and a link unit, linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the
broadcast data being stored in the digital image display apparatus according to a broadcast selecting signal and a broadcast data storing signal, whereas the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and provides information of the image data by using the information data linked with the channel list data.

The channel list generating unit can renew stored channel list data if a new receivable broadcast channel is found.

The link unit can link the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the image data and the information data.

The device for providing information can be included in the digital image display apparatus.

The digital image display apparatus can include a broadcast receiving unit, receiving broadcast data; an input unit, outputting an input signal corresponding to an inputted key; a processor, generating a control signal controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit; a display unit, outputting video data of the received broadcast data; a sound output unit, outputting audio data of the received broadcast data; a storing unit, storing the broadcast data; and a broadcast processing unit.

The broadcast data processing unit can also include a demodulating unit,
removing a carrier wave from the broadcast data and demodulating the broadcast data, from which the carrier wave is removed, into a digital data stream; a transfer stream (TS) parsing unit, parsing the broadcast data into audio data and video data; a video element stream (ES) buffer, temporarily storing the parsed video data in order to output it through the display unit; and an audio element stream (ES) buffer, temporarily storing the parsed audio data in order to output it through the display unit.

The information data can include transport stream information and recording information of the image data, and the transport stream information can include at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

The recording information can include at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

Another aspect of the present invention features a method for providing a recorded image in a digital image display apparatus.

According to an embodiment of the present invention, there is provided a method for providing information of image data stored in a digital image display apparatus, including generating channel list data by searching for a receivable broadcast
channel in the digital image display apparatus and; and linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus according to a broadcast selecting signal and a broadcast data storing signal, whereas the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and provides information of the image data by using the information data linked with the channel list data.

Another aspect of the present invention features a recording medium recorded with a program for executing a method for providing a recorded image in a digital image display apparatus.

According to an embodiment of the present invention, there is provided a recording medium tangibly embodying a program of instructions executable by a digital image display apparatus to execute a method of providing information of image data stored in the image display apparatus, the recorded medium being readable by the digital image display apparatus, including generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus and; and linking image data and information data, respectively, with the channel list data, the image data and the information data being included in the broadcast data, the broadcast data being
stored in the digital image display apparatus according to a broadcast selecting signal and a broadcast data storing signal, whereas the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and provides information of the image data by using the information data linked with the channel list data.

In the generating step, the channel list data can be generated by renewing stored channel list data if a new receivable broadcast channel is found.

In the linking step, a tag can be inserted into a portion of the channel list data and a link point connected to the tag is included in the image data and the information data.

The linking step can further include storing the channel list data linked with the image data and the information data, respectively.

The channel list data can include information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.

The information data can include transport stream information and recording information of the image data, and the transport stream information can include at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.
The recording information can include at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and viewer-restriction information.

The providing information of the image data by using the information data can be performed by receiving a selecting signal of image data and information data; searching for the selected image data; and searching for information data linked with the found image data.

**BRIEF DESCRIPTION OF THE DRAWINGS**

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

FIG. 1 is a block diagram illustrating a structure of a digital image display apparatus capable of including a device for providing information of stored image data in accordance with an embodiment of the present invention;

FIG. 2 is a flow chart illustrating a process storing image data in a digital image display apparatus in accordance with an embodiment of the present invention;

FIG. 3 is a block diagram illustrating a structure of sections of channel list data stored in a digital image display apparatus in accordance with an embodiment of the present invention;
FIG. 4 is a block diagram illustrating an example of the structure of transport
stream information data linked with channel list data stored in a digital image display
apparatus in accordance with an embodiment of the present invention;

FIG. 5 is a block diagram illustrating an example of the structure of recording
information data linked with channel list data stored in a digital image display apparatus
in accordance with an embodiment of the present invention;

FIG. 6 is a flow chart illustrating a process displaying recording information of
image data, stored in a digital image display apparatus, by using channel list data
generated in accordance with an embodiment of the present invention; and

FIG. 7 is a flow chart illustrating an example of a process displaying image
data, the genre of which is a movie, of stored image data, and a list of channels, through
which each image data is broadcasted, by using channel list data generated in
accordance with an embodiment of the present invention.

DESCRIPTION OF THE EMBODIMENTS

Since there can be a variety of permutations and embodiments of the present
invention, certain embodiments will be illustrated and described with reference to the
accompanying drawings. This, however, is by no means to restrict the present invention
to certain embodiments, and shall be construed as including all permutations,
equivalents and substitutes covered by the spirit and scope of the present invention.
Throughout the drawings, similar elements are given similar reference numerals. Throughout the description of the present invention, when describing a certain technology is determined to evade the point of the present invention, the pertinent detailed description will be omitted.

Terms such as "first" and "second" can be used in describing various elements, but the above elements shall not be restricted to the above terms. The above terms are used only to distinguish one element from the other.

For instance, the first element can be named the second element, and vice versa, without departing the scope of claims of the present invention.

The term "and/or" shall include the combination of a plurality of listed items or any of the plurality of listed items.

When one element is described as being "connected" or "accessed" to another element, it shall be construed as being connected or accessed to the other element directly but also as possibly having another element in between.

On the other hand, if one element is described as being "directly connected" or "directly accessed" to another element, it shall be construed that there is no other element in between.

The terms used in the description are intended to describe certain embodiments only, and shall by no means restrict the present invention.

Unless clearly used otherwise, expressions in the singular number include a
plural meaning. In the present description, an expression such as “comprising” or “consisting of” is intended to designate a characteristic, a number, a step, an operation, an element, a part or combinations thereof, and shall not be construed to preclude any presence or possibility of one or more other characteristics, numbers, steps, operations, elements, parts or combinations thereof.

Unless otherwise defined, all terms, including technical terms and scientific terms, used herein have the same meaning as how they are generally understood by those of ordinary skill in the art to which the invention pertains.

Any term that is defined in a general dictionary shall be construed to have the same meaning in the context of the relevant art, and, unless otherwise defined explicitly, shall not be interpreted to have an idealistic or excessively formalistic meaning.

Hereinafter, preferred embodiments will be described in detail with reference to the accompanying drawings. Identical or corresponding elements will be given the same reference numerals, regardless of the figure number, and any redundant description of the identical or corresponding elements will not be repeated.

A structure of a digital image display apparatus including a device capable of providing information of the stored image data in accordance with the an embodiment of the present invention, which can receive not only stored image data but also a variety of information of the stored image data through a channel list, will be described with
reference to FIG. 1.

As described above, in this specification, a digital image display apparatus, which refers to an apparatus providing a high-quality moving picture service by using digital data, and particularly, capable of storing image data, is a set-top box, having functions which can receive a digital broadcast such as a digital television broadcast and a digital multimedia broadcasting (hereinafter, referred to as DMB) and record the digital broadcast, a digital TV or a personal video recorder (PVR), capable of playing back the recorded digital broadcast, but not limited thereto.

The image data includes video data, capable of being visually recognized, and audio data, capable of being aurally recognized.

As illustrated in FIG. 1, the digital image display apparatus 100 including a device capable of providing information of the stored image data in accordance with the an embodiment of the present invention can include a broadcast receiving unit 110, an input unit 120, a display unit 130, a sound output unit 140, a processor 150, a storing unit 160, a broadcast data processing unit 170 and an information providing unit 180.

The broadcast receiving unit 110 receives a broadcast signal transmitted from a digital broadcasting apparatus, that is, digital broadcast data.

The input unit 120, which can include numeral keys and various functional keys, outputs to the processor 150 an input signal corresponding to the key inputted by a user.
The display unit 130 outputs video data of the received broadcast data, and the sound output unit 140 outputs audio data of the received broadcast data.

The processor 150 generates a control signal, controlling the digital image display apparatus 100, corresponding to the input signal outputted from the input unit 120.

The storing unit 10 stores a variety of information, necessary to control the operation of the digital image display apparatus 100, and broadcast data.

The broadcast data processing unit 170 processes the received broadcast data such that a user can watch the received broadcast data through the display unit 140 and the sound output unit 140.

The broadcast data processing unit 170 can include a demodulating unit 172, a transfer stream (TS) parsing unit 174, a video element stream (ES) buffer 176 and an audio ES buffer 178.

The demodulating unit 172 removes a carrier wave from the received broadcast data and demodulates the broadcast data, removed with the carrier wave, into a digital data stream.

The TS parsing unit 174 parses the broadcast data, demodulated in the demodulating unit 172, into audio data and video data.

The video ES buffer 176 temporally stores the parsed video data so as to output it through the display unit 140, and the audio ES buffer 178 temporally stores the parsed
audio data so as to output it through the sound output unit 140.

The information providing unit 180 provides information of stored image data through a channel list, specialized by the present invention.

The information providing unit 180 can include a channel list generating unit 182 and a link unit 184.

The channel list generating unit 182 generates channel list data by searching a received broadcast channel through the digital image display apparatus 100 and using a list of the found channel. Then, if a new receivable broadcast channel is found, the channel list generating unit 182 allows the generated channel list data to be renewed.

The link unit 184 allows image data and information data, respectively, included in the broadcast data, to be linked with the channel list data.

The link unit 184 inserts a tag into a portion of the channel list data, generated by the channel list generating unit 182, and includes a link point connected to the tag in the image data and the information data, respectively, included in the broadcast data, in order to allow the image data and the information data, respectively, to be linked with the channel list data.

On the other hand, although the illustration of FIG. 1 is based on the assumption that the digital image display apparatus 100 is configured to include the information providing unit 184, it shall be obvious that the information providing unit 184 can be separately embodied so as to be connected to the digital image display.
apparatus 100 and provide information of stored image data to the digital image display apparatus 100.

The process of storing image data in a digital image display apparatus will be described with reference to the structure of the digital image display apparatus including a device capable of providing information of the stored image data in accordance with the an embodiment of the present invention.

FIG. 2 is a flow chart illustrating a process storing image data in a digital image display apparatus.

As illustrated in FIG. 2, a step represented by S200 firstly searches a receivable channel by using a digital image display apparatus in order to store image data in the digital image display apparatus.

If the receivable channel is found, a step represented by S202 generates channel list data by using a list of the found channel. Then, a step represented by S204 provides the generated channel list data to a user as a channel list through a display unit of a device (e.g. a television), included in or connected to the digital image display apparatus.

The user can watch a desired channel by selecting the desired channel from the channel list.

If a step represented by S206 receives a selecting signal of a certain channel,
selected in the channel list displaying a list of the channel found by the user, a step represented by S208 receives broadcast data that is being broadcasted in the pertinent channel.

The broadcast data includes image data, corresponding to broadcast contents, and information data having additional information such as genre of the pertinent broadcast, broadcast time, information related to characters of the broadcast.

If a user selects a function recording a broadcast program broadcasted through a selected channel in the digital broadcast, the broadcast program that is being recorded is separately stored as image data. The user must check the stored image data through a recording list separated from the channel list.

However, the present invention adds a portion, for indicating whether a pertinent broadcast is recorded, into the channel list data, and if the broadcast of the pertinent channel is recorded, allows a sign that the broadcast is recorded to be displayed on the portion added into the channel list data.

As described above, in the digital broadcast, not only the image data but also the information data including the additional information related to the image data are received.

The present invention stores the information data including the additional information of the recorded broadcast as well as the image data of the recorded broadcast in the digital image display apparatus.
The present invention can also provide a variety of information of the image data in addition to stored image data through the channel list by linking the channel list data with the stored image data and the information data.

A structure of channel list data capable of providing not only recording information of image data but also additional information of the image data will be described with reference to FIG. 3.

FIG. 3 is a block diagram illustrating an example of a structure of sections of channel list data stored in a digital image display apparatus in accordance with an embodiment of the present invention.

As illustrated in FIG. 3, the channel list data stored in the digital image display apparatus in accordance with an embodiment of the present invention can be partitioned into sections such as SVC name 300, a type 302, a number 304, a TS info 306 and a Rec info 308, for example.

The SVC name 300 is a section displaying a name of a service channel receiving a digital broadcast.

The type 302 is a section indicating whether the received broadcast is a digital TV broadcast including both video data and audio data or a radio broadcast including audio data, and the number 304 is a section displaying the order of a channel which is found and provided through a channel list.
The TS info 306, displaying information related to a transport stream, and the Rec info 308, displaying recording information, can be stored with a tag for allowing the TS info 306 and the Rec info 308 to be connected to the transport stream data and the recording information data, respectively.

A link point, for being connected to the image data and the information data, respectively, can be generated in each of the image data and the information data by using a tag, in order to store the image data and the information data.

Referring to FIG. 4, the transport stream data, linked with the TS info 306 can be partitioned into sections such as a SVC name 400, a Freq 402, a symbolrate 404, a polar 406 and a FEC 408, for example.

In the case of moving picture experts group (MPEG) standard in association with the playback of moving pictures, the transport stream information refers to information related to a transport stream transporting image data and audio data through one stream.

The SVC name 400 is a section displaying a name of a service channel receiving a digital broadcast, and the Freq 402 is a section displaying frequency information of the channel receiving the broadcast.

The symbolrate 404 is a section displaying speed information transmitting a broadcast signal through a channel, and the polar 406 is a section displaying polar signal
information of a broadcast signal.

The FEC 408 is a section displaying information related to forward error correction encoding transport data so as to detect and correct an error of the transport data and allowing a receiver to correct the error.

Referring to FIG. 5, the recording information data, linked with the Rec info 308, can be partitioned into a SVC name 500, a start time 502, an end time 504, a genre 506 and a parentlock 508, for example.

The SVC name 500 is a section displaying a name of a service channel receiving a digital broadcast, and the start time 502 and the end time 504 are sections stored with start time and end time, respectively, of a broadcast to be recorded.

The genre 506 is a section storing information of a genre (e.g. a movie, a soap opera and news) of a broadcast to be recorded, and the parentlock 508 is a section indicating whether a child is restricted to access adult contents.

A user can know whether a pertinent channel is recorded by using the structure of the channel list data and the structure of the information data, linked with the channel list data, and if there is a sign indicating that the pertinent channel is recorded, can acquire additional information of the recorded image data by selecting recording information from the channel list.
Referring to FIG. 6, the process displaying recording information of image data, stored in a digital image display apparatus, by using channel list data generated in accordance with an embodiment of the present invention, will be described in more detail.

As illustrated in FIG. 6, if a digital image display apparatus is firstly operated, a step represented by S600 allows the digital image display apparatus to search a new channel.

A step represented by S602 determines whether a new channel is found. If the new channel is found, a step represented by S604 adds information related to the found new channel into channel list data.

A step represented by S606 determines whether a recording signal of a channel selected by a user is inputted. If the recording signal of the selected channel is inputted, a step represented by S608 stores image data and information data received from the selected channel.

A step represented by S610 links the stored image data and the stored information data, respectively, to the channel list data, and a step represented by S612 adds information, indicating that the image data is stored, into the channel list data and outputs the channel list data.

The process, generating channel list data by the same order as described with
reference to FIG. 6 and storing information data, linked with the channel list data, and
then checking recording information, indicating whether image data is stored, by using
a channel list and checking additional information of the stored image data, will be
described with reference to FIG. 7.

FIG. 7 is a flow chart illustrating an example of a process displaying image
data, the genre of which is a movie, of stored image data, and a list of channels, through
which each image data is broadcasted, by using channel list data generated in
accordance with an embodiment of the present invention.

FIG. 7 is a flow chart illustrating an example of a process displaying an image
datum, the genre of which is a movie, of stored image data and a list of channels, which
each image data is broadcasted through, by using channel list data generated in
accordance with an embodiment of the present invention.

As illustrated in FIG. 7, a step represented by S700 firstly outputs channel list
data by reading the channel list data from the digital image display apparatus and
displaying the channel list data on a display unit of the digital image display apparatus
or a device (e.g. a television), connected to the digital image display apparatus, in order
to check recording information and additional information of image data by using the
channel list.

If a user selects recording information and a movie for a genre, a step
represented by S702 allows the digital image display apparatus to receive a recording
information selecting signal and genre selecting information.

A step represented by S704 searches the stored image data according to the recording information selecting signal, and a step represented by S706 searches the information data, linked with the found image data.

A step represented by S708 selects the information data, identical to the genre selecting information, and the image data, connected to the selected information data, from the found information data.

A step represented by S710 reads channel information from a SVC name corresponding to the channel information in the selected image data and displays the channel information on a display unit of a device (e.g. a television), included in or connected to the digital image display apparatus, such that information including additional information of the stored image data can be provided to a user through the channel list.

Hitherto, although some embodiments of the present invention have been shown and described for the above-described objects, it will be appreciated by any person of ordinary skill in the art that a large number of modifications, permutations and additions are possible within the principles and spirit of the invention, the scope of which shall be defined by the appended claims and their equivalents.
What is claimed is:

1. A device for providing information of image data stored in a digital image display apparatus, the device comprising:

   a channel list generating unit, searching for a broadcast channel received through the digital image display apparatus and generating channel list data; and

   a link unit, linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus according to a broadcast selecting signal and a broadcast data storing signal,

   whereas the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and provides information of the image data by using the information data linked with the channel list data.

2. The device of Claim 1, wherein the channel list generating unit renews stored channel list data if a new receivable broadcast channel is found.

3. The device of Claim 1, wherein the link unit links the image data and the information data, respectively, to the channel list data by inserting a tag into a portion of the channel list data and including a link point connected to the tag in the image data
and the information data.

4. The device of Claim 1, wherein the device for providing information is included in the digital image display apparatus.

5. The device of Claim 1, wherein the digital image display apparatus comprises:

   a broadcast receiving unit, receiving broadcast data;

   an input unit, outputting an input signal corresponding to an inputted key;

   a processor, generating a control signal controlling an operation of the digital image display apparatus in accordance with the input signal outputted from the input unit;

   a display unit, outputting video data of the received broadcast data;

   a sound output unit, outputting audio data of the received broadcast data;

   a storing unit, storing the broadcast data; and

   a broadcast processing unit.

6. The device of Claim 5, wherein the broadcast data processing unit comprises:

   a demodulating unit, removing a carrier wave from the broadcast data and
demodulating the broadcast data, from which the carrier wave is removed, into a digital data stream;

a transfer stream (TS) parsing unit, parsing the broadcast data into audio data and video data;

a video element stream (ES) buffer, temporarily storing the parsed video data in order to output it through the display unit; and

an audio element stream (ES) buffer, temporarily storing the parsed audio data in order to output it through the display unit.

7. The device of Claim 1, wherein the information data includes transport stream information and recording information of the image data.

8. The device of Claim 7, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbol rate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

9. The device of Claim 7, wherein the recording information comprises at least one from the group consisting of channel information, information related to a start time and an end time of storing the broadcast data, genre information of image data and
viewer-restriction information.

10. A method for providing information of image data stored in a digital image display apparatus, the method comprising:

   generating channel list data by searching for a receivable broadcast channel in the digital image display apparatus and; and

   linking image data and information data, respectively, with the channel list data, the image data and the information data being included in broadcast data, the broadcast data being stored in the digital image display apparatus according to a broadcast selecting signal and a broadcast data storing signal,

   whereas the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and provides information of the image data by using the information data linked with the channel list data.

11. The method of Claim 10, wherein, in the generating step, the channel list data is generated by renewing stored channel list data if a new receivable broadcast channel is found.

12. The method of Claim 10, wherein, in the linking step, a tag is inserted into
a portion of the channel list data and a link point connected to the tag is included in the image data and the information data.

13. The method of Claim 10, wherein the linking step further comprises storing the channel list data linked with the image data and the information data, respectively.

14. The method of Claim 10, wherein the channel list data comprises information related to a channel capable of receiving the broadcast data, information related to a type of the broadcast data and information related to a tag linked with the information data.

15. The method of Claim 10, wherein the information data includes transport stream information and recording information of the image data.

16. The method of Claim 15, wherein the transport stream information comprises at least one from the group consisting of frequency information of the broadcast data, broadcast signal symbolrate information, polar signal information of a broadcast signal and forward error correction (FEC) information.

17. The method of Claim 15, wherein the recording information comprises at
least one from the group consisting of channel information, information related to a start
time and an end time of storing the broadcast data, genre information of image data and
viewer-restriction information.

18. The method of Claim 10, wherein providing information of the image data
by using the information data is performed by:

receiving a selecting signal of image data and information data;
searching for the selected image data; and
searching for information data linked with the found image data.

19. A recording medium tangibly embodying a program of instructions
executable by a digital image display apparatus to execute a method of providing
information of image data stored in the image display apparatus, the recorded medium
being readable by the digital image display apparatus, the program comprising:

generating channel list data by searching for a receivable broadcast channel in
the digital image display apparatus and; and

linking image data and information data, respectively, with the channel list data,
the image data and the information data being included in the broadcast data, the
broadcast data being stored in the digital image display apparatus according to a
broadcast selecting signal and a broadcast data storing signal,
whereas the channel list data is outputted through the digital image display apparatus to display link information of the image data and the information data and provides information of the image data by using the information data linked with the channel list data.
ABSTRACT

A device and a method for providing information of image data stored in a digital image display apparatus and a recording medium recorded with a program for realizing the same are disclosed. According to an embodiment of the present invention, the device for providing information of image data stored in the digital image display apparatus can include a channel list generating unit, which searches for a broadcast channel received through the digital image display apparatus and generates channel list data, and a link unit, which links image data and information data, respectively, included in broadcast data, stored in the digital image display apparatus according to a broadcast selecting signal and a broadcast data storing signal, with the channel list data.
FIG. 2

Start

Search channel S200

Search channel list data S202

Provide channel list to display unit S204

Receive certain channel selecting signal S206

Receive Broadcast data S208

End
FIG. 3

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<td>Rec Info</td>
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### FIG. 4

<table>
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**FIG. 5**

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FIG. 6

Start

Search channel S600

Is there new channel? S602

Yes

Add channel list data S604

No

Is selected channel recorded? S606

Yes

Store image data and information data S608

Link image data and information data with channel list data S610

No

Output channel list data S612

End
FIG. 7

Start

Output channel list data ~ S700

Receive recording information selecting signal and genre selecting information ~ S702

Search stored image data ~ S704

Search information data, linked with found image data ~ S706

Select image data, connected to information data that is identical to genre selecting information ~ S708

Read channel information from SVC name of image data ~ S710

End
### PATENT APPLICATION FEE DETERMINATION RECORD

**Application or Docket Number:** 11/874,770

#### APPLICATION AS FILED – PART I

<table>
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<td>420 if the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(f).</td>
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* If the difference in column 1 is less than zero, enter "0" in column 2.

#### TOTAL |

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#### APPLICATION AS AMENDED – PART II

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* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" in this space is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" in THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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