ISSUE NOTIFICATION

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 909 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):

Wonjang Baek, Gyeonggi-do, KOREA, REPUBLIC OF;
John Kim, Seoul, KOREA, REPUBLIC OF;
Seong Baek Lee, 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 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)

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<td>Wonjae Baek</td>
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TITLE OF INVENTION: METHOD OF SWITCHING DIGITAL TV APPLICATION

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3. EXAMINER ART UNIT CLASS-SUBCLASS

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1. Change of correspondence address or indication of Fee Address (37 CFR 1.353).
   - 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 02-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
   - Names of up to 3 registered patent attorneys or agents OR, alternatively,
   - The name of a single firm (having as a membe 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 recorded as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filling an assignment.
   - (A) NAME OF ASSIGNEE: SK PLANET CO., LTD.
   - (B) RESIDENCE: SEOUL, 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:
   - 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 553353 (enclose a copy of this form).

4b. Payment of Fee(s): (Please first recopy any previously paid issue fee shown above)
   - Issue Fee
   - Publication Fee (No small entity discount permitted)
   - Advance Order - # of Copies

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: 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.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature: Sungyeop Chung

Typed or printed name: Sungyeop Chung

Date: January 28, 2015
Registration No.: 64,130

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
## Electronic Patent Application Fee Transmittal

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## Filing Fees for U.S. National Stage under 35 USC 371

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<td>First Named Inventor/Applicant Name:</td>
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The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:
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Information:

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Warnings:

Information:

Total Files Size (in bytes): 177207

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.
NOTICE OF ALLOWANCE AND FEE(S) DUE

STEIN IP, LLC
1400 EYE STREET, NW
SUITE 300
WASHINGTON, DC 20005

EXAMINER
PENG, HSJUNOFEI

ART UNIT PAPER NUMBER
2426

DATE MAILED: 12/19/2014

APPLICATION NO. FILING DATE FIRST NAMED INVENTOR ATTORNEY DOCKET NO. CONFIRMATION NO.
12/450,066 09/10/2009 Wonjang Baek 0366.1009 1129

TITLE OF INVENTION: METHOD OF SWITCHING DIGITAL TV APPLICATION

APPLN. TYPE ENTITY STATUS ISSUE FEE DUE PUBLICATION FEE DUE PREV. PAID ISSUE FEE TOTAL FEE(S) DUE DATE DUE
nonprovisional SMALL $480 $0 $0 $480 03/19/2015

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.
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)

49455 7590 12/19/2014
STEIN IP, LLC
1400 EYE STREET, NW
SUITE 300
WASHINGTON, DC 20005

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:

(Date)

APPLICATION NO. FILING DATE FIRST NAMED INVENTOR ATTORNEY DOCKET NO. CONFIRMATION NO.

12/450,066 09/10/2009 Wonjang Baek 0366.1009 1129

TITLE OF INVENTION: METHOD OF SWITCHING DIGITAL TV APPLICATION

APPLN. TYPE ENTITY STATUS ISSUE FEE DUE PUBLICATION FEE DUE PREV. PAID ISSUE FEE TOTAL FEE(S) DUE DATE DUE

nonprovisional SMALL $480 $0 $0 $480 03/19/2015

EXAMINER ART UNIT CLASS-SUBCLASS

PENG, HSIUNGFEI 2426 725-116000

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
   (1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
   (2) 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.

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 a 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, as applicable.

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

   This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature __________________________ Date __________

Typed or printed name __________________________ Registration No. __________
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) 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

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 12/12/2014.
   - 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 1,2,4-8 and 11-12. 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 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 08/15/14
3. ☐ Examiner’s Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date ________

/FRED PENG/
Examiner, Art Unit 2426
DETAILED ACTION

1. This Office Action is in response to a supplemental AMENDMENT entered 12/12/2014 after phone interview with Applicant’s representative Sungyeon Chung.

Status of Claims

2. Claims 1, 2, 4-8 and 11-18 are pending in this application.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 08/15/2014 was filed after the mailing date of the Non-Final Rejection on 08/01/2014. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Allowable Subject Matter

4. Claims 1, 2, 4-8 and 11-18 are allowed.

Reason for Allowance

5. The prior art of records considered as a whole fails to anticipate or render limitations "... a method for switching a digital TV application in a receiver for receiving and executing the digital TV application comprising steps of (a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel; (b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a device identification information of the receiver and a user identification information of a user of the receiver; (c) transmitting the application switching event to an application providing server rather than a head-end system, wherein the application providing server stores the digital TV application according to a predetermined profile and the digital TV application corresponding to each channel, and wherein the application providing server is not a web server; and (d) receiving and
executing the digital TV application corresponding to the application switching event from the application providing server, where in the application providing server transmits the digital TV application corresponding to the device identification information or the user identification information, and wherein the application providing server does not provide a web page, wherein the step (d) comprises: (d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and (d-2) executing the minimum execution data....” in Independent Claim 1 to be obvious.

Claim 7 directed to an alternative method with different scope but similar limitations as recited in claim 1 is also allowed.

6. 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.”

**Correspondence Information**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRED PENG whose telephone number is (571)270-1147. The examiner can normally be reached on Monday-Friday 09:30-19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Nasser Goodarzi can be reached on (571) 272-4195. 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.

/Fred Peng/
Examining Attorney, Art Unit 2426

/NASSER GOODARZI/
Supervisory Patent Examiner, Art Unit 2426
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EXAMINER /Fred Peng/ DATE CONSIDERED 12/14/2014

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 809. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.*

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Examiner: FRED PENG

Art Unit: 2426

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Wonjang BAEK et al. Confirmation No. 1129
Application No. 12/450,066 Group Art Unit: 2426
Filed: September 10, 2009 Examiner: Peng HSIUNGFEI

For: METHOD OF SWITCHING DIGITAL TV APPLICATION

SUPPLEMENTAL AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This paper supplements Applicants' previous response to the Office Action mailed August 1, 2014, which was filed November 3, 2014 (November 1-2, 2014 fell on weekends). An Extension of Time under 37 CFR 1.136 is not required for submitting this supplemental reply since a complete first reply was timely filed in reply to the Office Action.

Reconsideration of the claims is respectfully requested. The following remarks are respectfully submitted.
AMENDMENTS TO THE CLAIMS

The text of all pending claims (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims show added text with underlining and deleted text with strikethrough. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please CANCEL claims 3, 9 and 10 without prejudice or disclaimer, and AMEND claims 1, 4, 5, 7, 11 and 12, in accordance with the following:

1. (CURRENTLY AMENDED) A method for switching a digital TV application in a receiver for receiving and executing the digital TV application, the method comprising steps of:
   (a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel;
   (b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a device identification information of the receiver and a user identification information of a user of the receiver;
   (c) transmitting the application switching event to an application providing server rather than a head-end system, wherein the application providing server stores the digital TV application according to a predetermined profile and the digital TV application corresponding to each channel, and wherein the application providing server is not a web server; and
   (d) receiving and executing the digital TV application corresponding to the application switching event from the application providing server, wherein the application providing server transmits the digital TV application corresponding to the device identification information or the user identification information, and wherein the application providing server does not provide a web page,

   wherein the step (d) comprises:
   (d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and
   (d-2) executing the minimum execution data.

2. (ORIGINAL) The method in accordance with claim 1, wherein the step (a) comprises (a-1) receiving the channel changing event including the channel identification
information of the second channel.

3. (CANCELED)

4. (CURRENTLY AMENDED) The method in accordance with claim 3, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

5. (CURRENTLY AMENDED) The method in accordance with claim 3, wherein the step (d) comprises:
   (d-3) requesting an additional execution data required during the execution of the minimum execution data to the application providing server;
   (d-4) receiving the additional execution data from the application providing server; and
   (d-5) executing the additional execution data.

6. (ORIGINAL) The method in accordance with claim 5, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

7. (CURRENTLY AMENDED) A method for switching a digital TV application in an application providing server for providing the digital TV application, the method comprising steps of:
   (a) receiving, from a receiver for executing the digital TV application, an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver; and
   (b) extracting and transmitting personalized digital TV application based on the application switching event to the receiver, wherein the application providing server configures the personalized digital TV application that is to be provided according to the device identification information or the user identification information in the form of a from-to table based on a profile, and wherein the application providing server is not a web server and does not provide a web page; and
   (c) dividing the another digital TV application into a minimum execution data and an
additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

wherein the step (b) comprises:

(b-2) extracting the minimum execution data for the another digital TV application to be provided to the receiver based on the application switching event; and

(b-3) transmitting the minimum execution data to the receiver.

8. (PREVIOUSLY PRESENTED) The method in accordance with claim 7, wherein the step (b) comprises (b-1) extracting the another digital TV application to be provided to the receiver based on at least one of the channel identification information, the device identification information and the user identification information.

9-10. (CANCELED)

11. (CURRENTLY AMENDED) The method in accordance with-claim 10 claim 7, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

12. (CURRENTLY AMENDED) The method in accordance with-claim 10 claim 7, wherein the step (b) comprises:

(b-4) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and

(b-5) extracting and transmitting the additional execution data to the receiver.

13. (ORIGINAL) The method in accordance with claim 12, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

14. (PREVIOUSLY PRESENTED) The method in accordance with claim 7, wherein dividing each of a plurality of the digital TV applications into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).
15. (PREVIOUSLY PRESENTED) The method in accordance with claim 14, wherein the step (b) comprises:
   (b-6) extracting the minimum execution data corresponding to the another digital TV application to be provided to the receiver from the plurality of the digital TV applications based on the application switching event; and
   (b-7) transmitting the extracted minimum execution data to the receiver.

16. (ORIGINAL) The method in accordance with claim 15, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

17. (ORIGINAL) The method in accordance with claim 15, wherein the step (b) comprises:
   (b-8) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and
   (b-9) extracting and transmitting the additional execution data corresponding to the transmission request to the receiver.

18. (ORIGINAL) The method in accordance with claim 17, wherein the additional execution data transmitted in the step (b-9) includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application corresponding to the minimum execution data transmitted in the step (b-7).

19. (CANCELED)
REMARKS

In accordance with the foregoing, claims 1, 4, 5, 7, 11 and 12 have been further amended with respect to the claim amendments as filed on November 3, 2014, and claims 3, 9 and 10 have been cancelled without prejudice or disclaimer. Claim 1 has incorporated the features of claim 3, now cancelled. Claim 7 has incorporated the features of claims 9 and 10, now cancelled. Claims 4, 5, 11 and 12 have been amended to change their dependency from claim 3 or 10, now cancelled, to claim 1 or 7. Upon entry of this amendment, claims 1, 2, 4-8 and 11-18 are pending and under consideration. No new matter within the meaning of 35 U.S.C. § 132 is presented in this Amendment.

INTERVIEW SUMMARY:

Applicants gratefully acknowledge that on December 8, 2014, the Examiner made a phone call to Applicants' representative, suggesting further amendments to the claims as filed on November 3, 2014. Specifically, the Examiner states that it would be allowable if Applicants cancel claim 3 and incorporate the features of claim 3 into claim 1, and cancel claims 9 and 10 and incorporate the features of claims 9 and 10 into claim 7.

The claims have been amended in accordance with the Examiner's suggestion above, and Applicants believe that they are in condition for allowance.

ALLOWABLE SUBJECT MATTER:

Claims 1, 2, 4-8 and 11-18 are pending, of which claims 1, 4, 5, 7, 11 and 12 have been amended according to the Examiner's suggestion. By this amendment, Applicants respectfully submit that claims 1, 2, 4-8 and 11-18 are in condition for allowance.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge
the same to our Deposit Account No. 503333.

Respectfully submitted,

STEIN IP, LLC

Date: December 12, 2014

By: [Signature]

Sungyeop Chung
Registration No. 64130

1400 Eye St., N.W.
Suite 300
Washington, D.C.  20005
Telephone: (202) 216-9505
Facsimile: (202) 216-9510
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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.
REPLY/AMENDMENT
FEE TRANSMITTAL

Attorney Docket No. 0366.1009
Application Number 12/450,066
Filing Date September 10, 2009
First Named Inventor Wonjang BAEK
Group Art Unit 2426

AMOUNT ENCLOSED $ 0.00
Examiner Name Peng HSIUNGFEI

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Since an Official Action set an original due date of ..., petition is hereby made for an extension to cover the date this reply is filed, for which the requisite fee is enclosed: (1 month ($200)); (2 months ($600)); (3 months ($1,400)); (4 months ($2,200)); (5 months ($3,000)):

Notice of Appeal is enclosed (37 CFR 41.20(b)(1)): $800.00
Information Disclosure Statement is enclosed and fee is required (37 CFR 1.17(p)): $180.00

Total of above calculations = $ 0.00
Reduction by 50% for filing by small entity (37 CFR 1.27) - $
Reduction by 75% for filing by micro entity (37 CFR 1.29) - $

Total of above calculations = $ 0.00
Statutory Disclaimer is enclosed (37 CFR 1.20(d)): $160.00

TOTAL FEES DUE = $ 0.00

☐ A previous micro entity status is no longer appropriate and is hereby cancelled under 37 CFR 1.29(i).

METHOD OF PAYMENT

☐ Check enclosed as payment. ☐ Credit Card Payment Form, Form PTO-2038 (attached).

☐ Charge “TOTAL FEES DUE” to the Deposit Account No. below.

☐ Payment authorized and made via EFS-Web.

☐ No payment is enclosed and no charges to the Deposit Account are authorized at this time (unless specifically required to obtain a filing date).

GENERAL AUTHORIZATION

☒ If the above-noted “AMOUNT ENCLOSED” is not correct, the Commissioner is hereby authorized to credit any overpayment or charge any additional fees necessary to:

Deposit Account No. 503333
Deposit Account Name STEIN IP, LLC

The Commissioner is also authorized to credit any overpayments or charge any additional fees required under 37 CFR 1.16 (filing fees) or 37 CFR 1.17 (processing fees) during the prosecution of this application, including any related application(s) claiming benefit hereof pursuant to 35 U.S.C. § 120 (e.g., continuations/divisionals/CIPs under 37 CFR 1.53(b) and/or continuations/divisionals/CPAs under 37 CFR 1.53(d)) to maintain pendency hereof or of any such related application.

SUBMITTED BY: STEIN IP, LLC

Typed Name Sungyeop Chung
Reg. No. 64130

Signature
Date December 12, 2014
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Wonjang BAEK et al.

Application No. 12/450,066

Filed: September 10, 2009

For: METHOD OF SWITCHING DIGITAL TV APPLICATION

AMENDMENT UNDER 37 CFR 1.111

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is in response to the Office Action mailed August 1, 2014, and having a period for response set to expire on November 3, 2014, with the fact that the original three-month date of November 1, 2014 fell on Saturday.

Reconsideration of the claims is respectfully requested. The following remarks are respectfully submitted.
AMENDMENTS TO THE CLAIMS

The text of all pending claims (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims show added text with underlining and deleted text with strikethrough. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 1 and 7 in accordance with the following:

1. (Currently Amended) A method for switching a digital TV application in a receiver for receiving and providing executing the digital TV application, the method comprising steps of:

   (a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel;

   (b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a device identification information of the receiver and a user identification information of a user of the receiver;

   (c) transmitting the application switching event to an application providing server for providing the digital TV application rather than a head-end system, wherein the application providing server stores the digital TV application according to a predetermined profile and the digital TV application corresponding to each channel, and wherein the application providing server is not a web server; and

   (d) receiving and executing the digital TV application corresponding to the application switching event from the application providing server, wherein the application providing server transmits the digital TV application corresponding to the device identification information or the user identification information, and wherein the application providing server does not provide a web page.

2. (Original) The method in accordance with claim 1, wherein the step (a) comprises (a-1) receiving the channel changing event including the channel identification information of the second channel.

3. (Original) The method in accordance with claim 1, wherein the step (d) comprises:
(d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and
(d-2) executing the minimum execution data.

4. (Original) The method in accordance with claim 3, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

5. (Previously Presented) The method in accordance with claim 3, wherein the step (d) comprises:
   (d-3) requesting an additional execution data required during the execution of the minimum execution data to the application providing server;
   (d-4) receiving the additional execution data from the application providing server; and
   (d-5) executing the additional execution data.

6. (Original) The method in accordance with claim 5, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

7. (Currently Amended) A method for switching a digital TV application in an application providing server for providing the digital TV application, the method comprising steps of:
   (a) receiving, from a receiver for executing and providing the digital TV application, an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver; and
   (b) extracting and transmitting another personalized digital TV application based on the application switching event to the receiver, wherein the application providing server configures the personalized digital TV application that is to be provided according to the device identification information or the user identification information in the form of a from-to table based on a profile, and wherein the application providing server is not a web server and does not provide a web page.
8. (Previously Presented) The method in accordance with claim 7, wherein the step (b) comprises (b-1) extracting the another digital TV application to be provided to the receiver based on at least one of the channel identification information, the device identification information and the user identification information.

9. (Previously Presented) The method in accordance with claim 7, further comprising (c) dividing the another digital TV application into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

10. (Previously Presented) The method in accordance with claim 9, wherein the step (b) comprises:
    (b-2) extracting the minimum execution data for the another digital TV application to be provided to the receiver based on the application switching event; and
    (b-3) transmitting the minimum execution data to the receiver.

11. (Original) The method in accordance with claim 10, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

12. (Original) The method in accordance with claim 10, wherein the step (b) comprises:
    (b-4) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and
    (b-5) extracting and transmitting the additional execution data to the receiver.

13. (Original) The method in accordance with claim 12, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

14. (Previously Presented) The method in accordance with claim 7, wherein dividing each of a plurality of the digital TV applications into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution
data prior to carrying out the step (a).

15. (Previously Presented) The method in accordance with claim 14, wherein the step (b) comprises:

(b-6) extracting the minimum execution data corresponding to the another digital TV application to be provided to the receiver from the plurality of the digital TV applications based on the application switching event; and

(b-7) transmitting the extracted minimum execution data to the receiver.

16. (Original) The method in accordance with claim 15, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

17. (Original) The method in accordance with claim 15, wherein the step (b) comprises:

(b-8) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and

(b-9) extracting and transmitting the additional execution data corresponding to the transmission request to the receiver.

18. (Original) The method in accordance with claim 17, wherein the additional execution data transmitted in the step (b-9) includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application corresponding to the minimum execution data transmitted in the step (b-7).

19. (Canceled)
REMARKS

In accordance with the foregoing, claims 1 and 7 have been amended, and claims 1-18 are pending and under consideration. Support for the amended features may be found at least in paragraphs [0070], [0071], [0074] and [0107]-[0109] of the instant application (here, the paragraph numbers are from the publication, for the Examiner’s convenience). No new matter within the meaning of 35 U.S.C. § 132 is presented in this Amendment.

REJECTIONS UNDER 35 U.S.C. § 102:

Claims 1-18 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2005/0028206 applied for by Cameron et al. (“Cameron”). Applicants have amended the independent claims and respectfully traverse this rejection based thereon.

Claim 1, as amended, recites inter alia:

(c) transmitting the application switching event to an application providing server rather than a head-end system, wherein the application providing server stores the digital TV application according to a predetermined profile and the digital TV application corresponding to each channel, and wherein the application providing server is not a web server; and

(d) receiving and executing the digital TV application corresponding to the application switching event from the application providing server, wherein the application providing server transmits the digital TV application corresponding to the device identification information or the user identification information, and wherein the application providing server does not provide a web page. [emphasis added]

Cameron fails to disclose or suggest these claim features. Cameron is directed to a computer software application for end-to-end management of the delivery of IP-configured integrated multimedia signals, on an interactive basis, to a subscriber device (personal computer) and a monitor coupled thereto or television/set-top box combination. Cameron carries out this scheme using a web server as an application provider. By contrast, the presently claimed subject matter requires that the application providing server is not a web server, nor does it provide a web page.

Specifically, the Office Action identifies paragraph [0064], lines 13-17 of Cameron as teaching Step (c) of claim 1, which describes that “[t]he broadcast delivery system may also
provide for channel hotlinks such that while watching a program, or when a program is highlighted on the IPG, the user can operate a remote entry device to activate a transfer to a dynamic web page.” This functionality as described in Cameron may inevitably require a web server to be involved. By contrast, in claim 1, “the application providing server is not a web server” (emphasis added) and “the application providing server does not provide a web page” (emphasis added), which are clearly not taught by Cameron.

Moreover, according to the subject matter of amended claim 1, the application providing server stores “the digital TV application according to a predetermined profile and the digital TV application corresponding to each channel” (emphasis added) and transmits “the digital TV application corresponding to the device identification information or the user identification information” (emphasis added). Cameron, however, does not disclose or suggest these claim features either.

As such, Cameron fails to disclose each and every feature as recited in claim 1, as amended, Applicants respectfully submit that it does not anticipate the claim.

Claim 7 recites features similar to those of claim 1 as discussed above, and is allowable over Cameron for similar reasons, mutatis mutandis. Claims 2-6 and 8-18 depend from claims 1 and 7, respectively, and are deemed allowable for at least their dependency of an allowable base claim.

Based on the foregoing, withdrawal of the rejection of claims 1-18 under 35 U.S.C. § 102(b) is respectfully requested.
CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

STEIN IP, LLC

Date: November 3, 2014

By: [Signature]

1400 Eye St., N.W.
Suite 300
Washington, D.C. 20005
Telephone: (202) 216-9505
Facsimile: (202) 216-9510
Electronic Acknowledgement Receipt

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<td>Wonjang Baek</td>
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Payment information:

Submitted with Payment: no

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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.
**REPLY/AMENDMENT FEE TRANSMITTAL**

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**FEE CALCULATION (fees effective 3/19/2013)**

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Since an Official Action set an original due date of November 1, 2014, petition is hereby made for an extension to cover the date this reply is filed, for which the requisite fee is enclosed: (1 month ($200)); (2 months ($600)); (3 months ($1,400)); (4 months ($2,200)); (5 months ($3,000)).

Notice of Appeal is enclosed (37 CFR 41.20(b)(1): $800.00) $0.00

Information Disclosure Statement is enclosed and fee is required (37 CFR 1.17(p): $180.00) $0.00

Total of above calculations = $0.00

Reduction by 50% for filing by small entity (37 CFR 1.27) - $

Reduction by 75% for filing by micro entity (37 CFR 1.29) - $

Total of above calculations = $0.00

Statutory Disclaimer is enclosed (37 CFR 1.20(d): $160.00) $0.00

TOTAL FEES DUE = $0.00

☐ A previous micro entity status is no longer appropriate and is hereby cancelled under 37 CFR 1.29(i).

**METHOD OF PAYMENT**

☐ Check enclosed as payment. ☐ Credit Card Payment Form, Form PTO-2038 (attached).

☐ Charge "TOTAL FEES DUE" to the Deposit Account No. below.

☐ Payment authorized and made via EFS-Web.

☒ No payment is enclosed and no charges to the Deposit Account are authorized at this time (unless specifically required to obtain a filing date).

**GENERAL AUTHORIZATION**

☒ If the above-noted "AMOUNT ENCLOSED" is not correct, the Commissioner is hereby authorized to credit any overpayment or charge any additional fees necessary to:

- Deposit Account No. 503333
- Deposit Account Name STEIN IP, LLC

☒ The Commissioner is also authorized to credit any overpayments or charge any additional fees required under 37 CFR 1.16 (filing fees) or 37 CFR 1.17 (processing fees) during the prosecution of this application, including any related application(s) claiming benefit hereof pursuant to 35 U.S.C. § 120 (e.g., continuations/divisionals/CIPs under 37 CFR 1.53(b) and/or continuations/divisionals/CPAs under 37 CFR 1.53(d)) to maintain pendency hereof or of any such related application.

**SUBMITTED BY: STEIN IP, LLC**

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<tr>
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**TOTAL CLAIMS (37 CFR 1.16(g))**

- minus 20 = *

**INDEPENDENT CLAIMS (37 CFR 1.16(h))**

- minus 3 = *

**APPLICATION SIZE FEE (37 CFR 1.16(a))**

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(g).

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

**TOTAL ADD'L FEE**

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**AMENDMENT**

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

**TOTAL ADD'L FEE**

- LIE

/MOLIKI MAY/

* 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.
**U.S. PATENT DOCUMENTS**

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**FOREIGN PATENT DOCUMENTS**

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<td>CN 1452399 A</td>
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**OTHER REFERENCES** *(Including Author, Title, Date, Pertinent Pages, Etc.)*

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**EXAMINER DATE CONSIDERED**

*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.*
PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-243190
(43)Date of publication of application : 07.09.2001

(51)Int.Cl. G06F 15/00
G06F 13/00
H04L 12/68
H04N 7/173

(21)Application number : 2000-053969 (71)Applicant : NIPPON TELEGR & TELEPH CORP <NTT>
(22)Date of filing : 29.02.2000 (72)Inventor : TSUBOKAWA MAKOTO

(54) APPLICATION CHANNEL CONVERSION COMMUNICATION SCHEME AND COMMUNICATION METHOD
(57)Abstract:
PROBLEM TO BE SOLVED: To enable an end user to customize a common channel setting by a simple operation when using different applications.
SOLUTION: This scheme is composed of an application/channel conversion part 1 that includes a network interface 2 capable of transmitting/receiving plurality of application information such as the Internet, television, etc., a data table 5 that allows a one-to-one correspondence between an address of information site providing the application information and an identifier (hereafter, 'channel') for the type of the applications and the address information, and an application selection/connection part 4 composed of software that commence running the corresponding application in an application part to make connections automatically to the site address, referring to the table 5 on the basis of the channel information designated by a user, and a terminal device 7 that is connected to the conversion part 1 through a network and can input or select the channel information.

【発明の名称】アプリケーション・チャンネル変換通信方式および通信方法

【要約】
異なるアプリケーションを利用する場合、端末ユーザは簡単な操作で共通のチャンネル設定をカスタマイズできるようにする。

【解決手段】インターネット、テレビジョン、電話などの複数のアプリケーション情報を送受信可能なネットワークインタフェースと、アプリケーション情報を提供する情報サイトのアドレスとそれらアプリケーション識別およびアドレス情報の識別子（以下、チャンネル）を1対1で対応させるデータテーブルと、ユーザにより指定されたチャンネル情報に基づいて、前記テーブルを参照し、アプリケーション部から該当するアプリケーションを起動させ、サイトアドレスへの接続を自動的に行うソフトウェアからなるアプリケーション選択・接続部4とを備えたアプリケーション/チャンネル変換部1、変換部1にネットワークを介して接続され、チャンネル情報を入力または選択する端末装置7で構成される。
【特許請求の範囲】
【請求項１】インターネット、テレビジョンなどの複数のアドレッジ情報を送受信可能なネットワークインターフェースと、
アプライケーション情報と提供する情報サイトのアドレッジ、アプライケーション種別および前記情報サイトアドレス
に対応したチャンネル情報（1対1で対応させるデータベース）と、指定されたチャンネル情報を抽出する抽出
部と、抽出されたチャンネル情報に基づいて、前記データベースを参照し、該当するアプライケーションを起
動させ、前記ネットワークインターフェースを介して情報サイトアドレスへの接続を行うアプライケーション選択
・接続部を備え、アプリケーション・チャンネル変換
部、および前記データベースを介して情報サイトアドレスへの接続を行うアプライケーション選択・接続部を
備え、アプリケーション・チャンネル変換部に送信する端末装置を有することを特徴とするアプリケーション・チャンネル
変換通信方式。

【請求項２】アプリケーション・チャンネル変換部
に、アプリケーションと情報提供サイトアドレスとチャ
ンネル情報それぞれ対応させた変換テーブルを用意
し、入力もしくは選択されたチャンネル情報を、端末装置か
ら前記アプリケーション・チャンネル変換部へ送出し、
該アプリケーション・チャンネル変換部では、受信した
チャンネル情報を抽出し、前記変換テーブルから対応す
るアプリケーションおよび情報提供サイトアドレスを獲
得し、該当するアプリケーションを起動し、指定されたアド
レッジ情報に基づき情報を特徴とするアプリケーショ
ン・チャンネル変換通信方式。

【請求項３】請求項２に記載のアプリケーション・チ
ャンネル変換通信方式を各ステップをプログラムに変換
し、変換されたプログラムを記憶装置に格納することを
特徴とするプログラム読み出し可能な記憶装置。

【発明の詳細な説明】
【0001】
【発明の属する技術分野】本発明は、インターネット、放
送、電話などの通信ネットワーク装置に関し、特に共通
にチャンネルを設定して多様なアプリケーション情報を
簡単にアクセスできるようなアプリケーション・チャン
ネル変換通信方式および通信方法に関する。

【0002】
【従来の技術】従来、インターネット、テレビジョン、電
話などの通信を通じてアプリケーションを利用する場合、各
アプリケーション毎に希望する相手、つまり情報サイト
に対するアクセスに異なる入力手続きが必要となるた
め、操作が複雑になるという問題があった。例えば、イ
ターネットでは、PC（パーソナルコンピュータ）など
においてWebブラウザ上で所要する情報サイトのアド
レッジを入力する、あるいは予め記憶させておいたアドレ
スを読み出す手続きが必要である。一方、テレビジョン
では、受信チューナにおいてチャンネル選択を行う手続き
は必要であり、また電話では、電話番号を指示する必
要がある。

【0003】こうしたように、それぞれ異なる端末装置にお
いて、ソフトウェアに依存した形によるアドレスの入力
手続きが必要となっていた。さらに、頻繁にアクセスする
情報サイトや、放送局などについても、アプリケーショ
ン毎に別々に管理する必要があった。一方、入力手続
きを簡略化する方法としては、インターネットで予め定め
た情報サイトに接続する場合に、特定のボタン操作だけで
自動接続する機能がPCなどで実現されているが、これ
は単にwebブラウザの起動とURL（Uniform
Resource
Locator）の設定手順を自動化
したわけではない。異なるアプリケーションとの手続き
に共通性を持たせたものではない。

【0004】
【発明が解決しようとする課題】このように、従来にお
いては、インターネットはPC上でアドレスを入力するこ
とにより、またテレビジョンは受信チューナのチャンネ
ル選択を行うことにより、電話は電話番号を指示するボ
タンまたはダイヤルの入力により、それぞれ別々の入力
手続きを行っていた。従って、複数の通信アプリケーシ
ョンの入力手続きを共通化したものは提案されていなかっ
た。

【0005】そこで、本発明の目的は、これら従来の課
題を解決し、異なる通信アプリケーションを利用する場
合に、入力手続きが共通化され、チャンネルを選択する
程度の簡単な操作でのアプリケーションにアクセスする
ようなアプリケーション・チャンネル変換通信方式および
通信方法を提供することにある。

【0006】
【課題を解決するための手段】上記目的を達成するた
め、01本発明のアプリケーション・チャンネル変換通信
方式では、インターネット、テレビジョンなどの複数のア
プリケーション情報を送受信可能なネットワークインタ
ーフェース（2）、アプリケーション情報と提供する
情報サイトのアドレス（テレビジョンでは、放送局チャ
ンネル番号やキャリア周波数情報など）とされるアプリ
ケーション種別およびアドレス情報の識別子（以下、チ
ャンネル）を1対1で対応させるデータテーブルと、
ユーザにより指定されたチャンネル情報を抽出部（6）
で抽出し、そのチャンネル情報に基づいて、前記テーブ
ル（5）を参照し、該当するアプリケーション（3）の
起動とサイトアドレスへの接続を自動的に行うアプリケ
ーション選択・接続部（4）とを備えたアプリケーショ
ン・チャンネル変換部、および前記のデータテーブル
情報を選択し、前記変換部に送信する端末装置（7）とを
有することを特徴としている。

【0007】また、02本発明のアプリケーション・チャ
インターネット交換通信方法では、アプライケーションと情報提供サイトアドレス、および対応するチャンネル情報を変換データに手順設定し、端末装置でチャンネル情報を入力し、または選択し、端末装置から送出されたチャンネル情報を抽出し、対応するアプリケーションおよび情報提供サイトアドレスを獲得し、該当するアプリケーションを起動して、指定されたアプリケーションおよび接続方法を取得する。この場合、異なるアプライケーションおよび接続方法で共通の識別子（チャンネル番号など）を同定設定し、識別子からアプリケーション種別と目的のアドレス情報と読み合わせ識別子の入力/選択することにより、必要とする情報サーチまたはアクセスすることを特徴としている。さらに、未発表の記録媒体は、上記の記載したアプリケーション・チャンネル変換通信方法の各ステッププログラムに変換し、該プログラムを記録媒体に格納したことを特徴としている。

【0000】
発明の実施の形態（以下、発明の実施例を、図面により詳細に説明する。図1は、発明の実施例を示すアプリケーション・チャンネル変換部の構成機能構成図である。アプリケーション・チャンネル変換部1（以下、変換端口1または変換端口2）および、変換端口2および変換端口1のチャネル情報を接続処理を行う変換端口3を示す。変換端口3は、変換端口1および変換端口2のチャネル情報を接続処理を行う。）

【0001】図2は、発明の実施例を示すアプリケーション・チャンネル交換通信方法の動作フローチャートである。エンドユーザが端末装置7上の表示されるチャンネルメニュー画面を表示（ステップ9）、画面でチャンネル番号を入力し、選択することにより、変換端口1におけるチャネル情報抽出-promotionが行われ（ステップ10）、変換端口1におけるチャネル情報抽出-promotionが行われ（ステップ11）、画面でチャンネル番号を入力し、選択することにより、変換端口1におけるチャネル情報抽出-promotionが行われ（ステップ12）、変換端口1におけるチャネル情報抽出-promotionが行われ（ステップ13）、画面では、アプリケーションの事例として4つの例を含む場合を示している。1番目はインターネットでのwebアクセスであるが、この場合には、次のwebブラウザが起動され（ステップ14）、ISP（Internet Server Protocol）などの接続のためにユーザIDやパスワード認証を行った後、ネットワークヘロゲインし（ステップ15）、接続情報として抽出されたURLを自動拡張することにより（ステップ16）、画面に出力データ表示が行われる（ステップ17）。

【0002】次に、2番目として電子メールにアクセスする場合には、先ずメールを起動させ（ステップ18）、連絡の前にネットワークヘロゲインすることにより（ステップ19）、メールサーバに自動接続され（ステップ20）、出力データが表示される（ステップ17）。また、3番目としてテレビジョンにアクセスする場合には、先ずTVチューナーソフトが起動され（ステップ21）、指定のチャンネルデータ（TVデジタルコードが指定されているチャンネル番号、あるいはチャンネル番号またはリモート番号の指定など）が自動接続される（ステップ22）が、あるいは選択する場合がテレビの前の場合には音楽チャンネルデータがチューナーに直接送信され、出力映像が表示される（ステップ17）。

【0003】さらに、4番目としてホームテレホンの場合には、ホームテレホン制御用のソフトウェアが起動され、
れ（ステップ23）、接続情報である電話番号が内線であるか否かの指示（ステップ24〜25）通話相手の音声やテレビ画面表示の場合は映像情報が端末上に表示される（ステップ27）、これら処理手順の中で、処理取り消しや無効変更の指示が認めることにより（ステップ26）、チャンネルメニュー画面に復帰させることが可能である（ステップ28）。さらに、予めエンドユーザがアプリケーションに相応する接続相手を設定するためのメニュー設定画面（ステップ29）、データ投入（ステップ28）、チャンネルアプリケーション変換テーブルへの登録（ステップ29）などの手続きをソフトウェアで実現される。

【0014】図3は、図1におけるアプリケーション・チャンネルテーブルの構成例を示す図である。一例として、ここでは横方向のフィールドにパラメータとして、チャンネル、アプリケーション名、パラメータ、設定項目、設定値をそれぞれ割り当てている。綫方向のレコードとして、各チャンネル番号に対応したフィールド毎のデータが記入される。図中のチャンネル番号は一例を示したものである。ユーザは文字数字などを任意に設定することができます。すなわち、図2に示すチャンネル情報抽出（ステップ11）が行われると、抽出されたチャンネル番号が図3に示すステップ中間層中で該当する番号を検索処理が行われ（ステップ12）、各データフィールドに記載された接続情報が抽出されて（ステップ13）、前述のようにアプリケーション起動の手続きに渡され（ステップ14〜18）、それを順に処理される。本発明では、異なるアプリケーションや接続先に対して共通の識別子（チャンネル番号）などは図3に示すアプリケーション・チャンネルテーブルに予め設定し、識別子からアプリケーション種別と目的のアドレス情報を読み出して、識別子の入力／選択を行うだけに要求される情報サイトや形式に簡単にアクセスすることができる。また、図2に示すメニュー画面設定（ステップ27）により変換テーブル部2に記載されたデータは新規作成または位置変更が可能である（ステップ28〜29）。なお、図3に示すテーブルに従い、チャンネル01、02を選択することによりウェブサイトに接続され、03チャンネルを選択することによりテレビジョンに接続され、04チャンネルを選択することにより電子メールに接続され、05チャンネルを選択することによりホームページに接続される。

【0015】図4は、図2におけるチャンネルメニュー画面およびメニュー設定画面の説明図である。図4の画面は、いずれも操作画面の例を示している。メニュー画面9では、チャンネル番号の選択肢と大きなチャンネル情報が表示される。メニュー設定画面27では、①現在の設定形式（変換テーブル中の表示）、②チャンネル番号に対応したデータの設定変更、の人力方法などの説明文に対するヘルプ等が表示される。チャンネル内容の変更では、変換用画面30に表示されるので、この画面30において変換データの接続先が変更されることにより、その内容が変換テーブル2に反映される。図4の変換用画面30では、チャンネル01に対する内容の変更が行われている。

【0016】図5は、本発明の一実施例を示す変換処理の物理配置による物理ネットワーク構成図である。ここでは、変換処理中の変換部2として、ネットワーク上で3まで接続された物理配置を示している。前述のように、変換処理1で用いられるパラメータであるチャンネル情報を、アプリケーション層などの上位層で扱うことにより、トランスポータ層以下において依存することなく構築できるため、図（a）（b）（c）の3通りの実装が可能となる。（a）では、外部のIPネットワーク4上にあるポータルサイトのような位置に変換部5を配置する。この場合、エンジニアリングは端末装置5からアクセスポート5を通じて変換部5に接続され、ここでアプリケーション・チャンネル変換を行う後、IP網／電話網5に介して情報提供者のサーバ51に接続される。

【0017】(b) では、エンジニアリングの端末内にあるLAN56上の外部ネットワークとの接続（ゲートウェイに相当）を通じて変換部5を実現する。エンジニアリングは、端末内のLAN56上の端末装置53から同じLAN56上の変換部52に接続され、アプリケーション・チャンネル変換を行った後、アクセスポート55およびIP網／電話網5に介して情報提供者のサーバ51に接続される。（c）では、エンジニアリングの端末内にあるLAN上の1つノード端末もしくはLANではLANではない単一のノード端末に変換部52を実現する。エンジニアリングは、端末内のLAN上のノード接続53と同じLAN上の変換部52に接続され、アプリケーション・チャンネル変換を行った後、アクセスポート55およびIP網／電話網5に介して情報提供者のサーバ51に接続される。

【0018】なお、図2に示すアプリケーション・チャンネル変換通信方法の各ステップをプログラムに変換し、変換したプログラムをCD-ROMなどの記録媒体に記録しておくことにより、IP網／電話網上の接続部52、またはLAN56上の変換部52のPCに上記記録媒体からプログラムを直接インストールするか、IP網／電話網5に介して変換部52にダウンロードすれば、簡単に本発明を実現することができる。

【0019】

【発明の効果】以上説明したように、本発明によれば、異なるアプリケーションを利用する場合、ユーザーは簡単に操作できる多様なアプリケーション情報をアクセスできる。ユーザの好みに応じてアプリケーション共通にチャンネル設定をカスタマイズすることができる。インターネットやデジタル放送などの情報ソースが無限に
に増大していく環境において、多数の情報へのアクセスを改善でき、一般ユーザーをインタネットやデジタルテレビなどへの参加を促進させる効果が期待できる。

【図面の簡単な説明】
【図1】本発明の一実施例を示すアプリケーション・チャンネル変換通信方式の機能構成図である。
【図2】本発明の一実施例を示すアプリケーション・チャンネル変換通信方式の動作フローチャートである。
【図3】図1におけるアプリケーション・チャンネル変換デバイスの構成例を示す図である。
【図4】図2におけるチャンネル設定メニュー画面例を示す図である。

【図5】本発明の一実施例を示す変換手段の配置配置によるネットワーク構成図である。
【符号の説明】
1…アプリケーション・チャンネル変換部（変換手段）、2…入力出力インタフェース、3…アプリケーション部、4…アプリケーション選択・接続部、5…変換テーブル部、6…チャンネル情報抽出部、7…端末装置、8…サーバ（情報提供者）9…チャンネルメニュー画面、27…チャンネル設定メニュー画面、30…変更用画面、51…サーバ、52…変換部、53…端末、54…IP網／電話網、55…アクセス網、56…建物内のLAN。
図3

<table>
<thead>
<tr>
<th>チャンネル</th>
<th>A/A</th>
<th>トーキング</th>
<th>ターゲット</th>
<th>ログイン</th>
<th>パスワード</th>
<th>設定番</th>
<th>設定者</th>
</tr>
</thead>
<tbody>
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<td>ooo</td>
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<td>shed</td>
<td>AAA</td>
<td>2000.x.y</td>
<td>A</td>
</tr>
<tr>
<td>02</td>
<td>web</td>
<td>see</td>
<td><a href="http://xxx.xxx.02/">http://xxx.xxx.02/</a></td>
<td>shed</td>
<td>AAA</td>
<td>2000.x.y</td>
<td>A</td>
</tr>
<tr>
<td>03</td>
<td>TV</td>
<td>tr</td>
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<td>afgh</td>
<td>AAA</td>
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<td>ab-xxx</td>
<td>bbed</td>
<td>AAA</td>
<td>2000.x.y</td>
<td>A</td>
</tr>
</tbody>
</table>

図4

図5

(a) サーバー I P/IP 地域

(b) サーバー I P/IP 地域

(c) サーバー I P/IP 地域
フロントページの続き

Pターグ (参考)  58085 BC00 BG07 GE01
   58089 GA21 GA31 GB03 KA04 KC23
   KC53 KG03 KH05
   SC064 BA07 BB05 BB10 BC14 BC20
   BD02 BD03 BD08 DD09
   SK030 GA17 HC02 HC04 HC14 HD09
        JT01 JT04 KA05
   9A001 BB04 CC02 CC03 DD10 JJ12
   JJ18 JJ19 JJ25 KK62
Method for change of channel in digital broadcast service

The patent refers to the field of 'pictorial communication'. Disclosed is a channel changing method in a digital broadcasting service. According to the channel changing method, a subscriber device provided with a
channel change protocol that operates on a TCP/IP layer transmits an input channel change message through the channel change protocol, and a channel change server that received the channel change message receives a confirmation message that includes channel information according to channel change information included in the channel change message, and transmits data of a requested channel to the subscriber device.

• (57) Abstract

公開了一種在數字廣播服務中的頻道改變方法。按照此頻道改變方法，與在 TCP/IP 層上操作的頻道改變協議一起提供的用戶裝置通過頻道改變協議輸入頻道改變消息，以及接收到此頻道改變消息的頻道改變服務器，按照包括在頻道改變消息中的頻道改變信息，接收包括頻道信息的確認消息，並向用戶裝置輸出所請求的頻道的數據。

• 대표도면
发明名称  在数字广播服务中的频道改变方法

摘要
公开了一种在数字广播服务中的频道改变方法。按照此频道改变方法，与在TCP/IP层上操作的频道改变协议一起提供的用户装置通过频道改变协议传输输入频道改变消息，以及接收到此频道改变消息的频道改变服务器，按照包括在频道改变消息中的频道改变信息，接收包括频道信息的确认消息，并向用户装置传输所请求的频道的数据。
1. 一种用于在数字广播服务中改变频道的设备，此设备包括：

5 机顶盒单元，具有在传输控制协议/网际协议（TCP/IP）层中执行的
频道改变协议，所述机顶盒单元通过频道改变协议传输新频道改变请求消
息，频道改变确认消息请求新频道的数据；以及

频道改变服务器，通过频道改变协议接收频道改变请求消息，响应
接收到的频道改变请求消息，通过频道改变协议传输频道改变确认消息，
所述机顶盒单元通过频道改变协议从所述频道改变服务器接收频道改变
确认消息，所述频道改变服务器通过频道改变协议传输新频道的数据给
所述机顶盒单元。

2. 按照权利要求 1 所述的设备，其特征在于所述机顶盒单元通过
频道改变协议向所述频道改变服务器传输频道信息，频道信息标识了在
所述机顶盒单元和所述频道改变服务器的最近连接上选择的先前频道，
所述机顶盒单元在从所述频道改变服务器接收新频道的数据之前，通过
频道改变协议从频道改变服务器接收新频道的数据。

3. 按照权利要求 1 所述的设备，其特征在于频道改变确认消息包
括依赖于频道改变请求消息的新频道信息。

4. 按照权利要求 1 所述的设备，其特征在于在所述机顶盒单元处
输入频道改变请求消息。

5. 按照权利要求 1 所述的设备，其特征在于在所述机顶盒单元和
频道改变服务器之间建立初始连接时，所述机顶盒单元和所述频道改变
服务器执行对话初始化程序，对话初始化程序在传输频道改变请求消息
之前执行，并包括套接字的产生。

6. 按照权利要求 5 所述的设备，其特征在于在所述机顶盒系统上
电时，建立初始连接。

7. 按照权利要求 1 所述的设备，其特征在于所述机顶盒单元产生
套接字并尝试与所述频道改变服务器建立连接，当初始建立与所述频道
改变服务器的连接时，所述机顶盒单元通过频道改变协议向所述频道改
变服务器传输对话初始化请求消息，所述频道改变服务器通过频道改变协议从所述机顶盒单元接收对话初始化请求消息，响应对话初始化请求消息，所述频道选择服务器通过频道改变协议向所述机顶盒单元传输对话初始化确认消息，所述机顶盒单元通过频道改变协议从所述频道改变服务器接收对话初始化确认消息。

8. 按照权利要求 7 所述的设备，其特征在于在所述机顶盒单元上电时，所述机顶盒产生套接字并尝试与所述频道改变服务器的连接。

9. 按照权利要求 7 所述的设备，其特征在于从频道改变服务器传输来的所请求的新频道的数据包括数字视频数据和数字音频数据中所选的至少一种。

10. 一种用于在数字广播服务中改变频道的方法，此方法包括：
通过频道改变协议从机顶盒单元向频道改变服务器传输频道改变请求消息，在传输控制协议/网际协议 (TCP/IP) 层中执行频道改变协议，频道改变请求消息请求新频道的数据；
在频道改变服务器通过频道改变协议接收频道改变请求消息；
响应接收到的频道改变请求消息，从频道改变服务器向机顶盒单元传输频道改变确认消息；以及
从频道改变服务器传输所请求的新频道的数据。

11. 按照权利要求 10 所述的方法，其特征在于通过频道改变协议从频道改变服务器向机顶盒单元传输频道改变确认消息，通过频道改变协议从频道改变服务器接收所请求的新频道的数据。

12. 按照权利要求 10 所述的方法，其特征在于还包括：
在机顶盒单元处接收新频道的数据前，通过频道改变协议从机顶盒单元向频道改变服务器传输频道信息，频道信息标识了在机顶盒单元和频道改变服务器的最近连接上选择的先前频道；以及
在从频道改变服务器接收新频道的数据之前，在机顶盒单元处，通过频道改变协议从频道改变服务器接收先前频道的数据。

13. 按照权利要求 10 所述的方法，其特征在于频道改变确认消息包括依赖于频道改变请求消息的新频道信息。

14. 按照权利要求 10 所述的方法，其特征在于在机顶盒单元处输
入频道改变请求消息。

15. 按照权利要求10所述的方法，其特征在于还包括：

在机顶盒单元执行所述频道改变请求消息的传输前，设置对话，所述对话的设置包括在机顶盒单元和频道改变服务器之间建立初始连接，所述对话的设置包括从机顶盒单元产生套接字。

16. 按照权利要求15所述的方法，其特征在于在机顶盒单元上电时，建立初始连接。

17. 按照权利要求10所述的方法，其特征在于还包括：

产生套接字并尝试在机顶盒单元和频道改变服务器之间建立连接；

当机顶盒单元和频道改变服务器之间的连接建立时，通过频道改变协议，从机顶盒单元向频道改变服务器传输对话初始化请求消息；

通过频道改变协议在频道改变服务器处接收对话初始化请求消息；

响应对话初始化请求消息，通过频道改变协议从频道改变服务器向机顶盒单元传输对话初始化确认消息；以及

通过频道改变协议在机顶盒单元处接收对话初始化确认消息。

18. 按照权利要求17所述的方法，其特征在于从频道改变服务器传输来的所请求的新频道的数据包括数字视频数据和数字音频数据中所选择的至少一种。

19. 按照权利要求10所述的方法，其特征在于从频道改变服务器传输来的所请求的新频道的数据包括数字视频数据和数字音频数据中所选择的至少一种。

20. 按照权利要求18所述的方法，其特征在于还包括：

上电机顶盒单元，当执行所述机顶盒的上电时，执行所述套接字的产生和所述在机顶盒单元和频道改变服务器之间建立连接的尝试。

21. 按照权利要求18所述的方法，其特征在于在所述从频道改变服务器传输来的对话确认消息的接收后，执行所述频道改变请求消息的传输。

22. 一种用于在数字广播服务中改变频道的方法，此方法包括：

通过频道改变协议从接口单元向服务器传输频道改变请求消息，在传输控制协议/网际协议（TCP/IP）层中执行频道改变协议，频道改变请
请求消息请求不同频道的数据；
在服务器通过频道改变协议接收频道改变请求消息；
响应接收到的频道改变请求消息，从服务器向接口单元传输频道改变确认消息；以及

5 通过频道改变协议从服务器向接口单元传输不同频道的所请求的数据，从服务器传输的不同频道的所请求的数据包括从数字视频数据和数字音频数据中所选择的至少一种。

23、按照权利要求22所述的方法，其特征在于还包括；
在接口单元处接收不同频道的数据之前，通过频道改变协议从接口单元向服务器传输频道信息，频道信息标识了在接口单元和服务器的最近连接上选择的先前频道；以及
在从服务器接收不同频道的数据之前，通过频道改变协议在接口单元处从服务器接收先前频道的数据。

24、按照权利要求23所述的方法，其特征在于在接口单元处输入频道改变请求消息。

25、按照权利要求23所述的方法，其特征在于还包括；
在接口单元执行所述频道改变请求消息的传输前，设置对话，所述对话的设置包括在接口单元和服务器之间建立初始连接，所述对话的设置包括从接口单元产生套接字。

26、按照权利要求25所述的方法，其特征在于在接口单元上电时，建立初始连接。

27、按照权利要求25所述的方法，其特征在于还包括；
当接口单元和服务器之间的连接建立时，通过频道改变协议从接口单元向服务器传输对话初始化请求消息；

25 通过频道改变协议在服务器处接收对话初始化请求消息；
响应对话初始化请求消息，通过频道改变协议从服务器向接口单元传输对话初始化确认消息；以及
通过频道改变协议，在接口单元处接收对话初始化确认消息。

30
在数字广播服务中的频道改变方法

5

技术领域

本发明涉及一种数字广播服务，更具体地，涉及一种在使用数字广播服务时的频道改变方法。

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背景技术

广播点播（BOD）是数字广播服务的例子。当前以视频点播（VOD）为代表的广播点播（BOD）是实时提供用户需求的视频信息的服务。广播点播（BOD）不是单方面地接收现有公共网络广播的节目或通过有线电视（TV）的单向服务，而是可以按照用户的要求在想要的时间利用想要的内容的双向服务。用于提供广播点播（BOD）的基础结构需要已经建立视频数据库，而且已经通过宽带传输路径（即，电缆或无线路径）将数据库连接到家庭（或个人便携式终端）。

机顶盒可以被称为接口单元、机顶盒单元、家庭用户终端、家庭终端以及其他术语。机顶盒可以对应于能够执行多种功能的装置。例如，机顶盒可以为用户提供通过电视支持因特网访问，而且可以为用户提供通过线缆调制解调器或宽带网络以高速访问因特网，而不是传统的电话网络普通老式电话业务（POTS）。此外，机顶盒可以提供视频会议能力，可以提供社区网络，以及可以提供包括视频点播、音乐点播、新闻点播、付费即时观看和电视节目点播的媒体点播（MOD）能力。机顶盒经常放置在家庭用户那里使用户能够传输如请求、指令或其他数据等信息信号。机顶盒可以包括中央处理器单元。

为了使提供的机顶盒单元（STU）具有广播点播（BOD）服务，并从多视频频道中选择频道，需要用于定义在网络和用户装置之间的控制信息的标准。这样的标准是由国际标准化组织/国际电工技术委员会（ISO/IEC）发起，在13818-6中定义的数字存储媒体命令和控制（DSM-
CC）。已经设计数字存储媒体命令和控制（DSM-CC）使其支持视频点播（VOD）服务和在异步传输模式（ATM）网络中的其他服务。数字存储媒体命令和控制（DSM-CC）只传输广播节目给在如混合光缆同轴（HFC）或光纤到路边（FTTC）传输网中的复制单元和广播控制单元（RU/BCU），以及复制单元和广播控制单元（RU/BCU）向机顶盒单元多点传送广播节目。

复制单元和广播控制单元（RU/BCU）不同于调台（zapping）服务器。调台服务器可以称为频道改变协议（CCP）服务器。所有广播节目向上传送到频道改变协议（CCP）服务器，但并不向上传送到机顶盒单元。

数字存储媒体命令和控制（DSM-CC）分类成对话控制协议和用于在服务连接后控制频道改变的频道改变协议。对话控制协议和频道改变协议在不同的协议栈上进行操作。

在数字存储媒体命令和控制（DSM-CC）中，基于传输控制协议/网际协议（TCP/IP）协议定义对话控制协议，而基于AAL5/ATM协议定义频道改变协议。ATM是异步传输模式。AAL5是异步传输模式适配层5。

按照数字存储媒体命令和控制（DSM-CC）标准，在服务环境可以支持异步传输模式（ATM）的情况中，数字存储媒体命令和控制（DSM-CC）的技术实现是可能的。但是在服务环境不能支持异步传输模式（ATM），而只能支持传输控制协议/网际协议（TCP/IP）的情况中，数字存储媒体命令和控制（DSM-CC）的技术实现是困难的。

由于应该在不同的协议栈上实现对话控制协议和频道改变协议，为了在两个协议之间具有兼容性，需要额外的处理或转换。通过频道改变协议传输的消息必须在第一目的地被接收，然后进行处理或转换，使得消息的内容然后可以通过对话控制协议传输给第二目的地。

在这样的安排中，需要TCP/IP分组到ATM分组的重复改变和ATM分组到TCP/IP分组的重复改变。主要功能为改变频道的请求的机顶盒单元没有安装在其上的异步传输模式（ATM）适配层（AAL），而且需要开发改进的技术。

数字存储媒体命令和控制（DSM-CC）标准定义了作为在服务器和
机顶盒单元之间的终端装置的对话资源管理器（SRM）。对话资源管理器
（SRM）将通过对话控制协议传输来的消息转换成为将要通过频道改变
协议传输的消息。对话资源管理器（SRM）将通过频道改变协议传输来
的消息转换成为将要通过对话控制协议传输的消息。频道改变协议和对
话控制协议在不同的协议栈上进行操作。

如果不进行修改就应用数字存储媒体命令和控制（DSM-CC）标准，
将引起麻烦和无效，如把对话放在因特网协议（IP）上面，频段的发送
在异步传输模式适配层5上，然后在网络接口单元（NIU）中的因特网协
议网络上，而确认消息的发送以相反次序进行。

以本人的观察，目前缺少支持数字广播服务中的频道改变的方便和
有效的方法。已经做出了努力来改进与网络和广播服务相关的特征。

公开了与网络和广播服务相关的近期的成果的例子，例如，授予
Hoarty等人的美国专利号5550578，题目《互动和常规电视信息系统》，1996
年8月27日公布；授予Naboulsi等人的美国专利号5805591，题目《用户网
络接口》，1998年9月8日公布；授予Brodigan的美国专利号6219355，题目
《视频和数据通信系统》，2001年4月17日公布；授予Kostreski等人的美国
专利号5734589，题目《具有频道映射的数字娱乐终端》，1998年3月31日
公布；授予Eames等人的美国专利号6317884，题目《视频、数据和电话
网关》，2001年11月13日公布；授予Brodigan的美国专利号6473427，题目
《具有用于在不同的数据服务提供商之间切换用户的元信令的基于ATM
的VDSL通信系统》，2002年10月29日公布。

尽管这些暂时的成果包含优点，以本人的观察可以预期进一步的改
进。

25

发明内容

据此，本发明提供对上述问题的解决办法。本发明提供一种能够在
数字服务中通过相同的协议栈传输对话控制协议和频道改变协议的方
法。

本发明提供一种在使用传输控制协议/网际协议（TCP/IP）网络的数
字广播服务中的频道改变方法。
本发明提供一种在数字广播服务中的频道改变方法，包括以下步骤：由在传输控制协议/网际协议（TCP/IP）层上进行操作的频道改变协议提供的用户装置通过频道改变协议传输输入频道改变消息，接收到频道改变消息的频道改变服务器按照包含在频道改变消息中的频道改变信息接收包括频道信息的确认消息，并传输所请求的频道的数据给用户装置。

与本发明的原理相一致，如同实施的和大致描述的，本发明提供一种在数字广播服务中用于改变频道的设备，此设备包括：机顶盒单元，具有在传输控制协议/网际协议（TCP/IP）层中执行的频道改变协议，所述机顶盒单元通过频道改变协议传输频道改变请求消息，频道改变请求消息请求新频道的数据；和频道改变服务器，通过频道改变协议接收频道改变请求消息，响应接收到的频道改变请求消息，通过频道改变协议传输频道改变确认消息，所述机顶盒单元通过频道改变协议从所述频道改变服务器接收频道改变确认消息，所述频道改变服务器通过频道改变协议传输新频道的数据给所述机顶盒单元。

与本发明的原理相一致，如同实施的和大致描述的，本发明提供一种在数字广播服务中用于改变频道的方法，此方法包括：通过频道改变协议从机顶盒单元向频道改变服务器传输频道改变请求消息，在传输控制协议/网际协议（TCP/IP）层中执行频道改变协议，频道改变请求消息请求新频道的数据；在频道改变服务器通过频道改变协议接收频道改变请求消息；响应接收到的频道改变请求消息，从频道改变服务器向机顶盒单元传输频道改变确认消息；并从频道改变服务器传输新频道的所请求的数据。

与本发明的原理相一致，如同实施的和大致描述的，本发明提供一种在数字广播服务中用于改变频道的方法，此方法包括：通过频道改变协议从接口单元向服务器传输频道改变请求消息，在传输控制协议/网际协议（TCP/IP）层中执行频道改变协议，频道改变请求消息请求不同频道的数据；在服务器通过频道改变协议接收频道改变请求消息；响应接收到的频道改变请求消息，通过频道改变协议从服务器向接口单元传输频道改变确认消息；并通过频道改变协议从服务器向接口单元传输不同频道的所请求的数据，从服务器传输的不同频道的所请求的数据包括从
数字视频数据和数字音频数据中所选择的至少一种。
参照只作为例子的附属的附图在接下来的段落中更详细地描述了本发明。通过以下的描述和权利要求，本发明的其他优势和特征将变得清楚。

附图说明
与上述本发明的大体上的描述一起，结合包含在本说明书中并构成了本说明书的一部分的附图，描述了本发明的实施例，而且下面给出了详细的描述，用以例证本发明的原理。

图1 是描述用于提供数字广播服务的典型结构图；
图2 是描述对话控制协议和频道改变协议的典型堆栈图；
图3 是描述按照典型技术在广播服务器和用户之间的信息流图；
图4 是按照本发明的基本原理，描述频道改变协议栈图；以及
图5 是按照本发明的基本原理，在广播服务器和用户之间的信息流。

具体实施方式
尽管下面将结合图式详述本发明的细节的附图更加详细的描述本发明，但在描述的开始，可以理解的是本领域的技术人员可以修改或放弃本发明的发明。但仍然获得本发明想要的结果。据此，以下的描述应当理解为宽泛的，指导本领域的技术人员的示教性公开，而不限于本发明。

在下面描述了本发明的描述性实施例。为了清楚的目的，没有描述实际应用的全部特征。在以下的描述中，不详细描述众所周知的功能、结构和配置，因为这些可能以不必要的细节模糊本发明。可以认识的是在实际实施例的产生中，必须作出大量应用特别的决定以获得研发人员的特别目的，例如依靠一个实施例来和其他实施例变化的系统相关和商业相关的约束。此外，可以认识到的其他的研发努力可能是复杂和耗费时间的，但仍然是从本发明获利的普通技术人员采取的例行程序。

广播点播（BOD）是数字广播服务的例子。当前以视频点播（VOD）为代表的广播点播（BOD）是实时提供用户要求的视频信息的服务。广播点播（BOD）不是单方面地接收现有公共网络广播的节目或通过有线
电视（TV）的单向服务，而是可以按照用户的要求在想要的时间利用想要的内容的双向服务。用于提供广播点播（BOD）的基础结构需要已经建立视频数据库，而且已经通过宽带传输路径（即，电缆或无线路径）将数据库连接到家庭（或个人便携式终端）。图1是描述用于提供数字广播服务的典型结构图。

为了使提供的机顶盒单元（STU）具有广播点播（BOD）服务，并从多视频频道中选择频道，需要用于定义在网络和用户装置之间的控制信息的标准。这样的标准是由国际标准化组织/国际电工技术委员会（ISO/IEC）发起、在13818-6中定义的数字存储媒体命令和控制（DSM-CC）。已经设计数字存储媒体命令和控制（DSM-CC）使其支持视频点播（VOD）服务和在异步传输模式（ATM）网络中的其他服务。数字存储媒体命令和控制（DSM-CC）只传输广播节目给在混合光纤同轴（HFC）或光纤到路边（FTTC）传输网中的复制单元和广播控制单元（RU/BCU），以及复制单元和广播控制单元（RU/BCU）向机顶盒单元多点传送广播节目。

复制单元和广播控制单元（RU/BCU）不同于频道改变协议（CCP）服务器。复制单元和广播控制单元（RU/BCU）是可以向STU（CCP客户端）多点广播从广播服务器（CCP服务器）接收到的广播节目的设备。这里，广播服务器是CCP服务器，以及STU是CCP客户端。

广播节目只从广播服务器向RU/BCU传输，并按照STU的请求从RU/BCU多点广播。所有广播节目向上传送到CCP服务器，但并不向上传送到机顶盒单元。

数字存储媒体命令和控制（DSM-CC）分类成对话控制协议和用于在服务连接后控制频道改变的频道改变协议。对话控制协议和频道改变协议在不同的协议栈上进行操作。图2是描述对话控制协议和频道改变协议的典型堆栈图。

在数字存储媒体命令和控制（DSM-CC）中，基于传输控制协议/网际协议（TCP/IP）协议定义对话控制协议，而基于AAL5/ATM协议定义频道改变协议。ATM是异步传输模式。AAL5是异步传输模式适配层5。

按照数字存储媒体命令和控制（DSM-CC）标准，在服务环境可以
支持异步传输模式（ATM）的情况下，数字存储媒体命令和控制（DSM-CC）的技术实现是可能的。但是在服务环境不能支持异步传输模式（ATM），而只能支持传输控制协议/网际协议（TCP/IP）的情况下，数字存储媒体命令和控制（DSM-CC）的技术实现是困难的。

由于应该在不同的协议栈上应用对话控制协议和频道改变协议，为了在两个协议之间具有兼容性，需要另外的处理或转换。通过频道改变协议传输的消息必须在第一目的地被接收，然后进行处理或转换，使得消息的内容然后可以通过对话控制协议传输给第二目的地。

在这样的安排中，需要TCP/IP分组到ATM分组的重复改变和ATM分组到TCP/IP分组的重复改变。主要功能为改变频道的请求的机顶盒单元没有安装在它的上的异步传输模式（ATM）适配层（AAL），而且需要开发改进的技术。

图3是描述按典型技术在广播服务器和用户之间的信息流图。数字存储媒体命令和控制（DSM-CC）标准定义了在频道改变协议（CCP）服务器310和机顶盒单元（STU）100之间的终端装置的对话资源管理器（SRM）300。频道改变协议（CCP）服务器310也可以称为调台服务器310。频道改变协议（CCP）服务器指示在频道改变协议中对应于服务器的部分。频道改变协议（CCP）服务器安装在一个光线路终端（OLT）或光网络单元（ONU）上。因此，图3中的频道改变协议（CCP）服务器310没有在图1中出现。

对话资源管理器（SRM）300将通过对话控制协议传输来的消息转换成为将要通过频道改变协议传输的消息。对话资源管理器（SRM）300将通过频道改变协议传输来的消息转换成为将要通过对话控制协议传输的消息。频道改变协议和对话控制协议在不同的协议栈上进行操作。

如果不进行修改就应用数字存储媒体命令和控制（DSM-CC）标准，将引起麻烦和无效，如把对话放在因特网协议（IP）上面，频道的发送在异步传输模式适配层5上，然后在网络接口单元（NIU）110中的因特网协议网络上，而确认消息的发送以相反次序进行。

下面，将参照附图描述根据本发明的在数字广播服务中的频道改变方法。在本发明的随后描述中，已知的功能和结构的细节描述当使得本
发明的主题不清楚时将被省略。

通过使用最广泛而且容易构建的传输控制协议/网际协议（TCP/IP）网络，本发明实现了高质量的广播服务。本发明在相同协议栈上实现对话控和频道改变，同时，基于最广泛且具有丰富扩展可能的传输控制协议/网际协议（TCP/IP）协议栈执行对话控制和频道改变。

本发明利用数字存储媒体命令和控制（DSM-CC）的协议消息鉴别符互不相同的特点，在相同的协议栈上执行对话控制和频道控制。

首先，数字存储媒体命令和控制（DSM-CC）消息由头和净荷组成。特别地，数字存储媒体命令和控制（DSM-CC）消息的头由协议鉴别符、DSM-CC类型和消息鉴别符组成。即，在国际标准化组织/国际电工技术委员会（ISO/IEC）13818-6中定义的消息标识符（ID）。同样，根据数字存储媒体命令和控制（DSM-CC）类型，对话被定义为用户-网络型（UN型），以及频道被定义为频道改变协议（CCP）型。由于对话和频道由上述不同类型所区分，即使他们被包含在用于传输的相同的数字存储媒体命令和控制（DSM-CC）头中，也可以区分对话和频道。

广播点播（BOD）的组元可以包括高速基础网络、机顶盒单元（STU）、用于连接高速基本网络和机顶盒单元（STU）的接入网络和多媒体数据库管理系统（DBMS）。高速基础网络可以利用光纤分布式数据接口（FDDI）、异步传输模式（ATM）、分布式队列双总线（DQDB）、高速局域网（LAN）或其他装置来构建，并传输大容量的数据。使用的接入网可以是利用电话线的非对称数字用户线（ADSL）、超高比特率数字用户线（VDSL）、有线电视（TV）网或其他装置。

接下来，将参照图1详细解释本发明的结构。图1示出用于提供数字广播服务的结构。如图1所示，结合本发明的网络包括机顶盒单元（STU）100、网络接口单元（NIU）110、光网络单元（ONU）120、光线路终结（OLT）130、头端器140、路由器150和因特网160。图1的头端器140对应于广播服务器，如上述的视频服务器。此后，广播服务器被称为“头端器”。代表性地，头端器140、光线路终止（OLT）130和光网络单元（ONU）120通过光缆相连。包括网络接口单元（NIU）110和机顶盒单元（STU）100的接入网络可以利用例如以太网、xDSL（即，ADSL、VDSL或其他
DSL），线缆调制解调器或者光纤到户（FTTH）等相连。

同样，接入网络通过路由器150与其他网络相连。在图1中，作为接入网络指示和解释因特网160。但是，因特网160只是网络代表性的例子，本发明并不局限与此。图1示出与光线路终端（OLT）130直接相连的头端器140，但是头端器140可以通过因特网160与路由器150相连。其他的结构也是可能的。

同样，图1的机顶盒单元（STU）100用于恢复和再生由头端器140压缩并传输的数字图像和音频数据，并向头端器140传输用户的请求。需要头端器140具有与用于存储视频和音频数据的大容量数据库，从而执行实时搜索。头端器140按照从机顶盒单元（STU）100接收的信号，向机顶盒单元（STU）100传输想要的广播数据。

网络接口单元（NIU）110是实现机顶盒单元（STU）100与网络相连的装置。光网络单元（ONU）120将从网络接口单元（NIU）110接收的电信号转换为光信号，向光线路终端（OLT）130传输转换的光信号，以及将从光线路终端（OLT）130接收的光信号转换为电信号，向网络接口单元（NIU）110传输转换的电信号。

由于超高比特率数字用户线（VDSL）和其他装置的数据传输/接收速度限制，所有频道的广播数据不能通过超高比特率数字用户线（VDSL）线路进入家庭。这样，在头端器140和用户装置（STU 100）之间安装频道改变服务器310来在头端器140和频道改变服务器310之间传输所有广播频道数据，而在频道改变服务器310和用户装置之间传输用户所请求的频道的广播数据。频道改变服务器310也被称为调台服务器310和频道变化服务器310和服务器310。

用户装置，即，机顶盒单元（STU）100，通过由于频道改变协议（CCP）服务器310的数据传输/接收接收广播。为了提供上述的服务，在用户装置100和频道改变协议（CCP）服务器310之间提供被称为频道改变协议（CCP）的用于频道选择或频道改变的规则。通常，光线路终端（OLT）130或光网络单元（ONU）120监管频道改变协议（CCP）服务器310。

在此，本发明提出了图4所示的协议栈。
图4是按照本发明的基本原理，描述频道改变协议栈图。如图4所示，根据按照本发明的频道改变协议栈，频道协议与传输控制协议/网际协议（TCP/IP）一起执行，不在异步传输模式（ATM）上。这样，通过没有任何独立处理的路由，从网络接口单元（NIU）110向头端器140直接传送频道改变协议。同时，频道改变消息具有与对话控制消息不同的类型，而且，即使在相同的协议栈上，他们也可以互相区分。

接下来，将参照图5解释本发明的操作。图5是按照本发明的基本原理，在广播服务器和用户之间的信息流。

在初始化操作期间，机顶盒单元（STU）100产生用于对话初始化的套接字（socket），并尝试连接。如果构成连接，机顶盒单元（STU）100产生并传输对话初始化请求消息501给频道改变协议（CCP）服务器310。对比图3所示的典型技术，对话初始化请求501通过网络接口单元（NIU）110，不进行如转换等任何其他处理而被直接传送给频道改变协议（CCP）服务器310。通过对话初始化请求消息501接收对话初始化请求的频道改变协议（CCP）服务器310设置对话，并向机顶盒单元（STU）100传输用于确认对话初始化请求消息的对话初始化确认消息503。参照图5描述的特征是对话初始化程序的一部分。

接收到对话初始化确认消息503的机顶盒单元（STU）100向频道改变协议（CCP）服务器310传输节目选择请求消息505。频道改变协议（CCP）服务器310向机顶盒单元（STU）100传输包括关于通过节目选择请求消息505请求的频道的信息的节目选择确认消息507，然后向机顶盒单元（STU）100传输相应频道的广播数据。

之后，如果用户想要改变频道，机顶盒单元（STU）100向频道改变协议（CCP）服务器310只传输节目选择请求消息505，而且，响应节目选择请求消息，频道改变协议（CCP）服务器310向机顶盒单元（STU）100只传输节目选择确认消息507。同时，在对话初始化的情况下，机顶盒单元（STU）100向频道改变协议（CCP）服务器310传输关于存储在机顶盒单元（STU）100中的最后传输的频道的信息，而且在用户选择频道之前通过相应的频道接收广播数据。

最后，上述如传输类型、因特网等特殊的例子只是用于对本发明的
理解，但应当注意的是本发明并不局限于那些例子。节目选择请求消息505也可以被称为频道改变请求消息。频道选择确认消息507也可以被称为频道改变确认消息。

如上所述，根据本发明，在相同的协议栈中执行对话控制和频道改变控制，而且易于实现和易于应用于现有传输控制协议/网际协议（TCP/IP）环境的优势，一起保持这种一致性。同样，由于本发明使用最广泛的传输控制协议/网际协议（TCP/IP），可以应用于千兆位因特网和在将来将要发展的任何兆兆位以太网。

尽管已经通过实施例的描述阐明了本发明，而且尽管已经相当详细地描述了实施例，本申请的意图不是限定在任何方式限制附加的权利要求的范围在这样的细节上。本领域的技术人员已经意识到另外的优势和修改。因此，本发明的更广泛方面并不局限于已经展示和描述的特定的细节、代表性的设备和方法以及描述性的例子。从而，在不偏离申请人全部创造性概念的精神或范围的前提下，可以对这些细节进行修改。
图 1

图 2
图 3
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Title of Invention
System and method for processing the application and variable data in the digital TV broadcast.

Abstract
The invention comprises the broadcasting station server extracting the application address information or variable data from the transmission device, transmitting broadcast data and broadcast data transmitted from the transmission device and transmits the application for the application address information which requests in the receiving device and downloadable receiving device the application according to the application address information from the broadcasting station server. And in broadcast data transmitted from the transmission device, the application address information is extracted and the application according to the extracted application address information is downloaded from the broadcasting station server. And if variable data are received from the transmission device data in which the receiving device is varied is downloaded and the application is updated.
The digital television, the application address information, and the variable data.

대표도면 (Representative drawing)
Scope of Claims

Claim 1:
Claim 2:
Claim 3:
The system processing the application and variable data in the digital TV comprising: the transmission device, the receiving device, and the broadcasting station server as to system comprised of the transmission device, and the receiving device and broadcasting station server; the transmission device receives broadcast data transmitted from the broadcasting station server; and transmits the broadcast data which it is received as described above with the receiving device; the receiving device extracts the application address information or variable data from broadcast data transmitted from the transmission device; and downloads the application according to the extracted application address information from the broadcasting station server; and the broadcasting station server searches the application about the application address information which requests in the receiving device and it transmits; it checks the occurrence of data varied based on the preset time and it proceeds with the version-up date of the application; and transmits the updated application version as described above with the transmission device.

Claim 4:
As for claim 3, the receiving device, wherein the receiving device comprises the downloadable application processing unit the extracting unit: application requester: which requests the application it connects to the broadcasting station server using the extracted application address information and the application which it is transmitted from the broadcasting station server extracts the application address information and variable data from broadcast data transmitted from the transmission device.

Claim 5:
Claim 6:
Method of processing the application and variable data in the digital TV comprising: the step of extracting the application address information in broadcast data, the step of requesting the corresponding application in the broadcasting station server using the extracted application address information, the receiving device the downloadable step the application searched according to the request is transmitted from the broadcasting station server, and the step of
updating the application; the step of extracting the application address information in broadcast data is transmitted from the transmission device; and the step of updating the application downloads from the transmission device and enforced.

Claim 7:

Claim 8:

Background Art

The invention relates to system and method for processing the application and variable data in the digital TV, especially, it relates to system and method being transmitted the application address information from the transmission device and for processing the application and variable data in the digital TV requesting the application about the application address information which is transmitted as described above to the broadcasting station server and downloads the corresponding application.

Generally, in the digital television, the mode, in which the mode for transmitting the application data mixes the air radio frequency with data and sent and the mode receiving immediate data using the network net from the broadcasting station server are applied.

Firstly, the mode transmitting application data using the air radio frequency is named the DSMCC-CC data carousel. And data in which the mode applying data carousel organizes the application are repetitively transmitted. In that way data can correspond to although the user executes the application in the arbitrary time. Generally, it is focused on the time when as to actually necessary data, the application is initiated. Therefore if data in which the application is initiated and which are later changed transmit it is efficient. But there is a problem that data are transmitted since not only data but also data for executing the initial application is repetitively transmitted but the mode applying data carousel changes the delay occurs. Particularly, there is a problem that the phenomenon that is delayed in order to transmit many data in case of transmitting data for executing the application with audio/video data is shown. And the large bandwidth has to be used by sending moreover, data repeatedly.

Data through the network may be referred to the mode which the mode which the mode receives suggests in data broadcasting standard like ATSC. That is, the address in which it has application data through the air radio frequency may be referred to the mode which is periodically transmitted and is transmitted variable data changed with application data according to the address of the application data which it is transmitted as described above in the server. But there is a problem that to solve this application data is transmitted, many cost is generated due to the enlargement of the server, capacity and speed enlargement etc.

Summary of Invention

Effects of the Invention

It has the advantage which can be rapidly transmitted the application through the network by being transmitted the corresponding application after doing the reception in the broadcasting station server according to the invention transmitted from the transmission device.

Moreover, the network overhead of the broadcasting station server can be reduced since the viewer requests the application in the application beginning in the broadcasting station server.

The viewer has the advantage saving the bandwidth of the network.

Moreover, it has the advantage which can save the bandwidth because of being transmitted through the transmission device only varied data.

Technical Task

The invention is provided to solve the above-described problem. And this Purpose of the invention is transmitted the application address information from the transmission device.

System and method for processing the application and variable data in the digital TV downloading the corresponding application using the transmitted application address information as described above from the broadcasting station server are provided.

It are another object of the present invention to provide system and method for processing the application and variable data in the digital TV which can decrease the broadcast station server load by being transmitted variable data from the transmission device.

Structure & Operation of the Invention

To accomplish the above objects, the invention comprises the broadcasting station server extracting the application address information or variable data from the transmission device, transmitting broadcast data and broadcast data transmitted from the transmission device and transmits the application for the application address information requested in the receiving
device and downloadable receiving device the application according to the extracted
application address information from the broadcasting station server.
Hereinafter, the preferred embodiment of the present invention is particularly explained with
reference to attached drawings.
Figure 1 is a configuration diagram showing the system processing the application and
variable data in the digital TV according to the invention. It comprises the transmission
device (100), and the receiving device (200) and broadcasting station server.
In the transmission device (100), the receiving device (200) receives the transmitted
broadcast data as described above if broadcast data are transmitted. It connects to the
broadcasting station server (300) using the extracted application address information and the
application address information the application is requested in the received broadcast data as
described above after doing the extraction. Thus, if the application which the broadcasting
station server (300) is requested is searched and it transmits with the receiving device (200)
the application which the receiving device (200) is transmitted is downloaded.
Moreover, the broadcasting station server (300) transmits the appearance of data varied
based on the preset time to the transmission device (100) data checking and is the
application version which has in the presence of variable data varied with the update. Here,
in variable data is the application, the actually changed data file is referred to.
In the meantime, if variable data is transmitted from the transmission device (100) variable
data in which the receiving device (200) is transmitted are received and the application is
updated.
Figure 2 is a block diagram which schematically shows the system processing the application
and variable data in the digital TV according to the invention. It comprises the receiving
device (200) including the transmission device (100), the receiver (210), the extracting unit
(220), the application requester (230) and the application processing unit (240) and
broadcasting station server (300).
The transmission device (100) transmits broadcast data with the receiving device (200).
Varied data is transmitted from the broadcasting station server (300). Here, broadcast data
which the transmission device (100) transmits can be understood as the air radio frequency,
the satellite wave and cable etc. And variable data which it is transmitted from the
broadcasting station server (300) transmit with the receiving device (200).
In broadcast data which the receiving device (200) is transmitted from the transmission
device (100), the application address information and variable data are extracted. Variable
data connect to the broadcasting station server (300) using the extracted application address
information. The application is downloaded from the broadcasting station server (300).
The application address information and variable data are extracted from broadcast data in
which the receiver (210) receives broadcast data which the transmission device (100)
transmits and which the extracting unit (220) the receiver (210) receives.
It connects to the broadcasting station server (300) using the application address information
which the application requester (230) extracts from the extracting unit (220). The application
is requested to the broadcasting station server (300).
The application processing unit (240) is transmitted which the application which the application
requester (230) requests in the broadcasting station server (300) from the broadcasting
station server (300) and it downloads.
The broadcasting station server (300) transmits the application requesting in the application
requester (230) to the application processing unit (240) the corresponding application it
searches. Here, when the application transmitted with the application processing unit (240)
starts the application necessary data are referred to. In the meantime, the broadcasting
station server (300) is connected to the receiving device (200) and network. And the
application of the up-to-date version is always held. Moreover, data in which the broadcasting
station server (300) is varied are transmitted in the transmission device (100).
Figure 3 is a flow chart which schematically shows method of processing the application and
variable data in the digital TV according to the invention. Firstly, the extracting unit (220) is
the application address information in the broadcast data which it is transmitted as described
above the receiver (210) receives broadcast data transmitted is extracted from the
transmission device (100) (S100).
Next, it connects to the broadcasting station server (300) using the application address
information which the application requester (230) extracts from the extracting unit (220).
The corresponding application is requested to the broadcasting station server (300) (S110).
And then, the broadcasting station server (300) transmits the application (data which it is necessary to have in other words, the application beginning) that it is requested to the application processing unit (240) it searches (S120). Here, the application transmitted with the receiving device (200) from the broadcasting station server (300) may be always, the up-to-date version.

The application in which this after, and the application processing unit (240) are transmitted from the broadcasting station server (300) is downloaded (S130). Here, there is no need that data necessary for the application beginning data which it is necessary to have in the application beginning is downloaded downloads. And if it downloads only data which the thereafter are varied as necessary it becomes.

In the meantime, the transmission device (100) variable data is transmitted from the broadcasting station server (300) transmits varied data which is transmitted from the broadcasting station server (300) to the receiving device (200). Thus, the receiver (210) receives the transmitted variable data as described above (S140). The application in which the received and varied data as described above is downloaded and which the application processing unit (240) practices is updated (S150). Here, it can be immediately applied to the application which the downloaded variable data as described above practices. It can be applied to the ash execution time of the application.

Figure 4 is a drawing showing the embodiment updating the application version according to variable data in the broadcasting station server according to the present invention. For example, it assumes because the broadcasting station server (300) has the application version 1.

The appearance of data in which the broadcasting station server (300) is varied based on the preset time is checked. And in case file (for example, the c'txt, the d'txt, the f'dat and h'png etc) freshly added like the application version 2 exist the update is done by the corresponding application version (for example, the application version 2). This after, and varied datas are transmitted with the transmission device (100).

Moreover, if variable datas newly added after the time out like the application version 3 are checked it updates to the application version of file (for example, the C"txt, D"txt, F"dat, H"png and I"png etc) in which the broadcasting station server (300) is freshly added. That is, the broadcasting station server (300) transmits the application version based on the preset time to the transmission device (100) data which checks and it performs the update to the new application version if freshly added variable datas exist and is varied.

In the above, it particularly described about the invention. However the invention is the human having the normal knowledge as to the technical field belonging. If it is the case the invention which does not deviate from spirit and range of the present invention defined in the attached claims is variously changed or it changes and it can perform it is obvious. And, therefore the technology of the simple change silver the invention according to a preferred embodiment of the present invention cannot be deviated from.

**Brief explanation of the drawing**

Figure 1 is a configuration diagram showing the system processing the application and variable data in the digital TV according to the invention.

Figure 2 is a block diagram which schematically shows the system processing the application and variable data in the digital TV according to the invention.

Figure 3 is a flow chart which schematically shows method of processing the application and variable data in the digital TV according to the invention.

Figure 4 is a drawing showing the embodiment updating the application version according to variable data in the broadcasting station server according to the present invention.

< Explanation of signs of major parts in the drawing>

100: transmission device 200: receiving device.
300: broadcasting station server.
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(54) 디지털 TV 방송에서 애플리케이션 및 가변 데이터에 대해 처리하는 시스템 및 방법

요약

본 발명은 방송 데이터를 전송하는 송신장치와, 상기 송신장치로부터 전송된 방송 데이터에서 애플리케이션 어드레스 정보 또는 가변 데이터를 추출하고 방송국 서비스로부터 상기 애플리케이션 어드레스 정보에 따른 애플리케이션을 다운로드하는 수신장치 및 상기 수신장치에서 요청한 애플리케이션 어드레스 정보에 대한 애플리케이션을 전송해 주는 방송국 서비스를 포함하며, 상기 송신장치로부터 전송된 방송 데이터에서 애플리케이션 어드레스 정보를 추출하고 방송국 서비스로부터 상기 추출된 애플리케이션 어드레스 정보에 따른 애플리케이션을 다운로드 하며, 상기 송신장치로부터 가변 데이터가 수신되면 상기 수신장치는 가변 데이터를 다운로드하여 애플리케이션을 업데이트하는 것을 특징으로 한다.

대표도

도 2

세인어

디지털 TV, 애플리케이션 어드레스 정보, 가변 데이터

명세서

도면의 간단한 설명

도 1은 본 발명에 따른 디지털 TV 방송에서 애플리케이션 및 가변 데이터를 처리하는 시스템을 개략적으로 나타낸 구성도.
도 2는 본 발명에 따른 디지털 TV 방송에서 에뮬레이션 및 가변 데이터를 처리하는 시스템을 개략적으로 나타낸 블록도.

도 3은 본 발명에 따른 디지털 TV 방송에서 에뮬레이션 및 가변 데이터를 처리하는 방법을 개략적으로 나타낸 플로우 차트.

도 4는 본 발명에 따른 방송국 서버에서 가변 데이터에 따른 에뮬레이션 비전을 업데이트하는 실시예를 나타낸 도면.

< 도면의 주요부분에 대한 부호의 설명 >

100 : 송신장치 200 : 수신장치
300 : 방송국 서버

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 디지털 TV 방송에서 에뮬레이션 및 가변 데이터를 처리하는 시스템 및 방법에 관한 것으로서, 특히 송신장치로부터 에뮬레이션 어드레스 정보를 전송받고, 상기 전송받은 에뮬레이션 어드레스 정보에 대한 에뮬레이션을 방송국 서버에 요청하여 해당 에뮬레이션을 다운로드 받는 디지털 TV 방송에서 에뮬레이션 및 가변 데이터를 처리하는 시스템 및 방법에 관한 것이다.

일반적으로, 디지털 TV에서 에뮬레이션 데이터(Application Data)를 전송하기 위한 방식은 크게 공용파와 데이터를 섞어서 보내는 방식과, 네트워크(Network)망을 이용하여 방송국 서버로부터 직접 데이터를 수신하는 방식이 사용되고 있다.

먼저, 공용파를 이용하여 에뮬레이션 데이터를 전송하는 방식은 DSMCC-CC 데이터 캐루셀(Data Carousel)로 명명되며, 상기 데이터 캐루셀을 적용한 방식은 에뮬레이션을 구성하는 데이터를 반복적으로 전송함으로써, 사용자가 임의의 시간에 에뮬레이션을 실행시키더라도 대응할 수 있다. 일반적으로, 실제 필요한 데이터는 에뮬레이션을 시작될 때까지만 결정하기 때문에, 에뮬레이션이 시작되고 난 후에는 변화된 데이터만 전송하면 효율적이다. 그러면, 데이터 캐루셀을 적용하는 방식은 변화하는 데터에 따라 아니라 초기 에뮬레이션을 실행시키기 위한 데이터도 반복적으로 전송되므로 데이터를 전송하는데 시간이 발생하는 문제점이 있다. 특히, 오디오/비디오 데이터와 함께 에뮬레이션을 실행시키기 위한 데이터를 전송할 경우 많은 데이터를 전송하기 위해 시간적으로 지연되는 현상이 나타나며, 또한 데이터를 반복 전송함으로써 큰 대역폭을 이용해야 하는 문제점이 있다.

네트워크를 통해서 데이터를 받는 방식은, ATSC와 같은 데이터 방송 규격에서 제안하고 있는 방식이다. 즉, 공용파를 통해 에뮬레이션 데이터가 있는 주소를 주기적으로 전송받고, 상기 전송받은 에뮬레이션 데이터의 주소에 따른 에뮬레이션 데이터를 변화된 데이터를 서버에서 전송받는 방식이다. 그러나, 서버 입장에서 볼 때 항상 많은 시청자가 데이터를 전송받기 위해 서버의 통신, 용량 및 속도 확보 등으로 인하여 많은 비용이 발생되는 문제가 있다.

발명의 이루고자 하는 기술적 과제

본 발명은 상기한 문제점을 해결하기 위하여 발명된 것으로서, 본 발명의 목적은 송신장치로부터 에뮬레이션 어드레스 정보를 전송받고, 상기 전송된 에뮬레이션 어드레스 정보를 이용하여 해당 에뮬레이션을 방송국 서버로부터 다운로드 받는 디지털 TV 방송에서 에뮬레이션 및 가변 데이터를 처리하는 시스템 및 방법을 제공하는 것이다.

본 발명의 다른 목적은 송신장치로부터 가변 데이터를 전송받음으로써 방송국 서버의 부하를 줄일 수 있는 디지털 TV 방송에서 에뮬레이션 및 가변 데이터를 처리하는 시스템 및 방법을 제공하는 것이다.
발생의 구성 및 작용

상기 목적을 달성하기 위하여 본 발명은, 방송 데이터를 전송하는 송신장치와, 상기 송신장치로부터 전송된 방송 데이터에서 에뮬레이션 어드레스 정보 또는 가변 데이터를 추출하고, 방송국 서버로부터 상기 추출된 에뮬레이션 어드레스 정보에 따른 에뮬레이션을 다운로드 하는 수신장치 및 상기 수신장치에서 요청한 에뮬레이션 어드레스 정보에 대한 에뮬레이션을 전송해 주는 방송국 서버를 포함하는 것을 특징으로 한다.

이하, 훈련한 도면들로 참고로 본 발명의 바람직한 실시예를 상세히 설명한다.

도 1은 본 발명에 따른 디지털 TV 방송에서 에뮬레이션 및 가변 데이터를 처리하는 시스템을 개략적으로 나타낸 구성도로서, 송신장치(100), 수신장치(200) 및 방송국 서버를 포함하는 것을 특징으로 한다.

송신장치(100)에서 방송 데이터를 전송하면 수신장치(200)는 상기 전송된 방송 데이터를 수신하고, 상기 수신한 방송데이터에서 에뮬레이션 어드레스 정보를 추출한 후, 상기 추출된 에뮬레이션 어드레스 정보를 이용하여 방송국 서버(300)로 접속하고 에뮬레이션을 요청한다. 이에, 상기 방송국 서버(300)는 요청받은 에뮬레이션을 검색하여 수신장치(200)로 전송하면 상기 수신장치(200)는 전송받은 에뮬레이션을 다운로드한다.

또한, 상기 방송국 서버(300)는 일정 시간을 기준으로 가변 데이터의 존재 유무를 체크하여 가변 데이터 존재시 현재 가지고 있는 에뮬레이션 버전을 업데이트 하고 가변된 데이터를 송신장치(100)로 전송한다. 여기서, 가변 데이터란 에뮬레이션에서 실제 변화되는 데이터 파일을 말한다.

한편, 상기 송신장치(100)로부터 가변 데이터가 전송되면 수신장치(200)는 전송된 가변 데이터를 수신하여 에뮬레이션을 업데이트 한다.

도 2는 본 발명에 따른 디지털 TV 방송에서 에뮬레이션 및 가변 데이터를 처리하는 시스템을 개략적으로 나타낸 블록도로서, 송신장치(100), 수신장치(210), 추출부(220), 에뮬레이션 요청부(230) 및 에뮬레이션 처리부(240)를 포함하는 수신장치(200) 및 방송국 서버(300)를 포함하는 것을 특징으로 한다.

송신장치(100)는 방송 데이터를 수신장치(200)로 전송하고, 상기 방송국 서버(300)로부터 가변한 데이터를 전송받는다. 여기에서, 상기 송신장치(100)가 전송하는 방송 데이터는 곡조파, 위성파 및 케이블 등으로 이해될 수 있으며, 상기 방송국 서버(300)로부터 전송받은 가변 데이터는 수신장치(200)로 전송한다.

수신장치(200)는 상기 송신장치(100)로부터 전송받은 방송 데이터에서 에뮬레이션 어드레스 정보 및 가변 데이터를 추출하고, 상기 추출된 에뮬레이션 어드레스 정보를 이용하여 방송국 서버(300)에 접속하고, 상기 방송국 서버(300)로부터 에뮬레이션을 다운로드 받는다.

수신장치(210)는 상기 수신장치(100)가 전송한 방송 데이터를 수신하고, 추출부(220)는 수신 장치(210)가 수신한 방송 데이터에서 에뮬레이션 어드레스 정보 및 가변 데이터를 추출한다.

에뮬레이션 요청부(230)는 상기 추출부(220)에서 추출한 에뮬레이션 어드레스 정보를 이용하여 방송국 서버(300)에 접속하고, 상기 방송국 서버(300)에 에뮬레이션을 요청한다.

에뮬레이션 처리부(240)는 상기 에뮬레이션 요청부(230)가 방송국 서버(300)에 요청한 에뮬레이션을 방송국 서버(300)로부터 전송받아 다운로드한다.

방송국 서버(300)는 상기 에뮬레이션 요청부(230)에서 요청한 에뮬레이션을 검색하여 해당 에뮬레이션을 에뮬레이션 처리부(240)로 전송한다. 여기서, 상기 에뮬레이션 처리부(240)로 전송하는 에뮬레이션은 에뮬레이션을 시작할 때 필요한 데이터를 말한다. 한편, 방송국 서버(300)는 상기 수신장치(200)와 네트워크로 연결되어 있으며, 항상 최신 버전의 에뮬레이션이 보유한다. 또한, 방송국 서버(300)는 가변된 데이터를 송신장치(100)에 전송한다.

도 3은 본 발명에 따른 디지털 TV 방송에서 에뮬레이션 및 가변 데이터를 처리하는 방법을 개략적으로 나타낸 플로우차트로서, 먼저 송신장치(100)에서 전송한 방송 데이터 수신장치(210)가 수신하여 추출부(220)로 전송하면, 상기 추출부(220)는 상기 전송받은 방송 데이터에서 에뮬레이션 어드레스 정보를 추출한다(S100).
그 다음, 에플리케이션 요청부(230)가 상기 추출부(220)에서 추출한 애플리케이션 어드레스 정보를 이용하여 방송국 서버(300)에 접속하고, 상기 방송국 서버(300)에 해당 애플리케이션을 요청한다(S110).

그러면, 상기 방송국 서버(300)는 요청받은 에플리케이션(즉, 에플리케이션 시작시 필요한 데이터)을 검색하여 에플리케이션 처리부(240)로 전송해 준다(S120). 여기서, 방송국 서버(300)에서 수신장치(200)로 전송하는 애플리케이션은 항상 최신 버전이다.

이 후, 상기 애플리케이션 처리부(240)는 방송국 서버(300)로부터 전송된 애플리케이션을 다운로드한다(S130). 여기서, 애플리케이션 시작시 필요한 데이터가 다운로드 될 경우, 다이어 애플리케이션 시작시 필요한 데이터는 다운로드 받을 필요가 없으며, 이 후 필요에 따라 가변되는 데이터만을 다운로드 받으면 된다.

한편, 방송국 서버(300)로부터 가변 데이터를 전송 받으면 수신장치(100)는 상기 방송국 서버(300)로부터 전송된 가변된 데이터를 수신장치(200)로 전송한다. 이에, 수신부(210)는 가변 데이터를 수신하고(S140), 에플리케이션 처리부(240)는 가변 데이터를 수신한 후 가변된 데이터를 다운로드 하여 실행중인 애플리케이션을 업데이트 한다(S150). 여기서, 상기 다운로드된 가변 데이터는 현재 실행중인 애플리케이션에 바로 적용될 수도 있고, 애플리케이션의 재 실행시 적용될 수도 있다.

또한, 방송국 서버(300)는 일정 시간을 기준으로 가변 데이터에 존재 유무를 체크하며, 가변 데이터에 존재 유무를 체크 후 가변 데이터의 존재 유무가 체크되지 않으면 방송국 서버(300)는 새로운 가변 데이터의 존재 유무를 체크하는 갱신 데이터를 수신장치(100)로 전송한다.

이러한, 일정 시간 범위 후에 업데이트 데이터가 존재하지 않으면, 방송국 서버(300)는 새로운 가변 데이터를 수신하고, 새로운 가변 데이터가 존재하면 새로운 가변 데이터를 수신장치(100)로 전송한다.

이상에서 본 방송국에 대하여 상세히 기술하였지만, 본 방송국이 속하는 기술 분야에 있어서 통상의 지식을 가진 사람이라면, 정부청 및 연구기관에 의한 방송국의 정책 및 업무를 벗어나지 않으면서 본 방송국을 여러 가지로 변형 또는 변경하여 실시할 수 있음은 자명하며, 따라서 본 방송국의 실시에 따른 단순한 변경은 본 방송국의 기술을 벗어날 수 없음을 것이다.

발명의 효과

상기한 구현의 본 발명에 의하면, 수신장치로부터 전송된 애플리케이션 어드레스 정보를 수신한 후 해당 애플리케이션을 방송국 서버에서 전송받음으로써 네트워크를 통해 바로게 애플리케이션을 전송받을 수 있는 것임이 있다.

또한, 시청자가 애플리케이션 시작시에만 방송국 서버에서 애플리케이션을 요청함으로써 방송국 서버와 네트워크 부하를 줄일 수 있고, 네트워크의 대역폭을 절약할 수 있는 것임이 있다.

또한, 수신장치를 통해 가변된 데이터만을 전송받을 수 있기 때문에 대역폭을 절약할 수 있는 것임이 있다.

(57) 청구의 범위

청구항 1.
석제

청구항 2.
석제

청구항 3.
송신장치, 수신장치, 및 방송국 서버로 구성된 시스템에 있어서,

상기 방송국 서버로부터 전송된 방송 데이터를 수신하고, 상기 수신받은 방송 데이터를 수신장치로 전송하는 송신장치;

상기 송신장치로부터 전송된 방송 데이터에서 애플리케이션 어드레스 정보 또는 가변 데이터를 추출하고, 상기 방송국 서버로부터 상기 추출된 애플리케이션 어드레스 정보에 따른 애플리케이션을 다운로드받는 수신장치; 및

상기 수신장치에서 요청한 애플리케이션 어드레스 정보에 대한 애플리케이션을 검색 및 전송하고, 일정 시간을 기준으로 가변된 데이터의 유무를 제어하여 애플리케이션의 버전 업데이트를 수행하고, 상기 업데이트된 애플리케이션 버전을 상기 송신장치로 전송하는 방송국 서버를 포함하는 것을 특징으로 하는 디지털 TV 방송에서 애플리케이션 및 가변 데이터를 처리하는 시스템.

청구항 4.

제 3항에 있어서,

상기 수신장치는,

상기 송신장치에서 전송한 방송 데이터에서 애플리케이션 어드레스 정보 및 가변 데이터를 추출하는 추출부;

상기 추출된 애플리케이션 어드레스 정보를 이용하여 상기 방송국 서버에 접속하여 애플리케이션을 요청하는 애플리케이션 요청부; 및

상기 방송국 서버로부터 전송받은 애플리케이션을 다운로드하는 애플리케이션 처리부를 포함하는 것을 특징으로 하는 수신장치.

청구항 5.

삭제

청구항 6.

송신장치로부터 전송받은 방송 데이터에서 애플리케이션 어드레스 정보를 추출하는 단계;

상기 추출된 애플리케이션 어드레스 정보를 이용하여 방송국 서버에 해당 애플리케이션을 요청하는 단계;

상기 요청에 따라 검색된 애플리케이션을 상기 방송국 서버로부터 전송받아 수신장치로 다운로드 하는 단계; 및

상기 송신장치로부터 전송받은 방송 데이터에 가변 데이터가 존재할 경우, 상기 수신장치가 상기 가변 데이터를 상기 송신장치로부터 다운로드하여 실행중인 애플리케이션을 업데이트하는 단계를 포함하는 것을 특징으로 하는 디지털 TV 방송에서 애플리케이션 및 가변 데이터를 처리하는 방법.

청구항 7.

삭제

청구항 8.

삭제

도면
도면 3

시작

S100

해플리케이션
이드레스 정보 수신

S110

수신된 해플리케이션
이드레스 정보를 이용하여
해당 해플리케이션 요청

S120

요청받은 애플리케이션
검색 및 전송

S130

전송받은
애플리케이션 다운로드

S140

가변 데이터 수신?

예

S150

수신된 가변 데이터
다운로드

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**Title of Invention**
The multi application providing method and multi application providing system.

**Abstract**
The invention relates to data broadcasting offer system and method. And the first application is stored as the application managing the second application and the second application which are the general data broadcasting application after manufacture. The first application and the second application are encoded and it transmits according to the broadcast program organization information with the application information table. In the user receiving shift, the first application is performed. It approaches the application information table from the user receiving shift through the object and the function provided and it indicates the application list in the user interface. And the application selected from the application list which the first application is indicated is executed among the organization ID and application ID of the corresponding application based on at least one information through the generated object and function. Therefore, the multi application electrical transmission is possible and the convenience of the broadcaster either side and user is raised.
The interactive broadcasting, data broadcasting, the multi application, the management application.

대표도면 (*Representative drawing*)
Scope of Claims

Claim 1:
The data broadcasting providing system comprising the contents database which stores the first application information as the application managed the second application information and the second application which are the general data broadcasting application as to data broadcasting providing system; the knitting information database which stores the broadcast program organization information; and the application and data encoder transmitting the application information table the transmission manager for driving the first application in the target point of time based on the information, stored in the knitting information database and contents database and the second application electrical transmission, the first application and the second application which it is transmitted from the transmission manager are encoded.

Claim 2:
As for claim 1, the classification storage is data broadcasting providing system the first application and the second application the application information table stores at least one information among the control code toward the name, beginning class, application-base directory, the organization ID, application ID, application importance (Priority), glands billi flaw (Visibility), application of each application, and the language code.

Claim 3:
As for claim 2, the object which it provides to the user receiving shift firstly the first application is performed in the user receiving shift and data broadcasting providing system approaching the application information table through the function and indicates the application list in the user interface.

Claim 4:
As for claim 3, data broadcasting providing system executing the application selected from the application list which the first application is indicated among the identity information about the corresponding application stored in the application information table based on at least one information through the generated object and function.

Claim 5:
As for any one of claim 1 through 4, data broadcasting providing system which further includes the editor called data broadcasting exclusive authoring tool which whether is the first application or not creates the source to the structure of fitting for the relevant function depending on being the second application.

Claim 6:
The data method for providing broadcasting including the step of storing after the authoring the first application as the application managed second application and second application, and the step that encodes the first application and the second application according to the b) broadcast program organization information and transmitted with the application information table, and the step of storing after the authoring the first application as the application managed second application and second application are the a) general data broadcasting application as to data method for providing broadcasting.

Claim 7:
As for claim 6, the classification storage is data method for providing broadcasting the first application and the second application the application information table stores at least one information among the control code toward the name, beginning class, application-base directory, the organization ID, application ID, application importance (Priority), glands billi flaw (Visibility), application of each application, and the language code.

**Claim 8:**
As for claim 7, the object which it provides to the user receiving shift firstly the first application is performed in the user receiving shift and data method for providing broadcasting approaching the application information table through the function and indicates the application list in the user interface.

**Claim 9:**
As for claim 8, data method for providing broadcasting executing the application selected from the application list which the first application is indicated in the user receiving shift among the identity information of the corresponding application stored in the function - application information table and the object provided based on at least one information through production -.

**Claim 10:**
As for any one of claim 6 through 9, data method for providing broadcasting multiple second applications are transmitted from the b) step; the second application is altogether expressed in the user receiving shift through one screen; and for the activated second application being expressed in the screen of the user receiving shift.

**Claim 11:**
A data method for providing broadcasting comprising the steps of: as to any one claim among claim 6 to claim 9, the announcement window application indicating the announcement window about the event by the pop up is stored in the second application screen upside among the second application execution after manufacture; further including the step that transmits with the first application and the second application; using the first application, the announcement window application is performed with the first application and it queues in the screen background; and indicating by the pop-up form in the event triggered in the second application which enforces the target contents.

**Background Art**
The invention relates to data broadcasting providing system and data method for providing broadcasting.

Recently, while the communication technology drastically developed the digital broadcasting technique began to be distributed as to the broadcasting technology. The signal of the information as the next generation broadcasting technology capable of the digital broadcasting is the interactive operation unlike the existing analog broadcasting, regeneration, and accumulation may be referred to the essential technique of the multimedia era in which it is the television broadcasting which compresses the television signal to the digital format which encodes and recorded and let out and the broadcast, the communication, and the computer are combined.

The data broadcasting or the interactive broadcasting of the etc. becomes possible to look while looking at TV due to the digitalization of the broadcast. Applications provided with the broadcasting program are developed according to that in data broadcasting.

But it is nothing but the service of mostly provided one application putting first. Various user preferences are reflected and it is to give more selection right to users and the necessity about the multiple application service offersd emerges. Particularly, multiple application offer or nots are changed according to the kind of the receiver with the form which just transmits several applications to the same time co-channel in case the service. Therefore, it is not multiple application offers at the transmission side. The multi application offer at the application itself side need to be considered.

**Summary of Invention**

**Effects of the Invention**
As described above, according to the invention, multiple applications can be provided in data broadcasting. Particularly, it is not transmission side. The multi application service can be provided regardless of the count at user fresh air kind since the multi application service from the application side is realized.
Therefore, various application offers controlling various second application etc through the function manager of the first application and reflect the property of each program are possible. Therefore the user can enjoy various application services fitting for the program characteristic and as to the broadcaster, the application knitting can be freed.

**Technical Task**

Therefore, as to this Technical challenges of the invention is data broadcasting, the multi application is provided. Particularly, in the application side which is not transmission side, the multi application service is used in consideration of the multi application service regardless of the kind of the count at user fresh air.

**Structure & Operation of the Invention**

The technical problem is achieved. And data broadcasting providing system according to the characteristic of the present invention is equipped with the application and data encoder transmitting the application information table the contents database which stores the first application information as the application managed: the knitting information database which stores the broadcast program organization information: the transmission manager for driving the first application in the target point of time based on the information, stored in the knitting information database and contents database and the second application electrical transmission:, the first application and the second application which is transmitted from the transmission manager the second application information and the second application which are the general data broadcasting application are encoded.

And the technical problem is achieved. And data method for providing broadcasting according to the characteristic of the present invention is equipped with the step of storing after manufacture the first application as the application managed the second application and the second application, and the step that encodes the first application and the second application according to the b) broadcast program organization information and transmitted with the application information table. The step of storing after manufacture the first application as the application managed the second application and the second application are the a) general data broadcasting application.

Hereinafter, the invention is particularly explained with reference to the attached view. As described in figure 1, the application service system according to the embodiment of the present invention comprises the editor (100), the contents database (200), and the knitting information database (300), and the transmission manager (400) and data encoder (500). Meta data capable of containing moreover, the information about each application the general application and the management application controlling the general application are authored the editor (100) is the content authoring tool are created. At this time, the editor (100) comprises the management application or data broadcasting exclusive authoring tool which creates the source to the structure of fitting for the relevant function depending on being the general application. And human is the management application or the general application whether or not may be referred to the general source code generation tool which is used to directly classify and generate the source code.

Hereinafter, for convenience general application may be referred to the first application the application managed, and the second application icse the general application. The first application manages the information including the application ID of the second applications, the name etc. And it is transmitted with multiple second applications and the list about the second applications is shown. The information makes navigation possible. And the second application execution is administered.

The second application is the characteristic function may be referred to the Yahoo web page on PC, and like the neighbor web page for example, one large Java program, the HTML website etc. can be given about one program had. And the second application reports its own operation state etc to the first application.

Meta data put in the information to the first application or the second application. For example, in case of the ACAP-J application, it can be comprised of class file, the image file including the png etc, and txt files. It can be comprised of html file, the image file including the png etc, and txt files in case of the ACAP-X application. At this time, in meta data, whether or not, and the application whether the implementator of each application, and the kind is the ACAP-X or not is the ACAP-J as the xml file capable of containing the information about each application include the information about the etc. the information to the image
required or the text file, and the information which the application requires has to be
provided to any kind of system to any kind of cycle.
The contents database (200) stores the authored first application, and meta data of each
application and the second application in the authoring tool.
The organization information database (300) comprises for example, the organization time
information of each program, and the program content information the organization
information about the program which each broadcast station offers is stored. And the
necessary application information can be included about each program.
The transmission manager (400) administers the beginning and termination of the application.
When it being necessary to have according to the broadcast program organization
information of the knitting information database the corresponding first application, and the
second application and meta data are read from the contents database (200) and it transmits
to geometry systems. The application electrical transmission is started.
The application, and meta data are delivered to data encoder (500) from the transmission
manager and the application can be encoded and the program and system related
information can be added. At this time, the necessary information is loaded the application
information table (AIT, Application Information Table) with and data encoder (500) can send
with reference to the application related information of meta data.
More specifically, AIT stores the application related information including the importance
(Priority) of the application one the application name, beginning class, application-base
directory, the organization ID, application ID, application, the glanders billi flaw (Visibility),
the control code about the application, the language code etc. to the content that data
encoder (500) transmits.
For example, data encoder (500) transmits the ACAP (Advanced Common Application
Platform) encoder and PSIP (Program and System Information Protocol) encoder to PSIP
(Program and System Information Protocol) encoder the ACAP encoder encodes the
application file (for example.class files in the case of the ACAP-1.png v files the .txt lanterns
burned on Buddha's birthday) it implies. At this time, it loads and sends AIT of ACAP called
the ACAP encoder is the ground wave data broadcasting standard the necessary information
with reference to the application related information of meta data. And the program and
system related information are added and PSIP (Program and System Information Protocol)
coder can send to the multiplexer. Thereafter the muxing of A / V stream, and data
broadcast stream, the modulation and transmission etc. are successively comprised of the
multiplexer, the modulator etc.
More specifically, fig. 2 comprises the multi application considering multiple applications to
the example drawing about the structure of the second application using the first application
is one function manager application, in other words, the first application, and the multiple
second applications.
It is transmitted with the second application and the application list is revealed and the first
application provides the function of navigation. And the running application is administered.
First it is performed among the serviced application. That is, when AIT in which data encoder
(500) includes the information about the running application is transmitted the first
application and the second application are differently transmitted after the establishment. The
reception end of the user interprets this and first the first application is executed.
The information about the second applications which the first application has to serve at the
execution realtime, and the user receiving shift can be obtained from AIT. Corresponding
applications can be executed.
For example, as described in figure 3, the information about the application using the
AppsDatabase and the AppAttributes which are one among the Java program object which
the user receiving shift the first application provides may be obtained.
It can be comprised of the Java program object provided to the user receiving shift as the
object controlling the information of the applications in which the AppsDatabase is available.
Application entry of the AppsDatabases obtain the information about the applications from
AIT. The information can be provided through the AppsDatabase object of the user receiving
shift middleware to applications.
The AppAttributes object providing application descriptive data through the function provided
by the first application is the AppsDatabase can be obtained. The information of the
applications which are in AIT can be indicated in the user interface through the AppAttributes
object.
That is, the AppsDatabase object having the function which loads the information about the application which is in the service to AIT and in which data encoder (500) can transmit and approaching AIT from the user receiving shift can be approached through the function provided by the first application is the AppsDatabase it provides to the information about the application which is in the service.

At this time, the example of the function provided by the AppsDatabase is as follows.

getAppAttributes(AppsDatabaseFilter): presently, appAttributes objects about the usable applications are returned.

getAppIDs(AppsDatabaseFilter): ID about the applications fitting for the AppDatabaseFilter standard is returned.

getAppProxy(AppID): the ApplicationProxy object of the application associated with the given application ID is returned.

And the example of the function provided by the AppAttributes class the variable and the function can obtain are provided the various information about each application in which the AppAttributes object is registered within AIT are as follows.

getName: the application name is returned.

getNames: all application names are returned.

getPriority: the priority of the application is returned.

In conclusion, the first application comprises the class implemented from the database which stores the application in which it obtains the application information like the name of the application from the AppAttributes and it indicates in the screen and the AppAttributes saves from the AppsDatabase and the presently the AppsDatabase is in the service.

And as described in figure 4, in case the user selects the specific application of the application list in which the first application is indicated the corresponding application is performed.

For example, the execution t selection lower-side, the first application including the user is the remote controller the entry 1 (entry 1) application etc. the first application indicates the second application of 3 in the screen in fig. 4 may be formed of the AppProxy object the application selected by the user is enforced.

As the surrogate (Proxy) of application acting as the proxy in which the AppProxy controls the operation state of the specific application in the inter middleware of the reception end and the first application, as described above, it obtains from the getAppProxy (AppID key) function of the AppsDatabase. At this time, the necessary AppID object can be generated to the factor of this function through the organization ID and application ID of the corresponding application. The AppProxy has each application entry and one by one correspondence relation signaled in AIT. The reception end middleware in which the AppProxy is signaled provides the function makes the corresponding application with the beginning (start), the termination (stop), and the pausing (pause). Therefore it does so that the AppProxy of the application which the first application executes is obtained and the start function of the corresponding AppProxy is called and for the corresponding application, the execution etc. be with the middleware of the reception end.

In case the user selects the execution aborting or the transmission at the transmission terminal is stopped the second application sends the corresponding stopping information among the execution to the user receiving shift. The corresponding stopping information is delivered to the first application from the reception end and the AppProxy of the corresponding the second application is obtained and the stop function of the AppProxy is called and the corresponding application is stopped.

Hereinafter, referring to figures 5 through 7, the embodiment about the first application function materialization screen is explained.

As described in figure 5, the application list including the list of the second applications in which the first application is in the service can be provided to the screen. That is, according to the user option, the first application provides the respective second application list provided the music bank, the news, and the information related game. It can provide the function of navigation selected by the user.

As described in figure 6, the first application is indicated on the arbitrary area of the screen of the user receiving shift. When the second application list was navigated using the button of the remote controller including the phase / under button etc. and the focus came to the desired second application the user selects. The corresponding the second application can be executed.
In the meantime, as described in figure 8, in order to indicate the second application which is among the second application of the plurality shown in the first application is the screen in the execution the execution state title bar can be provided. Moreover, the second applications stop each execution using the current button including the button etc. to go out in order to convert the second application which the user practices into the other second application. It can be comprised in order to call the first application.

Figures 9 through 11 are an embodiment of the application execution method scenario under the multi application structure.

As described in figure 9, it is the case where two or more second applications appear in one screen. Each the second application repeats the execution and abort. Each the second application can not utilize the entire screen and two or more second applications can be indicated using the respective given area bay on one screen. At this time, even in case each the second application the execution is interrupted its own graphic data are not deleted and it maintains. And thereafter, the case where the interrupted second application is again executed, and previous graphic data are continuously applied. Therefore two or more second applications can be indicated on one screen.

At this time, as shown in the among the second application of the plurality shown in screen the actual operation second application mentions above the execution state title bar can be indicated. And the first application is called and the conversion between each the second application can be made. The second application which similarly is converted with execution can indicate the execution state title bar.

In the or more, and fig. 9, it was illustrated to the state in which each the second applications did not overlap. But in order to overlap as necessary it can be implemented it is of course. Moreover, the movement between the display type of the execution state title bar and each application can be implemented as various modes it is natural to feel.

Figure 10 is an example in which one second application is indicated on the screen of one. One second application is the screen whole may be referred to that case, the scene change between the second application is made it uses. At this time, there the need to maintain previous graphic data to the case where multiple second applications are indicated on one screen in the break-in are no each the second applications.

In the meantime, the conversion between the second application can be implemented as various modes. The first application can be called through the button etc. firstly to go out of the second application in which the user is in the execution. At this time, the first application shows the list of the second application in the screen. The user selects the other second application through the function of navigation of the first application.

Or the key button of the specific remote controller etc. is defined as the second application switch button. This button key value can be registered as the UserEvent in the first application. It is defined as the event processing *** defined in the DVB- MHP (Digital Video Broadcasting-Multimedia Home Platform) in the ATSC (Advanced Television Systems Committee) -ACAP so that the UserEvent process the remote control key event even if the second application does not appear in the screen. When the user of the first application pressed the switch button the application conversion using the UserEvent in case the processing the first application does not show the second application list and the previous execution the second application is re-executed. In that way the second application practiced can be converted into the other second application.

Figure 11 is an embodiment of the case where the application appears as the pop up of the announcement window form among the second application operation.

The case of the first application being performed and providing the second application list and the user selecting the specific agent 2 application and using, and the second application selected by the user can be performed and it can show up in the screen only the second application which it calls the first application for the other application usage it practices. At this time, if it gives the special report the specification event is generated like the application the announcement window application sending the announcement window about the event up can be comprised of the pop up in the situation where the other second application practices in the second application screen upside which is in the execution.

In the background unlike the second application shown in the announcement window application, is the actual screen, it prepares with event processing. And the correspondence event is processed when the event is actually generated. The target contents the screen is indicated in the second application occupied by the pop-up form.
It is not application which the user chooses and the announcement window application executes but application is together performed. And it can process so that for the first application, the first application execution time announcement window application be automatically executed. At this time, the first application can classify the second application and announcement window application from the application list which the initial execution time oneself administers.
Less than explains the multi application providing method for following the embodiment of the present invention with reference to 12.
As described in figure 12, firstly, the first application, the second application, and the application like the announcement window application are manufactured through the editor (100). The application are stored in the contents database (S100, S110). At this time, according to the kind of the manufactured object application, whether it is in other words, the first application or not whether it is the second application or not or is generated according to the etc. to the other source structure.
According to the program organization information in which the transmission manager (400) is stored in the knitting information database (300), when it being necessary to have the corresponding application, and meta data have been being read from the contents database (200) and the application electrical transmission starts with around relative systems (S120). The data encoder (500) receives the application, and meta data from the transmission manager (400) and application files are encoded (S130). At this time, data encoder (500) loads AIT with the necessary information with reference to the application related information of meta data and the application related information transmits. And moreover, the program and system related information are added and it can transmit in the multiplexer etc.
Thereafter, data stream etc transmitted by a / V stream and data encoder including the multiplexer, the modulator etc are muxed and it modulates and it transmits. The first application in which the function is implemented in the user receiving shift, and the second application show up in the screen. And it is the same like the announcement window application can be implemented it mentions above.
In the above, the thing is nothing but the embodiment of the present invention and the scope of protection of the present invention is not thus restricted. And it is of course that various transformation executions are possible between the person skilled in the art about the obvious matter. The scope of protection of the present invention altogether includes the patent claim reference to be described below and the technical component recognized as the equality matter.

**Brief explanation of the drawing**

Figure 1 is drawing exemplifying the process to the transmission including the multi application providing system in the multi application authoring according to the embodiment of the present invention. 
Figure 2 is drawing exemplifying the multi application structure.
Figure 3 is a drawing showing the example about a process of has been obtain the first application is the information about the second applications.
Figure 4 is a drawing showing the embodiment about a process of practicing the corresponding the second application the specific application is selected between the second application list which the first application shows and the specific application.
Figure 5 is a drawing illustrating the function manager toward the second applications of the first application.
Figures 6 and 7 is a drawing showing the screen embodiment example of the first application.
Figure 8 is a drawing showing the example of the button use in which the second application which practices stops the execution and calling the first application.
Figures 9 through 11 are the various embodiments enforcing the multi application on the screen.
Fig. 12 may be the general flowchart for the transmission and multi application authoring
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(54) 멀티 애플리케이션 제공 방법 및 멀티 애플리케이션 제공시스템  

(57) 요약  
본 발명은 데이터 방송 제공 시스템 및 방법에 관한 것으로, 일반 데이터 방송 애플리케이션인 제2 애플리케이션 및 제2 애플리케이션을 관리하는 애플리케이션으로서 제1 애플리케이션을 제작 후 저장하고, 방송 프로그램 편성 정보에 따라, 상기 제1 애플리케이션 및 상기 제2 애플리케이션을 인코딩하여 애플리케이션 정보 데이터를 함께 전송한다. 상기 제1 애플리케이션은, 사용자 수신단에서 우선 실행되어, 사용자 수신단에서 제공하는 고객 및 합수를 통해 애플리케이션 정보 데이터에 접근하여 애플리케이션 리스트를 사용자 화면에 표시한다. 또한, 상기 제1 애플리케이션은, 표시된 애플리케이션 리스크를 선택된 애플리케이션을, 해당 애플리케이션의 오가나게어 아이디 및 애플리케이션 아이디 중 하나 이상의 정보를 기초로 생성된 고객 및 합수를 통해 실행시킨다. 따라서, 멀티 애플리케이션 전송이 가능하여 사용자 및 방송사 양측의 권익이 보호된다.  

대표도  
도 2  

특허청구의 범위
청구항 1.
데이터 방송 제공 시스템에 있어서,

일반 데이터 방송 애플리케이션 및 제2 애플리케이션 정보 및 제2 애플리케이션을 관리하는 애플리케이션으로서 제1 애플리케이션 정보를 저장하는 컨텐츠 데이터베이스;

방송 프로그램 편성 정보를 저장하는 편성 정보 데이터베이스;

상기 편성 정보 데이터베이스 및 상기 컨텐츠 데이터베이스에 저장된 정보를 기초로, 해당 시점에 상기 제1 애플리케이션 및 상기 제2 애플리케이션 전송을 구성하는 송출 매니저 및

송출 매니저로부터 전송받은 상기 제1 애플리케이션 및 상기 제2 애플리케이션을 인코딩하여 애플리케이션 및 애플리케이션 정보 데이터베이스를 전송하는 데이터 인코더

를 포함하는 데이터 방송 제공 시스템.

청구항 2.

제1항에 있어서,

상기 애플리케이션 정보 데이터에 각 애플리케이션의 이름, 시작 클레스, 애플리케이션 배치 디렉토리, 오가니제이션 아이디(Outside ID), 애플리케이션 아이디, 애플리케이션 중요도(Priority), 비지블리티(Visibility), 애플리케이션에 대한 컨트롤 코드(Control Code), 링키지 코드(Language Code) 중 하나 이상의 정보를 저장하며, 상기 제1 애플리케이션 및 상기 제2 애플리케이션을 구분 저장하는

데이터 방송 제공 시스템.

청구항 3.

제2항에 있어서,

상기 제1 애플리케이션은, 사용자 수신단에서 우선 실행되어, 사용자 수신단에서 제공하는 객체 및 함수를 통해 애플리케이션 정보 데이터에 접근하여 애플리케이션 리스트를 사용자 화면에 표시하는

데이터 방송 제공 시스템.

청구항 4.

제3항에 있어서,

상기 제1 애플리케이션은, 표시된 애플리케이션 리스트 중 선택된 애플리케이션을, 상기 애플리케이션 정보 데이터에 저장된 해당 애플리케이션에 대한 고유 정보 중 하나 이상의 정보를 기초로 생성된 객체 및 함수를 통해 실행시키는

데이터 방송 제공 시스템.

청구항 5.

제1항 내지 제4항 중 어느 한 항에 있어서.
제1 에플리케이션인지 제2 에플리케이션인지에 따라 해당 기능에 맞는 구조로 소스를 생성하는 데이터 생성 전용 저작도 구인 에디터를 더 포함하는.

데이터 생성 제공 시스템.

청구항 6.

데이터 생성 제공 방법에 있어서,

a) 일반 데이터 생성 에플리케이션인 제2 에플리케이션 및 제2 에플리케이션을 관리하는 에플리케이션으로서 제1 에플리케이션을 적용 후 저장하는 단계;

b) 생성 프로그램 편성 정보에 따라, 상기 제1 에플리케이션 및 상기 제2 에플리케이션을 인코딩하여 에플리케이션 정보 데이터에 함께 전송하는 단계를 포함하는

데이터 생성 제공 방법.

청구항 7.

제6항에 있어서,

상기 에플리케이션 정보 데이터는, 각 에플리케이션의 이름, 시작 클래스, 에플리케이션 베어스 디렉토리, 오가닉에이션 아이디(Organization ID), 에플리케이션 아이디, 에플리케이션 중요도(Priority), 비지블리티(Visibility), 에플리케이션에 대한 컨트롤 코드(Control Code), 레거지 코드(Language Code) 중 하나 이상의 정보를 저장하며, 상기 제1 에플리케이션 및 상기 제2 에플리케이션을 구분 저장하는

데이터 생성 제공 방법.

청구항 8.

제7항에 있어서,

상기 제1 에플리케이션은, 사용자 수신단에서 우선 실행되어, 사용자 수신단에서 제공하는 객체 및 함수를 통해 에플리케이션 정보 데이터에 접근하여 에플리케이션 리스트를 사용자 화면에 표시하는

데이터 생성 제공 방법.

청구항 9.

제8항에 있어서,

상기 제1 에플리케이션은, 표시된 에플리케이션 리스트 중 선택된 에플리케이션을, 사용자 수신단에서 제공하는 객체 및 함수--상기 에플리케이션 정보 데이터에 저장된 해당 에플리케이션의 고유 정보 중 하나 이상의 정보를 기초로 생성--을 통해 실행시키는

데이터 생성 제공 방법.

- 3 -
단계에서 복수의 제2 에뮬레이션을 전송된 경우,

상기 제2 에뮬레이션은 사용자 수신단에서 하나의 화면을 통해 모두 표현되거나, 활성화된 상기 제2 에뮬레이션만 사용자 수신단 화면에 표현되는

데이터 방송 제공 방법.

출처 

발명의 상세한 설명

발명의 목적

발명이 속하는 기술 및 그 분야의 종래기술

본 발명은 데이터 방송 제공 시스템 및 데이터 방송 제공 방법에 관한 것이다.

최근 통신 기술이 급격히 발달하면서, 방송 기술에 있어서도 디지털 방송 기술이 보급되기 시작했다. 디지털 방송이란 기존의 아날로그 방송과 달리 생활 방송을 제일, 재생, 통신이 가능한 차세대 방송기술로서, 정보의 속도를 확보하여 기록하는 디지털 형식의 레비전 신호를 압축하여 보내는 레비전 방송이며, 방송, 통신, 컴퓨터가 결합된 멀티미디어 시대의 핵심적 기술이다.

방송의 디지털화로 인해, TV를 보면서 경제, 게임, 물품 구매, 부가 정보 보기 등의 데이터 방송 혹은 대화형 방송이 가능해지고, 그에 따라 데이터 방송에서 방송 프로그램과 함께 제공되는 에뮬레이션들이 개발되고 있다.

그러나, 대부분 특성시간, 특성 채널에 대해 제공되는 하나의 에뮬레이션 위주의 서비스에 불과하여, 다양한 사용자 기호를 반영하고 사용자들에게 더 많은 선택권을 주기 위해서는 복수의 에뮬레이션 제공 서비스에 대한 필요성이 대두되고 있다.

특히, 단순히 여러 개의 에뮬레이션을 동일시간 동일 채널에 송출하는 형태로 서비스하는 경우, 수신기의 종류에 따라 복수의 에뮬레이션 제공 여부가 달라진다.

따라서, 송출 측면에서의 복수의 에뮬레이션 제공이 아니라, 에뮬레이션 자체 측면에서의 멀티 에뮬레이션 제공이 고려될 필요가 있다.

발명이 이루고자 하는 기술적 과제
따라서, 본 발명이 이루고자 하는 기술적 과제는 데이터 방송에 있어서, 멀티 엠플리케이션을 제공할 수 있도록 하는데 있다.

특히, 송출 측면이 아닌 엠플리케이션 측면에서 멀티 엠플리케이션 서비스를 고려하여, 사용자의 수신기의 종류에 관계없이 멀티 엠플리케이션 서비스를 이용할 수 있도록 하는데 있다.

발명의 구성

상술한 기술적 과제를 달성하기 위한 본 발명의 특징에 따른 데이터 방송 제공 시스템은, 일반 데이터 방송 엠플리케이션 인 제2 엠플리케이션 정보 및 제2 엠플리케이션을 관리하는 엠플리케이션으로서 제1 엠플리케이션 정보를 저장하는 컨텐츠 데이터베이스, 방송 프로그램 변성 정보를 저장하는 편성 정보 데이터베이스, 편성 정보 데이터베이스 및 관리용 컨텐츠 데이터베이스에 저장된 정보를 기초로, 해당 시점에 상기 제1 엠플리케이션 및 상기 제2 엠플리케이션 전송을 구성하는 송출 메니저 및 송출 메니저로부터 전송받은 상기 제1 엠플리케이션 및 상기 제2 엠플리케이션을 인코딩하여 엠플리케이션 및 엠플리케이션 정보 데이터를 전송하는 데이터 인코더를 포함한다.

또, 상술한 기술적 과제를 달성하기 위한 본 발명의 특징에 따른 데이터 방송 제공 방법은, a) 일반 데이터 방송 엠플리케이션 인 제2 엠플리케이션 및 제2 엠플리케이션을 관리하는 엠플리케이션으로서 제1 엠플리케이션을 제공 후 저장하는 단계; b) 방송 프로그램 변성 정보에 따라, 상기 제1 엠플리케이션 및 상기 제2 엠플리케이션을 인코딩하여 엠플리케이션 정보 데이터를 함께 전송하는 단계를 포함한다.

이하 첨부도면을 참조하여 본 발명을 상세히 설명한다.

도 1에 도시된 바와 같이, 본 발명의 실시에 따른 엠플리케이션 제공 시스템은, 에디터(100), 컨텐츠 데이터베이스(200), 편성 정보 데이터베이스(300), 송출 메니저(400) 및 데이터 인코더(500)를 포함한다.

에디터(100)는 컨텐츠 저작도구로서, 일반 엠플리케이션과 일반 엠플리케이션을 관리하는 관리 엠플리케이션을 저장하고, 각 엠플리케이션에 대한 정보를 담고 있는 메타데이터를 생성한다. 이에, 에디터(100)는 관리 엠플리케이션 혹은 일반 엠플리케이션 인터페이스에 따라 해당 기능에 맞는 구조로 소스를 생성하는 데이터방송전송 저작도구로 구성될 수도 있고, 사람이 관리 엠플리케이션 혹은 일반 엠플리케이션 영역을 직접 구분하여 소스 코드를 생성하는 데 이용되는 일반적인 소스 코드 생성 도구일 수도 있다.

이하, 관리상 일반 엠플리케이션을 관리하는 엠플리케이션을 제1 엠플리케이션, 일반 엠플리케이션을 제2 엠플리케이션이라 한다.

제1 엠플리케이션은 제2 엠플리케이션들의 엠플리케이션 아이디, 이름 등의 정보를 관리하며, 복수의 제2 엠플리케이션들과 함께 송출되며 제2 엠플리케이션들에 대한 리스트를 보여주고, 내비게이션을 가능하게 하며, 제2 엠플리케이션 실행을 완료한다.

제2 엠플리케이션은 고유의 기능을 가지는 하나의 프로그램으로 하나의 큰 자바 프로그램, HTML, 웹사이트들을 에로 들 수 있으며, PC상에서의 애플리케이션, 내비 헤드웨어와 같은 것이다. 그리고, 제2 엠플리케이션은 자신의 동작 상태 등을 제1 엠플리케이션에 보고한다.

메타데이터는 제1 엠플리케이션 혹은 제2 엠플리케이션에 대한 정보를 담고 있다. 예를 들어, ACAP-J 엠플리케이션의 경우, class 파일, png 등의 이미지 파일, txt 파일들로 구성될 수 있고, ACAP-X 엠플리케이션의 경우, html 파일, png 등의 이미지 파일, txt 파일들로 구성될 수 있다. 이에, 메타데이터는 각 엠플리케이션에 대한 정보를 담는 xml 파일로서, 각 엔터프레인더의 작성자, 종류는 ACAP-X 인지 ACAP-J인지 여부, 엠플리케이션이 필요로 하는 이미지나 텍스트 파일들에 대한 정보, 엠플리케이션이 필요로 하는 정보를 어떤 시스템에서 어떤 추가로 제공해야 하는지 등에 대한 정보를 포함한다.

컨텐츠 데이터베이스(200)는 저작도구에서 저작된 제1 엠플리케이션, 제2 엠플리케이션 및 각 엠플리케이션의 메타데이터 저장한다.
편성정보 데이터베이스(300)는 각 방송국에서 제공하는 프로그램에 대한 편성 정보를 저장하고 있으며, 예를 들어 각 프로그램의 편성 시간 정보, 프로그램 내용 정보를 포함할 수 있으며, 각 프로그램에 대해 필요한 에플리케이션 정보를 포함 할 수도 있다.

송출매니저(400)는 에플리케이션의 시작 및 종료를 관리하는데, 편성 정보 데이터베이스의 방송 프로그램 편성 정보에 따라 필요한 시점에 해당 제1 에플리케이션, 제2 에플리케이션 및 메타데이터를 컨텍스트 데이터베이스(200)로부터 읽고 주변 시스템들에게 전송하여, 에플리케이션 전송을 시작하도록 한다.

데이터 인코더(500)는 송출 매니저로부터 에플리케이션, 메타데이터를 전달받아 에플리케이션을 인코딩하고 프로그램 및 시스템 관련 정보를 추가할 수 있다. 이 때, 데이터 인코더(500)는 메타데이터의 에플리케이션 관련 정보를 참조하여, 필요한 정보를 에플리케이션 정보 데이터(AIT, Application Information Table)에 삽입하여 보낼 수 있다.

보다 구체적으로, AIT는 데이터 인코더(500)가 송출하는 내용으로, 에플리케이션 하나당 에플리케이션 이름, 시작 클레스, 에플리케이션 메시지 헤더, 오라클에 아이디(Organization ID), 에플리케이션 아이디, 에플리케이션의 중요도(Priority), 비적용 범위(Visibility), 에플리케이션에 대한 컨트롤 코드(Control Code), 행거지 코드(Language Code) 등 에플리케이션 관련 정보를 저장한다.

예를 들어, 데이터 인코더(500)는 ACAP(Advanced Common Application Platform) 인코더 및 PSIP(Program and System Information Protocol) 인코더를 포함하여, ACAP 인코더는 에플리케이션 파일들(예를 들어, ACAP-J의 경우, .class 파일들, .png 파일들, .txt 파일들)을 인코딩하여 PSIP(Program and System Information Protocol) 인코더로 전송한다. 이 때, ACAP 인코더가 메타데이터의 에플리케이션 관련 정보를 참조하여 필요한 정보를 지정하고 데이터 통신 규격인 ACAP의 AIT에 삽입하여 보낸다. 그리고, PSIP(Program and System Information Protocol) 인코더는 프로그램과 시스템 관련 정보를 추가하여 다양한 방식으로 보낼 수 있고, 이후 다중화, 변조가능성에 의해 차례로 A/V 스트림과, 데이터 송신 스트림과의 링크, 변조 및 송출들이 이루어질 수 있다.

보다 상세하게, 도 2는 제1 에플리케이션을 이용한 제2 에플리케이션의 구조에 대한 예시도로, 복수의 에플리케이션을 고려한 방식 에플리케이션은 하나의 관리 기능 에플리케이션, 즉 제1 에플리케이션과 복수의 제2 에플리케이션을 포함 한다.

제1 에플리케이션은 제2 에플리케이션과 함께 송출되어 에플리케이션 리스트를 보여주고 테이블기능을 제공하며, 에플리케이션 실행을 관리하는데, 서비스 되는 에플리케이션 중 가장 먼저 실행된다. 즉, 데이터 인코더(500)는 에플리케이션 실행 관련 정보를 포함하는 AIT를 전송할 때, 제1 에플리케이션 및 제2 에플리케이션을 달리 설정 후 전송하여, 사용자의 수신단에서 이를 해석하여 제1 에플리케이션을 가장 먼저 실행시킨다.

제1 에플리케이션은 실행 즉시, 사용자 수신단에서 서비스해야 할 제2 에플리케이션들에 대한 정보를 AIT로부터 읽을 수 있고, 해당 에플리케이션들을 실행시킬 수 있다.

예를 들어, 도 3에 도시된 바와 같이, 제1 에플리케이션은 사용자 수신단에서 제공하는 자바 프로그램 객체 중 하나인 AppsDatabase와 AppAttributes를 사용하여 에플리케이션들에 대한 정보를 얻을 수 있다.

AppsDatabase는 이용가능한 에플리케이션들의 정보를 관리하는 객체로서 사용자 수신단에서 제공하는 자바 프로그램 객체로 구성될 수 있는데, AppsDatabase의 에플리케이션 앱트리들은 AIT로부터 에플리케이션들에 대한 정보를 얻어, 사용자 수신단 미디어의 AppsDatabase 객체를 통해 에플리케이션들에 제공될 수 있다.

제1 에플리케이션은 AppsDatabase에 제공하는 함수를 통해 에플리케이션 속성정보를 제공하는 AppAttributes 객체를 읽을 수 있고, AppAttributes 객체를 통해 AIT에 있는 에플리케이션들의 정보를 사용자 화면에 표시할 수 있다.

즉, 데이터 인코더(500)가 현재 서비스 중인 에플리케이션에 대한 정보를 AIT에 삽입하고, 사용자 수신단에서 AIT 에 접근할 수 있는 함수를 갖는 AppsDatabase 객체를 제공하면, 제1 에플리케이션은 AppsDatabase가 제공하는 함수를 통해 현재 서비스 중인 에플리케이션에 대한 정보에 접근할 수 있다.

이 때, AppsDatabase가 제공하는 함수의 예는 다음과 같다.
getAppAttributes(AppsDatabaseFilter): 현재 사용 가능한 애플리케이션들에 대한 AppAttributes 객체들을 반환함.

getAppIDs(AppsDatabaseFilter): AppDatabaseFilter 기준에 맞는 애플리케이션들에 대한 ID를 반환함.


그리고, AppAttributes 객체는 AIT 내에 등록된 각 애플리케이션에 대한 다양한 정보를 얻을 수 있는 변수 및 함수를 제공하는데, AppAttributes 클래스가 제공하는 함수의 예는 다음과 같다.

getName(): 애플리케이션 이름을 반환함.

getNames(): 모든 애플리케이션 이름들을 반환함.

getPriority(): 애플리케이션의 우선순위를 반환함.

결론적으로, 제1 애플리케이션은 AppsAttributes로부터 애플리케이션의 이름과 같은 애플리케이션 정보를 얻어 화면에 표시하고, AppsAttributes는 AppsDatabase로부터 구하며, AppsDatabase는 현재 서비스 중인 애플리케이션을 저장하는 데이터베이스로부터 구현하는 클래스로 구성될 수 있다.

또, 도 4에 도시된 바와 같이, 제1 애플리케이션은 표시된 애플리케이션 리스트 중 특정 애플리케이션을 사용자가 선택한 경우, 해당 애플리케이션이 실행되도록 할 수도 있다.

예를 들어, 도 4에서 제1 애플리케이션이 3개의 제2 애플리케이션을 화면에 표시하고 있는데, 사용자가 엔트리 1(entry 1) 애플리케이션을 리모콘으로 실행(선택하면, 제1 애플리케이션은 사용자가 선택한 애플리케이션을 실행하기 위해 AppProxy 객체를 사용할 수 있다.

AppProxy는 제1 애플리케이션과 수도권의 미들웨어 사이에서 특정 애플리케이션의 동작 상태를 제어하는 proxy 역할을 하는 애플리케이션의 대리자(Proxy)로서, 상술한 바와 같이, AppsDatabase의 getAppProxy(AppID key) 함수를 통해 얻는다. 이 때, 이 함수의 인자로 필요한 AppID 객체는 해당 애플리케이션의 오가나계이어 아이디 및 애플리케이션 아이디를 통해 생성될 수 있다.

AppProxy는 AIT에 시그널 되는 각 애플리케이션 엔트리와 일대일 대응 관계를 가진다. AppProxy는 시그널 되는 수도권 미들웨어가 해당 애플리케이션을 시작(start), 종료(stop), 일시 중지(pause)시킬 있는 함수를 제공하므로, 제1 애플리케이션은 실행시킬 애플리케이션의 AppProxy를 얻어 해당 AppProxy의 start() 함수를 호출하여 수도권의 미들웨어에 의해 해당 애플리케이션이 실행되도록 한다.

제2 애플리케이션은 실행 중 사용자가 실행 중지를 선택하거나 송출단에서의 송출이 중지된 경우 해당 중지 정보를 사용자 수신단에 보내고, 제1 애플리케이션은 수신단으로부터 해당 중지 정보를 받아가 해당 제2 애플리케이션의 AppProxy를 얻어 AppProxy의 stop() 함수를 호출하여 해당 애플리케이션이 중지되도록 한다.

이하, 도 5 내지 도 7을 참조하여, 제1 애플리케이션 기능 구현 화면에 대한 설시예를 설명한다.

도 5에 도시된 바와 같이, 제1 애플리케이션은 서비스 중인 제2 애플리케이션들의 리스트를 포함한 애플리케이션 리스트를 화면에 제공할 수 있다. 즉, 제1 애플리케이션은, 사용자 선택에 따라 미디어, 뉴스, 게임 관련 정보를 각각 제공하는 제2 애플리케이션 리스트를 제공하여, 사용자가 선택할 수 있도록 하는 미디어기기 기능을 제공할 수 있다.

도 6에 도시된 바와 같이, 제1 애플리케이션은 사용자 수신단의 화면의 일부의 영역에 표시되어, 도 7에 도시된 바와 같이, 사용자는 상/하 버튼 등 리모컨의 버튼을 이용하여 제2 애플리케이션 리스트를 벤치매기어 하나가 선택한 제2 애플리케이션에 포커스가 있을 때 선택하여, 해당 제2 애플리케이션을 실행시킬 수 있다.
한편, 도 8에 도시된 바와 같이, 제1 애플리케이션은 화면에 나타난 복수의 제2 애플리케이션 중 실행 중인 제2 애플리케이션을 표시하기 위해 실행 상태 태이블을 바탕으로 제공할 수도 있다. 또한, 사용자가 실행중인 제2 애플리케이션을 다른 제2 애플리케이션으로 전환할 수 있도록 "나가기 버튼" 등의 특정 버튼을 이용하여, 제2 애플리케이션들이 각 실행을 중지하고, 제1 애플리케이션을 활성화할 수 있도록 구성될 수도 있다.

도 9 내지 도 11은 멀티 애플리케이션 구조에서 애플리케이션 실행 방법 시나리오의 실시예이다.

도 9에 도시된 바와 같이, 하나의 화면에 두 개 이상의 제2 애플리케이션이 등장하는 경우로서, 각각의 제2 애플리케이션이 실행과 중단을 반복하고, 각 제2 애플리케이션이 화면 전체를 활용하지 않고 각각 특정 영역만을 이용하여 하나의 스크 랜에 두 개 이상의 제2 애플리케이션이 표시될 수 있다. 이 때, 각각의 제2 애플리케이션은 실행이 중단되는 경우에도 자신 의 그래픽 데이터를 삭제하지 않고 계속해서 유지한다. 그리고, 이후 중단된 제2 애플리케이션이 재실행되는 경우, 이전 그래픽 데이터를 계속하여 보여주므로, 하나의 화면에 두 개 이상의 제2 애플리케이션이 표시될 수 있다.

이때, 스크린에 나타난 복수의 제2 애플리케이션 중 실행 중인 제2 애플리케이션은 앞서 언급한 바와 같이, 실행 상태 태이블을 바탕으로 표시할 수 있다. 그리고, 각 제2 애플리케이션 간의 전환은 제1 애플리케이션을 활성화하여 이루어질 수 있는 데, 마찬가지로, 실행 전환이 된 제2 애플리케이션은 실행 상태 태이블을 표시할 수 있다.

이상, 도 9에서는 각 제2 애플리케이션이나 실행 중인 경우로 보이지 않은 상태로 대입되었으며, 필요에 따라 검토하고 구현될 수도 있음을 볼 수 있다. 또한 실행 상태 태이블을 바탕 표시 형태 및 각 애플리케이션 간의 이동도 다양한 방식으로 구현될 수 있음을 당연 하다.

도 10은 하나의 화면에 하나의 제2 애플리케이션이 표시되는 예로서, 하나의 제2 애플리케이션이 스크린 전체를 사용하여, 제2 애플리케이션간의 화면 전환이 이루어지는 경우이다. 이 때, 각 제2 애플리케이션들은 한 화면에 복수의 제2 애플 리케이션이 표시되는 경우와는 달리 실행 중단전 이전 그래픽 데이터를 유지할 필요는 없다.

한편, 제2 애플리케이션 간의 전환은 다양한 방식으로 구현될 수 있는데, 우선, 사용자가 실행 중인 제2 애플리케이션의 나 가기 버튼 등을 통해 제1 애플리케이션을 활성화할 수 있다. 이에, 제1 애플리케이션은 제2 애플리케이션의 리스트화 화면 에 보여주고, 사용자가 제1 애플리케이션의 내비게이션 기능을 통해 다른 제2 애플리케이션을 선택하도록 할 수 있다.

또한 특정 리모컨의 키 버튼 등을 제2 애플리케이션 전환 비튼으로 정의하여, 제1 애플리케이션에서 이 버튼 키값을 UserEvent로 등록할 수 있다. UserEvent는 제2 애플리케이션이 화면에 등장하지 않아도 리모컨 카 이벤트를 처리할 수 있도록 DVB-MHP(Digital Video Broadcasting-Multimedia Home Platform)에서 정의한 이벤트 처리 메커니즘으로 ATSC(Advanced Television Systems Committee)-ACAP에서도 정의되어 있다. 제1 애플리케이션이 UserEvent를 이용하여 애플리케이션 전환을 처리하는 경우, 사용자가 전환 버튼을 눌렀을 때 제1 애플리케이션에서 제2 애플리케이션 리스트를 보여주지 않고 이전 실행 제2 애플리케이션을 재실행 시킴으로써, 현재 실행중인 제2 애플리케이션을 다른 제2 애플리케이션으로 전환시킬 수 있다.

도 11은 제2 애플리케이션 동작 중 일람창 형태의 애플리케이션이 활성화로 등장하는 경우의 실시예이다.

제1 애플리케이션이 실행되어 제2 애플리케이션 리스트를 제공하고 사용자가 특정 제2 애플리케이션을 선택하여 이용하지, 사용자가 선택한 제2 애플리케이션이 실행되고 다른 애플리케이션 이용을 위해 제1 애플리케이션을 활성화한 경우) 제2 애플리케이션 한 화면에 나타낼 수 있다.

이때, 속보 알림 애플리케이션과 같이 특정 이벤트가 발생하면, 다른 제2 애플리케이션이 실행중인 상황에서도 실행 중인 제2 애플리케이션 화면 위에 활성으로 이벤트에 대한 알림창을 띄우는 알림창 애플리케이션이 구성될 수 있다.

알림창 애플리케이션은, 실제 화면에 나타나는 제2 애플리케이션과 달리 백그라운드에서 이벤트 처리 준비를 하고 있어야 하며, 실제 이벤트가 발생한 후 해당 이벤트를 처리하여, 해당 내용을 현재 스크린을 갱신하고 있는 제2 애플리케이션 위에 활성 형태로 표시한다.
알림장 애플리케이션은 사용자가 선택하여 실행시키는 애플리케이션이 아니라 제1 애플리케이션 실행시 함께 실행되며, 제1 애플리케이션이 제1 애플리케이션 실행시 알림장 애플리케이션이 자동 실행되도록 처리할 수 있다. 이 때, 제1 애플리케이션은 최초 실행시 자신이 관리하는 애플리케이션 리스트로부터 제2 애플리케이션과 알림장 애플리케이션을 구분할 수 있어야 한다.

이하 도 12를 참조하여, 본 발명의 실시에 따르는 밀터 애플리케이션 제공 방법을 설명한다.

도 12에 도시된 바와 같이, 우선 애플리케이션(100)을 통해 제1 애플리케이션, 제2 애플리케이션, 알림장 애플리케이션과 같은 애플리케이션이 제작되고, 컴퓨터 및 데이터베이스에 저장된다(S100, S110). 이 때, 제작대상 애플리케이션의 종류에 따라, 즉 제1 애플리케이션인지 혹은 제2 애플리케이션인지 등에 따라 다른 소스 구조로 생성된다.

송출 매니저(400)는 관리 정보 데이터베이스(300)에 저장된 프로그램 관리 정보에 따라, 필요한 시점에 해당 애플리케이션, 메타데이터를 컴퓨터 데이터베이스(200)로부터 읽어오고 주변 관련 시스템들에 의해 애플리케이션 전송이 시작되도록 한다(S120).

메타데이터 인코더(500)는 송출 매니저(400)로부터 애플리케이션, 메타데이터를 받아 애플리케이션 파일들을 인코딩한다(S130). 이 때, 메타데이터 인코더(500)는 메타데이터의 애플리케이션 관련 정보를 참조하여 필요한 정보를 AIT에 싸여 전송하여, 또한 프로그램과 시스템 관련 정보를 추가하여 다중화기능에 전송할 수 있다.

이후, 다중화기능, 변조기능이 A/V 스트림과 메타데이터 인코더에 의해 전송된 데이터 스트림등을 막상하고 변조하여 송출하고, 사용자 선호도에서 성공한 기능이 구현되는 제1 애플리케이션, 제2 애플리케이션이 화면에 나타나게 된다. 그리고, 알림장 애플리케이션도 구현될 수 있음은 앞서 언급한 바와 같다.

이상 설명한 바는 본 발명의 실시에 불과한 것으로 본 발명의 권리범위가 이에 한정되는 것은 아니며, 당연한 자명한 사항에 대해 다양한 변형실험이 가능함은 물론이다. 본 발명의 권리범위는 후술할 특허청구범위 기재사항 및 그 근동 사항으로 인정되는 기술적 구성요소를 모두 포함한다.

발명의 효과

상술한 바와 같이 본 발명에 따르면, 데이터 송출시 복수의 애플리케이션을 제공할 수 있다. 특히 송출 측면이 아니라, 애플리케이션 측면으로부터의 밀터 애플리케이션 서비스가 현실되므로 사용자의 수신기에 관계없이 밀터 애플리케이션 서비스를 제공할 수 있다.

따라서, 제1 애플리케이션의 관리 기능을 통해 다양한 제2 애플리케이션들을 제어하여 각 프로그램의 특성을 반영하는 다양한 애플리케이션 제공이 가능함으로, 사용자는 프로그램 특성에 맞는 다양한 애플리케이션 서비스를 즐길 수 있고 방송사는 애플리케이션 판성을 자유로워질 수 있다.

도면의 간단한 설명

도 1은 본 발명의 실시에 따른 밀티 애플리케이션 제공 시스템을 포함하여, 밀티 애플리케이션 설치에서 송출까지의 과정을 예시한 그림이다.

도 2는 밀티 애플리케이션 구조를 예시한 도면이다.

도 3은 제1 애플리케이션이 제2 애플리케이션들에 대한 정보를 얻어오는 과정에 대한 예를 나타낸 도면이다.

도 4는 제1 애플리케이션이 보여주는 제2 애플리케이션 리스트 중 특정 애플리케이션이 선택된 경우, 해당 제2 애플리케이션을 실행하는 과정에 대한 실시예를 나타낸 도면이다.

도 5는 제1 애플리케이션의 제2 애플리케이션들에 대한 관리 기능을 설명한 도면이다.

도 6 및 도 7은 제1 애플리케이션의 화면 구현 예를 나타낸 도면이다.
도 8은 실행중인 제2 애플리케이션이 실행을 중지하고 제1 애플리케이션을 호출하는 버튼 사용의 예를 나타낸 도면이다.

도 9는 대화 상자에서 애플리케이션을 실행하는 다양한 실시예이다.

도 12는 멀티 애플리케이션 시작 및 종료에 대한 전체 흐름도이다.

도면 1

도면 2
### 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 the Application of:

Wonjang BAEK et al.                  Confirmation No.  1129
Application No.  12/450,066           Group Art Unit:  2426
Filed:  September 10, 2009            Examiner:  Peng HSIUNGFEI

For:  METHOD OF SWITCHING DIGITAL TV APPLICATION

INFORMATION DISCLOSURE STATEMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure provisions of 37 CFR § 1.56, there is hereby provided certain information which the Examiner may consider material to the examination of the subject U.S. patent application. It is requested that the Examiner make this information of record if it is deemed material to the examination of the subject application.

1. Enclosures accompanying this Information Disclosure Statement are:

   1a. ☑ List Of References Cited By Applicant (ATTACHMENT 1(a), hereto).
   1c. ☑ English language copy of a communication(s) from a foreign Patent Office or a PCT International Search Report.
   1d. ☑ English language translation (Abstract Only) attached to non-English language publications as indicated on the attached List Of References Cited By Applicant.
   1e. ☐ Explanations of Relevancy of References (ATTACHMENT 1(e), hereto) for providing a concise explanation of non-English publications.
   1f. ☐ List of Copending Applications (ATTACHMENT 1(f), hereto).
   1g. ☐ List of Additional Submitted Documents (ATTACHMENT 1(g), hereto).

2. ☐ This Information Disclosure Statement is filed under 37 CFR § 1.97(b):

   (Check either Item 2a or 2b or 2c or 2d)

   2a. ☐ Within three months of the filing date of a national application;
   2b. ☐ Within three months of the date of entry of the national stage as set forth in § 1.491 in an international application.
   2c. ☐ Before the mailing of a first Office Action on the merits; or
   2d. ☐ Before the mailing of a first Office Action after the filing of a Request for Continued Examination under § 1.114.
3. ☒ This Information Disclosure Statement is filed under 37 CFR § 1.97(c) after the period specified in paragraph 2 above but before the mailing date of any of a Final Office Action under § 1.113, a Notice of Allowance under § 1.311 or an action that otherwise closes prosecution in the application, AND

(Check either Item 3a or 3b; Item 3b to be checked if any reference known for more than 3 months)

3a. ☐ The § 1.97(e) Statement in Item 5 below is applicable; OR

3b. ☒ The fee set forth in 37 CFR § 1.17(p) is enclosed, said fee being:
   ☒ $180.00 (large entity fee).
   ☐ $90.00 (small entity fee).
   ☐ $45.00 (micro entity fee).

4. ☐ This Information Disclosure Statement is filed under 37 CFR § 1.97(d) after the period specified in paragraph 3 above, but on or before payment of the Issue Fee, AND

4a. ☐ The § 1.97(e) Statement in Item 5 below is applicable; AND

4b. ☐ The fee set forth in 37 CFR § 1.17(p) is enclosed, said fee being:
   ☐ $180.00 (large entity fee).
   ☐ $90.00 (small entity fee).
   ☐ $45.00 (micro entity fee).

5. ☐ Statement under § 1.97(e) (applicable if Item 3a or Item 4a is checked)

   (Check either Item 5a or 5b)

5a. ☐ In accordance with 37 CFR § 1.97(e)(1), it is stated that each item of information contained in this Information Disclosure Statement was first cited in any 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.

5b. ☐ In accordance with 37 CFR § 1.97(e)(2), it is stated that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in this Information Disclosure Statement was known by any individual designated in § 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

6. ☐ This is included with a Request for Continued Examination under 37 CFR § 1.114.

   (Check either Item 6a or 6b)

6a. ☐ The Issue Fee has not been paid.

6b. ☒ A Petition to Withdraw from issue under 37 CFR § 1.313(c) is filed concurrently herewith or has been granted. A Request for Continued Examination under 37 CFR § 1.114, after payment of the Issue Fee, is proper in accordance with 37 CFR § 1.114(a), respectively.
7. ☐ This is a Supplemental Information Disclosure Statement.
   (Check either Item 7a or 7b)

7a. ☐ This Supplemental Information Disclosure Statement under 37 CFR § 1.97(f) supplements the Information Disclosure Statement filed on ___. A bona fide attempt was made to comply with 37 CFR § 1.98, but inadvertent omissions were made. These omissions have been corrected herein. Accordingly, additional time is requested so that this Supplemental IDS can be considered as if properly filed on ___.

7b. ☐ This Supplemental Information Disclosure Statement is timely filed within one (1) month of the Notice under 37 CFR §§ 1.97 and 1.98, mailed ___.

8. ☒ In accordance with 37 CFR § 1.98, a concise explanation of what is presently understood to be the relevance of each non-English language publication is:
   (Check appropriate Items 8a, 8b, 8c and/or 8d)

8a. ☒ satisfied for the non-English language publication(s) cited on the enclosed "English language version of the search report or action which indicates the degree of relevance found by the foreign office". (See MPEP § 609.04(a)(III), Minimum Requirements for an Information Disclosure Statement: Concise Explanation of Relevance, 8th Ed., Rev. 5)

8b. ☐ set forth in the application.

8c. ☐ satisfied for the non-English language publication(s) indicated on the attached List Of References Cited By Applicant as having an English language translation (Abstract Only) attached thereto.

8d. ☐ enclosed as Attachment 1(e), hereto.

9. No admission is made that the information cited in this Statement is, or is considered to be, material to patentability nor a representation that a search has been made (other than search report(s) from a counterpart foreign application or a PCT International Search Report, if submitted herewith). 37 CFR §§ 1.97(g) and (h).

10. The Commissioner is authorized to credit any overpayment or charge any additional fee required under 37 CFR § 1.17 for this Information Disclosure Statement to Deposit Account No. 503333.

Respectfully submitted,

STEIN IP, LLC

Dated: August 15, 2014

By: [Signature]

[Full Name]
Registration No. 84,130

1400 Eye St., N.W.
Suite 300
Washington, D.C. 20005
Telephone: (202) 216-9505
Facsimile: (202) 216-9510
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STEIN IP, LLC  
1400 EYE STREET, NW  
SUITE 300  
WASHINGTON, DC 20005

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@steinip.com
Office Action Summary

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 09/21/2012.
    - 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) 1-18 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) 1-18 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 09/10/09 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)  3) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date ______.  Paper No(s)/Mail Date ______.

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)  4) ☐ Other: ______.
   Paper No(s)/Mail Date ______.
DETAILED ACTION

Continued Examination Under 37 CFR 1.114

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. Applicant's submission filed on 08/21/2012 has been entered.

Status of Claims

2. Claims 1-18 are pending in this application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Cameron et al (US 2005/0028206).

Regarding Claim 1, Cameron discloses a method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of:

(a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel (e.g., see Para 64 lines 1-10; when user selects a URL channel while watching a TV program);
(b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least a device identification information of the receiver (e.g., see Para 64 lines 11-17; Para 38 lines 4-14; Para 71; then switch to a web browser application event which includes at least an IP address of the receiver such as STB or PC so as to receive corresponding web content);

(c) transmitting the application switching event to an application providing server for providing the digital TV application (e.g., see Para 64 lines 13-17; the web browser then transmits the link address to a web server for a web page access); and

(d) receiving and executing the digital TV application corresponding to the application switching event (e.g., see Para 64 lines 17-19; the web browser then receives the corresponding web page associated with the TV program and executes the web page application for display).

Regarding Claim 2, Cameron further discloses the step (a) comprising receiving the channel changing event including the channel identification of the second channel (e.g., see Para 64 lines 5-10; such as a channel number or URL address).

Regarding Claims 3, 10 and 15, Cameron equally discloses receiving a minimum execution data required for executing the digital TV application from the application providing server (e.g., see Para 64; Para 71 lines 10-13; a home page at the web server is equated to a minimum execution data); and

executing the minimum execution data (then executes and displays the home page for further selection).

Regarding Claims 4, 11 and 16, Cameron further discloses the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application (e.g., see Para 64; Para 48; the home page includes at least
one of an executable code, a display data and a resource data, such as standard HTML code for an initial screen of the digital TV application).

Regarding Claims 5, 12 and 17, Cameron equally discloses requesting an additional execution data (link data on the home page) required during the execution of the minimum execution data (home page) to the application providing server; receiving the additional execution data from the application providing server; and executing the additional execution data (e.g., see Para 64 lines 17-19; when the user selects a link on the home page to request additional information about a television program; or self-service transaction such as pay-per-view or channel blocking, etc. e.g., see Para 41; Para 48).

Regarding Claims 6, 13 and 18, Cameron further discloses the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data (e.g., see Para 64 lines 17-19; Para 41; Para 48; the additional link data includes at least one of an executable code, a display data and a resource data such as HTML code for a screen to be displayed).

Regarding Claims 7 and 8, Cameron discloses a method for switching a digital TV application in an application providing server for providing the digital TV application, the method comprising steps of:

(a) receiving, from a receiver executing and providing the digital TV application, an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver (e.g., see Para 64 lines 1-17; web server receives a link address from a receiver for a web page access when user selects a URL channel while watching a TV program); and
(b) extracting and transmitting the digital TV application based on the application
switching event to the receiver (e.g., see Para 64 lines 17-19; the web server then extracts and
transmits the corresponding web page associated with the TV program based on the user
selecting the URL channel).

Regarding Claims 9 and 14, Cameron inherently discloses dividing each of a plurality of
the digital TV application into a minimum execution data and an additional execution data and
storing the minimum execution data and the additional execution data prior to carrying out the
step (a) (e.g., see Para 41; Para 48; Para 64; each of a plurality of web servers includes a home
page and corresponding link data such as self-service transaction for users to access).

**Response to Arguments**

4. Applicant's arguments filed 08/21/2012 have been fully considered but they are not persuasive.

In reference to Applicant's arguments (page 7)

In the instant case, one skilled in the art would not confuse HTML pages with a digital TV
application which can be executed, and there is no evidence that such a usage is consistent with
either the specification or the understanding of one skilled in the art. Compare Dictionary.com,
(Application defined for computers as "a computer program used for a particular type of job or
problem: Your new computer comes preloaded with applications") (last visited June 5, 2012) with
Dictionary.com, (Website defined as “a connected group of pages on the World Wide Web
regarded as a single entity, usually maintained by one person or organization and devoted to a
single topic or several closely related topics") (last visited June 5, 2012). Further, there is no
evidence that one skilled in the art would consider HTML pages as being executable since web
browsers only display the HTML page as opposed to executing the HTML page as a processor
would executable code. As such, it is respectfully submitted that, even given its broadest
reasonable interpretation, the combination does not disclose or suggest the "digital TV
application” or “receiving and executing the digital TV application corresponding to the application switching event” as recited in claim 1.

**Examiner’s response**

In response to Applicant’s arguments, Examiner respectfully disagrees. For example, when a HTML page is downloaded, the HTML page is executed by a processor (browser) so as to display a particular webpage on a screen based on the HTML data format (HTML is a standard markup language and contains special tags equivalent to executable code and is run and interpreted by the browser to display the webpage); thus, a HTML page running under a browser to display a home page so that via a particular webpage such as a shopping website, users are able to purchase goods or services through an internet; thus, downloading a webpage and running under an internet browser for particular usage such as shopping or request for service, or request for program information can be reasonably interpreted as an application.

**In reference to Applicant’s arguments (page 7)**

Similarly, since paragraph 0064 describes the URLs and hotlinks in the different channels of the IPG as being for different websites associated with the different channels, there is no disclosure that such websites are on or provided by a common server. There is further no evidence that such a common server is inherently required for each URL or hotlink. In contrast, claim 7 recites, among other features, a “method for switching a digital TV application in an application providing server for providing the digital TV application” which includes “receiving, from a receiver executing and providing the digital TV application, an application switching event” and “extracting and transmitting another digital TV application based on the application switching event to the receiver.” As such, Cameron et al. does not disclose the features of claim 7.

**Examiner’s response**

In response to applicant’s argument that there is no disclosure that such websites are on or provided by a common server. There is further no evidence that such a common server is inherently required for each URL or hotlink. In contrast, claim 7 recites, among other features, a “method for switching a digital TV application in an application providing server for providing the
digital TV application”, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Also refer to the grounds of rejection as set forth in claim 7 for the arguments that Cameron does not disclose the features of claim 7.

In reference to Applicant’s arguments (page 8)

In contrast, claim 5 recites, among other features, “transmitting the application switching event to an application providing server for providing the digital TV application”, "requesting an additional execution data required during the execution of the minimum execution data to the application providing server” and "receiving the additional execution data from the application providing server.” As such, Cameron et al. does not disclose the features of claim 5.

Examiner’s response

Please refer to Office Action’s grounds of rejection as set forth in claim 5 for the arguments that Cameron does not disclose the features of claim 5.

Conclusion

5. Claims 1-18 are rejected.

Correspondence Information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRED PENG whose telephone number is (571)270-1147. The examiner can normally be reached on Monday-Friday 09:30-19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Nasser Goodarzi can be reached on (571) 272-4195. 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.

/Fred Peng/
Examiner, Art Unit 2426

/NASSER GOODARZI/
Supervisory Patent Examiner, Art Unit 2426
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REQUEST FOR CONTINUED EXAMINATION (RCE) TRANSMITTAL

(INCLUDING FILING FEE AND/OR PETITION FOR EXTENSION OF TIME FEE)

Subsection (b) of 35 U.S.C. §132, effective May 29, 2000, provides for continued examination of a utility or plant application filed on or after June 8, 1995. See The American Inventors Protection Act of 1999 (AIPA)

To: Commissioner for Patents
   Box RCE
   P.O. Box 1450
   Alexandria, VA 22313-1450

Attorney Docket No.: 0366.1009

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<td>METHOD OF SWITCHING DIGITAL TV APPLICATION</td>
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This is a Request for Continued Examination (RCE) under 37 C.F.R. §1.114 of the above-identified application.

1. Submission required under 37 C.F.R. §1.114 (Box a or b must be completed)
   a. ☒ Previously submitted
      i. ☒ Consider the amendment(s)/reply under 37 C.F.R. § 1.116 previously filed on August 21, 2012
         (Any unentered amendment(s) referred to above will be entered).
      ii. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on ___
      iii. ☐ Other
   b. ☐ Enclosed
      i. ☐ Amendment/Reply
      ii. ☐ Affidavit(s)/Declaration(s)
      iii. ☐ Information Disclosure Statement (IDS)
      iv. ☐ Other

2. Miscellaneous
   a. ☐ Suspension of action on the above-identified application is requested under 37 C.F.R. §103(c) for a period of ___ months. (Period of suspension shall not exceed 3 months; Fee under 37 C.F.R. §1.17(i) required).
   b. ☐ Other
RCE FEE

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Suspension Fee ($130.00)

Total of above Calculations = $1080.00

Reduction by 50% for filing by small entity (Note 37 C.F.R. 1.9, 1.27, 1.28).

Reduction by 75% for filing by micro entity (37 CFR 1.23(a)(1))

TOTAL FEES DUE = $1080.00

4. ☒ Small entity status:
   b. ☐ A Verified Statement Claiming Small Entity Status was previously filed and such status is still proper and desired.
   c. ☐ is no longer claimed.

5. ☐ Other:

6. METHOD OF PAYMENT
   ☐ A check in the amount of $ is enclosed.
   ☒ Credit Card Payment Form PTO-2038 (attached).
   ☐ Charge "TOTAL FEES DUE" to Deposit Account No. 503333. (A duplicate copy of this form is enclosed.)

7. GENERAL AUTHORIZATION
   ☒ The Commissioner is hereby authorized to credit any overpayment or charge any additional fees under 37 C.F.R. 1.16 (filing fees) or 37 C.F.R. 1.17 (processing fees) during the prosecution of this application and of any related application(s) claiming benefit hereof pursuant to 35 U.S.C. §120 to maintain pendency hereof and of any such related application to:
     Deposit Account No. 503333.

8. CORRESPONDENCE ADDRESS

STEIN MCEWEN, LLP

49,455

PATENT TRADEMARK OFFICE

9. SIGNATURE OF ATTORNEY OR AGENT REQUIRED

NAME: James G. McEwen
REGISTRATION NO.: 41,983

SIGNATURE: [Signature]
DATE: Sep. 21, 2012
**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.

Total Files Size (in bytes): 280867
**PATENT APPLICATION FEE DETERMINATION RECORD**

**APPLICATION AS FILED – PART I**

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**APPLICATION AS AMENDED – PART II**

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Legal Instrument Examiner: /VIOLA ROGERS/

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@smiplaw.com
THE REPLY FILED 21 August 2012 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) The period for reply expires 3 months from the mailing date of the final rejection.
   b) The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any previously granted patent term adjustment. See 37 CFR 1.764(b).

NOTICE OF APPEAL

2. The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   a) They raise new issues that would require further consideration and/or search (see NOTE below);
   b) They raise the issue of new matter (see NOTE below);
   c) They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   d) They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. Applicant’s reply has overcome the following rejection(s): _____.

6. Newly proposed or amended claim(s) _____. would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. For purposes of appeal, the proposed amendment(s): a) ___ will not be entered, or b) ___ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: _____.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

9. The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to provide all rejections under appeals and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

10. The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.

12. Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). _____.

13. Other: _____.

/Nasser Moazzami/  
Supervisory Patent Examiner, Art Unit 2426
The amendment such as "...extracting the another digital TV application based on the application switching event..." in claim 7 and "...dividing the another digital TV application into minimum execution data..." in claim 9 raises new issues and requires further consideration/search.
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Wonjang Baek et al.

Application No. 12/450,066

Group Art Unit: 2426

Confirmation No. 1129

Filed: September 10, 2009

Examiner: Peng HSIUNGFEI

For: METHOD OF SWITCHING DIGITAL TV APPLICATION

RESPONSE AND REQUEST FOR RECONSIDERATION UNDER 37 C.F.R. §1.116

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: BOX AF

Sir:

This is in response to the Final Office Action mailed May 24, 2012, and having a period for response set to expire on August 24, 2012.

Reconsideration of the claims is respectfully requested. The following remarks are respectfully submitted.
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Wonjang Baek et al.

Application No. 12/450,066

Confirmation No. 1129

Filed: September 10, 2009

For: METHOD OF SWITCHING DIGITAL TV APPLICATION

Group Art Unit: 2426

Examiner: Peng HSIUNGFEI

Docket No.: 0366.1009

RESPONSE AND REQUEST FOR RECONSIDERATION UNDER 37 C.F.R. §1.116

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: BOX AF

Sir:

This is in response to the Final Office Action mailed May 24, 2012, and having a period for response set to expire on August 24, 2012.

Reconsideration of the claims is respectfully requested. The following remarks are respectfully submitted.
IN THE CLAIMS:

Please AMEND claims 7-10 and 15 in accordance with the following:

1. (Previously Presented) A method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of:
   (a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel;
   (b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a device identification information of the receiver and a user identification information of a user of the receiver;
   (c) transmitting the application switching event to an application providing server for providing the digital TV application; and
   (d) receiving and executing the digital TV application corresponding to the application switching event.

2. (Original) The method in accordance with claim 1, wherein the step (a) comprises (a-1) receiving the channel changing event including the channel identification information of the second channel.

3. (Original) The method in accordance with claim 1, wherein the step (d) comprises:
   (d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and
   (d-2) executing the minimum execution data.

4. (Original) The method in accordance with claim 3, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

5. (Previously Presented) The method in accordance with claim 3, wherein the step (d) comprises:
   (d-3) requesting an additional execution data required during the execution of the minimum execution data to the application providing server;
(d-4) receiving the additional execution data from the application providing server; and
(d-5) executing the additional execution data.

6. (Original) The method in accordance with claim 5, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

7. (Currently Amended) A method for switching a digital TV application in an application providing server for providing the digital TV application, the method comprising steps of:

(a) receiving, from a receiver executing and providing the digital TV application, an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver; and

(b) extracting and transmitting the another digital TV application based on the application switching event to the receiver.

8. (Currently Amended) The method in accordance with claim 7, wherein the step (b) comprises (b-1) extracting the another digital TV application to be provided to the receiver based on at least one of the channel identification information, the device identification information and the user identification information.

9. (Currently Amended) The method in accordance with claim 7, further comprising (c) dividing the another digital TV application into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

10. (Currently Amended) The method in accordance with claim 9, wherein the step (b) comprises:

(b-2) extracting the minimum execution data for the another digital TV application to be provided to the receiver based on the application switching event; and

(b-3) transmitting the minimum execution data to the receiver.
11. (Original) The method in accordance with claim 10, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

12. (Original) The method in accordance with claim 10, wherein the step (b) comprises:
   (b-4) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and
   (b-5) extracting and transmitting the additional execution data to the receiver.

13. (Original) The method in accordance with claim 12, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

14. (Previously Presented) The method in accordance with claim 7, wherein dividing each of a plurality of the digital TV applications into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

15. (Currently Amended) The method in accordance with claim 14, wherein the step (b) comprises:
   (b-6) extracting the minimum execution data corresponding to the another digital TV application to be provided to the receiver from the plurality of the digital TV applications based on the application switching event; and
   (b-7) transmitting the extracted minimum execution data to the receiver.

16. (Original) The method in accordance with claim 15, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

17. (Original) The method in accordance with claim 15, wherein the step (b) comprises:
   (b-8) receiving a transmission request for the additional execution data required during
an execution of the minimum execution data from the receiver; and
(b-9) extracting and transmitting the additional execution data corresponding to the
transmission request to the receiver.

18. (Original) The method in accordance with claim 17, wherein the additional
execution data transmitted in the step (b-9) includes at least one of an executable code, a
display data and a resource data for a screen to be displayed corresponding to a user input
during the execution of the digital TV application corresponding to the minimum execution data
transmitted in the step (b-7).

19. (Canceled)
REMARKS

In accordance with the foregoing, claims 7-10 and 15 have been amended, and claims 1-18 are pending and under consideration. No new matter is presented in this Amendment.

ENTRY OF AMENDMENT UNDER 37 C.F.R. §1.116:

Applicants request entry of this Rule 116 Response because the amendments of claims 7-10 and 15 should not entail any further search by the Examiner since no new features are being added or no new issues are being raised; and the amendments do not significantly alter the scope of the claims and place the application at least into a better form for purposes of appeal. No new features or new issues are being raised.

The Manual of Patent Examining Procedures sets forth in Section 714.12 that "[a]ny amendment that will place the application either in condition for allowance or in better form for appeal may be entered." Moreover, Section 714.13 sets forth that "the Proposed Amendment should be given sufficient consideration to determine whether the claims are in condition for allowance and/or whether the issues on appeal are simplified." The Manual of Patent Examining Procedures further articulates that the reason for any non entry should be explained expressly in the Advisory Action.

REJECTIONS UNDER 35 U.S.C. §102:

On pages 2-5 of the Office Action, the Examiner rejects claims 1-18 under 35 U.S.C. §102(b) in view of Cameron et al. (U.S. Publication No. 2005/0028206). The rejection is respectfully traversed and reconsideration is requested.

By way of review, Cameron et al. discloses a system which includes an Interactive Program Guide (IPG) program on a computer or a TV and allows a subscriber to select multimedia signals. (Abstract). A DTVM 40 acts as the system manager and includes a web server which generates HTML pages and a server which provides data for the IPG program. (Paragraphs 0030, 0038, 0041, 0048, 0056, 0057). The HTML pages are used by the subscriber to provide self services, as well as order pay-per-view programming. (Paragraphs 0048, 0050). Further, in order to allow browsing on the internet, the IPG provides URL links to webpages on IPG channels, which when activated, take the user to a specified webpage using a browser. (Paragraph 0064). However, other than providing HTML pages or linking to external webpages, there is no disclosure of an overall application, or that the individual HTML pages are executable elements of a larger application as would be understood by one skilled in the art.
As a general proposition, in order to find that a combination discloses a claim, the combination must disclose each element of the claim. In interpreting the references included in the combination, the Examiner is to broadly interpret the claim, but must do so within the bounds of reason. In re Morris, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997), MPEP 2111. Thus, while the Examiner is to avoid reading limitations from the specification into the claims, the Examiner should not interpret claim limitations so broadly as to contradict or otherwise render a limitation meaningless as would be understood by those of ordinary skill in the art. See, In re Cortright, 49 USPQ2d 1464, 1467 (Fed. Cir. 1999), In re Zletz, 13 USPQ2d 1320, 1322 (Fed. Cir. 1999), MPEP 2111.01.

In the instant case, one skilled in the art would not confuse HTML pages with a digital TV application which can be executed, and there is no evidence that such a usage is consistent with either the specification or the understanding of one skilled in the art. Compare Dictionary.com, (Application defined for computers as "a computer program used for a particular type of job or problem: Your new computer comes preloaded with applications") (last visited June 5, 2012) with Dictionary.com, (Website defined as "a connected group of pages on the World Wide Web regarded as a single entity, usually maintained by one person or organization and devoted to a single topic or several closely related topics") (last visited June 5, 2012). Further, there is no evidence that one skilled in the art would consider HTML pages as being executable since webbrowsers only display the HTML page as opposed to executing the HTML page as a processor would executable code. As such, it is respectfully submitted that, even given its broadest reasonable interpretation, the combination does not disclose or suggest the “digital TV application” or “receiving and executing the digital TV application corresponding to the application switching event” as recited in claim 1.

For at least similar reasons, it is respectfully submitted that Cameron et al. does not disclose or suggest, among other features, "a receiver executing and providing the digital TV application" or "(b) extracting and transmitting another digital TV application based on the application switching event to the receiver" as recited in claim 7.

The Examiner asserts on page 3 of the Office Action that the recited application providing server is disclosed by the webserver in paragraph 0064, which provides webpages through URLs and hotlinks in the IPG channels. The Examiner next asserts on page 4 of the Office Action that the HTML-providing server of paragraphs 0041 & 0048 also disclose the recited application providing server. However, there is no suggestion that the server providing the HTML is the same as the web server storing the websites accessed using the hot links or
the URL channel. Specifically, in paragraph 0064, Cameron et al. discloses that the URLs refer to websites, such as www.imagicity.com. Thus, where a hotlink is selected in the IPG, the reference will be to a remote, external webpage as opposed to HTML generated by the DTVM 40. There is no suggestion that such external websites are stored on the server of the DVTM 40 which transmitted the data to the IPG or otherwise generated the HTML used for self service.

In contrast, claim 5 recites, among other features, “transmitting the application switching event to an application providing server for providing the digital TV application”, “requesting an additional execution data required during the execution of the minimum execution data to the application providing server” and “receiving the additional execution data from the application providing server.” As such, Cameron et al. does not disclose the features of claim 5.

Similarly, since paragraph 0064 describes the URLs and hotlinks in the different channels of the IPG as being for different websites associated with the different channels, there is no disclosure that such websites are on or provided by a common server. There is further no evidence that such a common server is inherently required for each URL or hotlink. In contrast, claim 7 recites, among other features, a “method for switching a digital TV application in an application providing server for providing the digital TV application” which includes “receiving, from a receiver executing and providing the digital TV application, an application switching event” and “extracting and transmitting another digital TV application based on the application switching event to the receiver.” As such, Cameron et al. does not disclose the features of claim 7.

Claims 2-4 and 6-18 are deemed patentable due at least to their depending from corresponding claims 1 and 7.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.
If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

STEIN MCEWEN, LLP

Date: August 21, 2012

By:

James G. McEwen
Registration No. 41,983

1400 Eye St., N.W.
Suite 300
Washington, D.C. 20005
Telephone: (202) 216-9505
Facsimile: (202) 216-9510
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REPLY/AMENDMENT
FEE TRANSMITTAL

Attorney Docket No. 0366.1009
Application Number 12/450,066
Filing Date 2009-09-10
First Named Inventor Wonaeg Baek, John Kim, Seong Baek Lee
Group Art Unit 2426
Examiner Name Peng HSIUNGFEI

AMOUNT ENCLOSED $ 0.00

FEE CALCULATION (fees effective 10/02/08)

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Since an Official Action set an original due date of August 24, 2012, petition is hereby made for an extension to cover the date this reply is filed for which the requisite fee is enclosed (1 month ($150)); (2 months ($560)); (3 months ($1,270)); (4 months ($1,980)); (5 months ($2,690)):

$ 0.00

If Notice of Appeal is enclosed, add ($620.00) $ 0.00
If Statutory Disclaimer under Rule 20(d) is enclosed, add fee ($140.00) $ 0.00
Information Disclosure Statement (Rule 1.17(p)) ($180.00) $ 0.00
Total of above Calculations = $ 0.00
Reduction by 50% for filing by small entity (37 CFR 1.9, 1.27 & 1.28) $ 0.00
Reduction by 75% for filing by micro entity (37 CFR 1.23(a)(1)) $ 0.00
TOTAL FEES DUE = $ 0.00

(1) If entry (1) is less than entry (2), entry (3) is "0".
(2) If entry (2) is less than 20, change entry (2) to "20".
(4) If entry (4) is less than entry (5), entry (5) is "0".
(5) If entry (5) is less than 3, change entry (5) to "3".

METHOD OF PAYMENT
☐ Check enclosed as payment. ☐ Credit Card Payment Form, Form PTO-2038 (attached).
☐ Charge "TOTAL FEES DUE" to the Deposit Account No. below.
☒ No payment is enclosed and no charges to the Deposit Account are authorized at this time (unless specifically required to obtain a filing date).

GENERAL AUTHORIZATION
☒ If the above-noted "AMOUNT ENCLOSED" is not correct, the Commissioner is hereby authorized to credit any overpayment or charge any additional fees necessary to:

Deposit Account No. 503333
Deposit Account Name STEIN MCEWEN, LLP

☒ The Commissioner is also authorized to credit any overpayments or charge any additional fees required under 37 CFR 1.16 (filing fees) or 37 CFR 1.17 (processing fees) during the prosecution of this application, including any related application(s) claiming benefit thereof pursuant to 35 USC § 120 (e.g., continuations/divisionals/CIPs under 37 CFR 1.53(b) and/or continuations/divisionals/CPAs under 37 CFR 1.53(d) to maintain pendency hereof or of any such related application.

SUBMITTED BY: STEIN MCEWEN, LLP
Typed Name James G. McEwen
Signature
Reg. No. 41,983
Date August 21, 2017
# PATENT APPLICATION FEE DETERMINATION RECORD

## Application asFiled – PART I

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## Application as Amended – PART II

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Legal Instrument Examiner: 
/JAMES MASON/

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@smiplaw.com
Office Action Summary

Application No. 12/450,066
Applicant(s) BAEK ET AL.
Examiner FRED PENG
Art Unit 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) [x] Responsive to communication(s) filed on 01 March 2012
2a) [x] 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) [x] Claim(s) 1-18 is/are pending in the application.
   5a) Of the above claim(s) _____ is/are withdrawn from consideration.
6) [ ] Claim(s) _____ is/are allowed.
7) [x] Claim(s) 1-18 is/are rejected.
8) [ ] Claim(s) _____ is/are objected to.
9) [ ] Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10) [ ] The specification is objected to by the Examiner.
11) [x] The drawing(s) filed on 10 September 2009 is/are: a) [x] 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).
12) [ ] 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

13) [x] Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) [x] All  b) [ ] Some *  c) [ ] None of:
    1. [x] 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)
   Paper No(s)/Mail Date ______
4) [ ] Interview Summary (PTO-413)
   Paper No(s)/Mail Date ______
5) [ ] Notice of Informal Patent Application
6) [ ] Other: ______

U.S. Patent and Trademark Office
PTOL-326 (Rev. 03-11) Office Action Summary Part of Paper No./Mail Date 20120507
DETAILED ACTION

1. This Office Action is in response to an AMENDMENT entered 03/01/2012.

Status of Claims

2. Claims 1-18 are pending in this application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Cameron et al (US 2005/0028206).

Regarding Claim 1, Cameron discloses a method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of:

(a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel (e.g., see Para 64 lines 1-10; when user selects a URL channel while watching a TV program);

(b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least a device identification information of the receiver (e.g., see Para 64 lines 11-17; Para 38 lines 4-14; Para 71; then switch to a web browser application event which includes at least an IP address of the receiver such as STB or PC so as to receive corresponding web content);
(c) transmitting the application switching event to an application providing server for
providing the digital TV application (e.g., see Para 64 lines 13-17; the web browser then transmits
the link address to a web server for a web page access); and

(d) receiving and executing the digital TV application corresponding to the application
switching event (e.g., see Para 64 lines 17-19; the web browser then receives the corresponding
web page associated with the TV program and executes the web page application for display).

Regarding Claim 2, Cameron further discloses the step (a) comprising receiving the
channel changing event including the channel identification of the second channel (e.g., see Para
64 lines 5-10; such as a channel number or URL address).

Regarding Claims 3, 10 and 15, Cameron equally discloses receiving a minimum
execution data required for executing the digital TV application from the application providing
server (e.g., see Para 64; Para 71 lines 10-13; a home page at the web server is equated to a
minimum execution data); and

executing the minimum execution data (then executes and displays the home page for
further selection).

Regarding Claims 4, 11 and 16, Cameron further discloses the minimum execution data
includes at least one of an executable code, a display data and a resource data for an initial
screen of the digital TV application (e.g., see Para 64; Para 48; the home page includes at least
one of an executable code, a display data and a resource data, such as standard HTML code for
an initial screen of the digital TV application).

Regarding Claims 5, 12 and 17, Cameron equally discloses requesting an additional
execution data (link data on the home page) required during the execution of the minimum
execution data (home page) to the application providing server;
receiving the additional execution data from the application providing server; and
executing the additional execution data (e.g., see Para 64 lines 17-19; when the user
selects a link on the home page to request additional information about a television program; or
self-service transaction such as pay-per-view or channel blocking, etc. e.g., see Para 41; Para
48).

Regarding Claims 6, 13 and 18, Cameron further discloses the additional execution data
includes at least one of an executable code, a display data and a resource data for a screen to be
displayed corresponding to a user input during the execution of the digital TV application based
on the minimum execution data (e.g., see Para 64 lines 17-19; Para 41; Para 48; the additional
link data includes at least one of an executable code, a display data and a resource data such as
HTML code for a screen to be displayed).

Regarding Claims 7 and 8, Cameron discloses a method for switching a digital TV
application in an application providing server for providing the digital TV application, the method
comprising steps of:

(a) receiving, from a receiver executing and providing the digital TV application, an
application switching event including at least one of a channel identification information of a
channel, a device identification information of the receiver and a user identification information of
a user of the receiver (e.g., see Para 64 lines 1-17; web server receives a link address from a
receiver for a web page access when user selects a URL channel while watching a TV program);
and

(b) extracting and transmitting the digital TV application based on the application
switching event to the receiver (e.g., see Para 64 lines 17-19; the web server then extracts and
transmits the corresponding web page associated with the TV program based on the user
selecting the URL channel).
Regarding Claims 9 and 14, Cameron inherently discloses dividing each of a plurality of
the digital TV application into a minimum execution data and an additional execution data and
storing the minimum execution data and the additional execution data prior to carrying out the
step (a) (e.g., see Para 41; Para 48; Para 64; each of a plurality of web servers includes a home
page and corresponding link data such as self-service transaction for users to access).

Response to Arguments

4. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of
the new ground(s) of rejection.

Conclusion

5. Claims 1-18 are rejected.

6. 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 date of this final action.
Correspondence Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRED PENG whose telephone number is (571) 270-1147. The examiner can normally be reached on Monday-Friday 09:30-19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nasser Goodarzi can be reached on (571) 272-4195. 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.

/Fred Peng/
Examiner, Art Unit 2426

/Nasser Moazzami/
Supervisory Patent Examiner, Art Unit 2426
### EAST Search History

**EAST Search History (Prior Art)**

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  - **T.D.**
  - **R.1.47**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Wonjang BAEK et al.

Application No. 12/450,066

Confirmation No. 1129

Filed: September 10, 2009

Examiner: Fred H. Peng

For: METHOD OF SWITCHING DIGITAL TV APPLICATION

AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is in response to the Office Action mailed October 13, 2011, and having a period for response set to expire on January 13, 2012.

A petition for a two-month extension of time is made herein and the appropriate fee is enclosed, extending the due date to March 13, 2012.

Reconsideration of the claims is respectfully requested. The following remarks are respectfully submitted.
N THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with strikethrough. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 1, 5, and 14 in accordance with the following:

1. (Currently amended) A method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of:

(a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel;

(b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a channel identification information of the second channel, a device identification information of the receiver and a user identification information of a user of the receiver;

(c) transmitting the application switching event to an application providing server for providing the digital TV application; and

(d) receiving and executing the digital TV application corresponding to the application switching event.

2. (Original) The method in accordance with claim 1, wherein the step (a) comprises (a-1) receiving the channel changing event including the channel identification information of the second channel.

3. (Original) The method in accordance with claim 1, wherein the step (d) comprises:

(d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and

(d-2) executing the minimum execution data.

4. (Original) The method in accordance with claim 3, wherein the minimum
execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

5. (Currently amended) The method in accordance with claim 3, wherein the step (d) comprises:
   (d-3) requesting an additional execution data required during the execution of the minimum execution data to the application providing server;
   (d-4) receiving the additional execution data from the application providing server; and
   (d-5) executing the additional execution data.

6. (Original) The method in accordance with claim 5, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

7. (Original) A method for switching a digital TV application in an application providing server for providing the digital TV application, the method comprising steps of:
   (a) receiving, from a receiver executing and providing the digital TV application, an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver; and
   (b) extracting and transmitting the digital TV application based on the application switching event to the receiver.

8. (Original) The method in accordance with claim 7, wherein the step (b) comprises (b-1) extracting the digital TV application to be provided to the receiver based on at least one of the channel identification information, the device identification information and the user identification information.

9. (Original) The method in accordance with claim 7, further comprising (c) dividing the digital TV application into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying
out the step (a).

10. (Original) The method in accordance with claim 9, wherein the step (b) comprises:

(b-2) extracting the minimum execution data for the digital TV application to be provided to the receiver based on the application switching event; and
(b-3) transmitting the minimum execution data to the receiver.

11. (Original) The method in accordance with claim 10, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

12. (Original) The method in accordance with claim 10, wherein the step (b) comprises:

(b-4) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and
(b-5) extracting and transmitting the additional execution data to the receiver.

13. (Original) The method in accordance with claim 12, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

14. (Currently amended) The method in accordance with claim 7, wherein dividing each of a plurality of the digital TV applications into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

15. (Original) The method in accordance with claim 14, wherein the step (b) comprises:

(b-6) extracting the minimum execution data corresponding to the digital TV application to be provided to the receiver from the plurality of the digital TV applications based on the
application switching event; and

(b-7) transmitting the extracted minimum execution data to the receiver.

16. (Original) The method in accordance with claim 15, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

17. (Original) The method in accordance with claim 15, wherein the step (b) comprises:

(b-8) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and

(b-9) extracting and transmitting the additional execution data corresponding to the transmission request to the receiver.

18. (Original) The method in accordance with claim 17, wherein the additional execution data transmitted in the step (b-9) includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application corresponding to the minimum execution data transmitted in the step (b-7).

19. (Canceled)
REMARKS

In accordance with the foregoing, claims 1, 5, and 14 have been amended, and claims 1-18 are pending and under consideration. No new matter is presented in this Amendment.

CLAIM OBJECTIONS

Claim 5 stands objected to because the term "fro" recited in line 5 is allegedly considered to be "from." Claim 14 stands objected to because the term "if" recited in line 2 is allegedly considered to be "of."

Claims 5 and 14 have been amended in accordance with the Examiner's suggestion. Applicants respectfully request withdrawal of the objection to claims 5 and 14.

REJECTIONS UNDER 35 U.S.C. §102:

Claims 1-18 are rejected under 35 U.S.C. §102(b) as being anticipated by Cameron et al. (U.S. Patent Application Publication No. 2005/0028206). Applicants respectfully traverse this rejection.


Claim 1, as amended, recites, inter alia:

A method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of:

... (b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event
including *at least one of a device identification information of the receiver and a user identification information of a user of the receiver*,

(emphasis added)

The features of original claim 1 corresponding to those recited above have been amended to remove the phrase "a channel identification information of the second channel" therefrom. The outstanding rejection of claim 1 is based on this removed claim feature, allegedly taught by the "link address associated with the URL channel" as described in Cameron et al. See the Office Action, page 3, lines 7-9. Hence, amended claim 1 overcomes the reason for rejection.

Moreover, no teaching or suggestion is found in Cameron et al. that the application switching event includes "at least one of a device identification information of the receiver and a user identification information of a user of the receiver," as recited in claim 1. Since Cameron et al. fails to disclose each and every feature recited in claim 1, the reference does not anticipate the claim.

Claim 7 is another independent claim directed to a "method for switching a digital TV application *in an application providing server*" (emphasis added). The Office Action fails to articulate how Cameron et al. disclose each and every feature recited in claim 7. "In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified." 37 CFR 1.104(c)(2). Since the Office fails to establish a *prima facie* case of anticipation, Applicants are under no obligation to submit the evidence of the allowability of claim 7.

Claims 2-6 and 8-18 depend directly or indirectly from claims 1 and 7, respectively, and are thus allowable for at least this reason.

In view of the foregoing, withdrawal of the rejection of claims 1-18 under 35 U.S.C. §102(b) is respectfully requested.
CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

STEIN MCEWEN, LLP

Date: March 1, 2012

By: Sungyeop Chung
Registration No. 64,130

1400 Eye St., N.W.
Suite 300
Washington, D.C. 20005
Telephone: (202) 216-9505
Facsimile: (202) 216-9510
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| Filer:                              | Sungyeop Chung/Natasha Duarte |
| Filer Authorized By:                 | Sungyeop Chung  |
| Attorney Docket Number:             | 0293.1009       |
| Receipt Date:                       | 01-MAR-2012     |
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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.
REPLY/AMENDMENT
FEE TRANSMITTAL

Attorney Docket No. 0293.1009
Application Number 12/450,066
Filing Date September 10, 2009
First Named Inventor Wonjang BAEK et al.
Group Art Unit 2426

AMOUNT ENCLOSED $280.00
Examiner Name Fred H. Peng

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Since an Official Action set an original due date of January 13, 2012, petition is hereby made for an extension to cover the date this reply is filed for which the requisite fee is enclosed (1 month ($150)); (2 months ($560)); (3 months ($1,270)); (4 months ($1,980)); (5 months ($2,680)); $560.00

If Notice of Appeal is enclosed, add ($620.00)

If Statutory Disclaimer under Rule 20(d) is enclosed, add fee ($140.00)

Information Disclosure Statement (Rule 1.17(p)) ($180.00)

Total of above Calculations = $560.00

Reduction by 50% for filing by small entity (37 CFR 1.9, 1.27 & 1.28) -$280.00

Reduction by 75% for filing by micro entity (37 CFR 1.23(a)(1))

TOTAL FEES DUE = $280.00

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(2) If entry (2) is less than 20, change entry (2) to "20".
(3) If entry (4) is less than entry (5), entry (6) is "0".
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METHOD OF PAYMENT

☐ Check enclosed as payment. ☒ Credit Card Payment Form, Form PTO-2038(attached).

☐ Charge "TOTAL FEES DUE" to the Deposit Account No. below.

☐ No payment is enclosed and no charges to the Deposit Account are authorized at this time (unless specifically required to obtain a filing date).

GENERAL AUTHORIZATION

☒ If the above-noted "AMOUNT ENCLOSED" is not correct, the Commissioner is hereby authorized to credit any overpayment or charge any additional fees necessary to:

Deposit Account No. 503333
Deposit Account Name STEIN MCEWEN, LLP

☒ The Commissioner is also authorized to credit any overpayments or charge any additional fees required under 37 CFR 1.16 (filing fees) or 37 CFR 1.17 (processing fees) during the prosecution of this application, including any related application(s) claiming benefit hereof pursuant to 35 USC § 120 (e.g., continuations/divisionals/CIPs under 37 CFR 1.53(b) and/or continuations/divisionals/CPAs under 37 CFR 1.53(d)) to maintain pendency hereof or of any such related application.

SUBMITTED BY: STEIN MCEWEN, LLP
Typed Name Sungyeop Chung
Reg. No. 64,130
Signature

Date March 1, 2012
# 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 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.

Legal Instrument Examiner: /BRENDA HARRISON/

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.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@smiplaw.com
Office Action Summary

Application No. 12/450,066
Applicant(s) BAEK ET AL.
Examiner FRED PENG
Art Unit 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 to the finality notice 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) [x] Responsive to communication(s) filed on 10 September 2009
2a) [ ] This action is FINAL.
2b) [x] 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) [x] Claim(s) 1-18 is/are pending in the application.
   5a) Of the above claim(s) _____ is/are withdrawn from consideration.
6) [ ] Claim(s) _____ is/are allowed.
7) [x] Claim(s) 1-18 is/are rejected.
8) [x] Claim(s) 5, 14 is/are objected to.
9) [ ] Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10) [ ] The specification is objected to by the Examiner.
11) [x] The drawing(s) filed on 10 September 2009 is/are: a) [x] 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).
12) [ ] 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

13) [x] Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) [x] All
   b) [ ] Some * c) [ ] None of:
      1. [x] 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) [x] Notice of References Cited (PTO-892)
2) [ ] Notice of Draftsman's Patent Drawing Review (PTO-948)
3) [x] Information Disclosure Statement(s) (PTO/SB/08)
   Paper No(s)/Mail Date 09/10/09.
4) [ ] Interview Summary (PTO-413)
   Paper No(s)/Mail Date _____.
5) [ ] Notice of Informal Patent Application
6) [ ] Other: _____.
DETAILED ACTION

Status of Claims

1. Claims 1-18 are pending in this application.

Claim Objections

2. Claim 5 is objected to because of the following informalities: A typo “fro” in …execution data fro the application … is considered to be “from”. Appropriate correction is required.

3. Claim 14 is objected to because of the following informalities: A typo “if” in …a plurality if the digital TV applications… is considered to be “of”. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Cameron et al (US 2005/0028206).

Regarding Claims 1, 7 and 8, Cameron discloses a method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of:
(a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel (e.g., see Para 64 lines 1-10; when user selects a URL channel while watching a TV program);

(b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a channel identification information of the second channel, a device identification information of the receiver and a user identification information of a user of the receiver (e.g., see Para 64 lines 11-17; then switch to a web browser application event which includes at least a link address associated with the URL channel);

(c) transmitting the application switching event to an application providing server for providing the digital TV application (e.g., see Para 64 lines 13-17; the web browser then transmits the link address to a web server for a web page access); and

(d) receiving and executing the digital TV application corresponding to the application switching event (e.g., see Para 64 lines 17-19; the web browser then receives the corresponding web page associated with the TV program and executes the web page application for display).

Regarding Claim 2, Cameron further discloses the step (a) comprising receiving the channel changing event including the channel identification of the second channel (e.g., see Para 64 lines 5-10; such as a channel number or URL address).

Regarding Claims 3, 10 and 15, Cameron equally discloses receiving a minimum execution data required for executing the digital TV application from the application providing server (e.g., see Para 64; Para 71 lines 10-13; a home page at the web server is equated to a minimum execution data); and

executing the minimum execution data (then executes and displays the home page for further selection).
Regarding Claims 4, 11 and 16, Cameron further discloses the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application (e.g., see Para 64; Para 48; the home page includes at least one of an executable code, a display data and a resource data, such as standard HTML code for an initial screen of the digital TV application).

Regarding Claims 5, 12 and 17, Cameron equally discloses requesting an additional execution data (link data on the home page) required during the execution of the minimum execution data (home page) to the application providing server;

receiving the additional execution data from the application providing server; and

executing the additional execution data (e.g., see Para 64 lines 17-19; when the user selects a link on the home page to request additional information about a television program; or self service transaction such as pay-per-view or channel blocking, etc. e.g., see Para 41; Para 48).

Regarding Claims 6, 13 and 18, Cameron further discloses the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data (e.g., see Para 64 lines 17-19; Para 41; Para 48; the additional link data includes at least one of an executable code, a display data and a resource data such as HTML code for a screen to be displayed).

Regarding Claims 9 and 14, Cameron inherently discloses dividing each of a plurality of the digital TV application into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a) (e.g., see Para 41; Para 48; Para 64; each of a plurality of web servers includes a home page and corresponding link data such as self service transaction for users to access).
Conclusion

5. The prior art of record and not relied upon is considered pertinent to applicant's disclosure.
   - Reisman, US 2011/0219419
   - Ratsch, US 2010/0180295
   - Oh, US 2007/0022434
   - Patel, US 2004/0078829
   - Heredia, US 2003/0217369
   - Klosterman, US 2002/0092017
   - Westberg, US 7,984,468
   - Ludvig, US 7,216,170

6. Claims 1-18 are rejected.

Correspondence Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to FRED PENG whose telephone number is (571)270-1147. The examiner can normally be reached on Monday-Friday 09:30-19:30.

   If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hirli can be reached on (571) 272-3685. 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.

/Fred Peng/

Examiner, Art Unit 2426
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**Examiner**

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**Art Unit**

| 2426 |

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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. 1 Applicant’s unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language translation is attached. This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours 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.

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### EAST Search History

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**APPLICANTS**
- Wonjang Baek, Gyeonggi-do, KOREA, REPUBLIC OF;
- John Kim, Seoul, KOREA, REPUBLIC OF;
- Seong Baek Lee, Seoul, KOREA, REPUBLIC OF;

**CONTINUING DATA**
- This application is a 371 of PCT/KR2008/001616 03/21/2008

**FOREIGN APPLICATIONS**

**IF REQUIRED, FOREIGN FILING LICENSE GRANTED**
- SMALL ENTITY

**11/06/2009**

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**ADDRESS**

STEIN MCEWEN, LLP
1400 EYE STREET, NW
SUITE 300
WASHINGTON, DC 20005
UNITED STATES

**TITLE**

METHOD OF SWITCHING DIGITAL TV APPLICATION

**FILING FEE RECEIVED**

490

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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NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/18/2011.

• The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record (37 CFR 1.33).

/hsarwari/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101
NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 08/18/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.


/hsarwari/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Wonjang BAEK et al.

Application No. 12/450,066 Group Art Unit: 2423
Confirmation No. 1129

Filed: September 10, 2009 Examiner: Andrew Y. Koenig

For: METHOD OF SWITCHING DIGITAL TV APPLICATION

LETTER TO THE EXAMINER REQUESTING ENTRY OF CHANGE IN POWER OF ATTORNEY AND CORRESPONDENCE ADDRESS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the enclosed Power of Attorney, it is respectfully submitted that the attorneys of Stein McEwen, LLP, customer number 49,455, are associated with the instant application and all prior powers of attorney have been revoked.

Please direct all correspondence to the address associated with customer number 49,455, which is presently as follows:

Stein McEwen, LLP
1400 Eye St., NW
Suite 300
Washington, D.C. 20005

Respectfully submitted,

STEIN MCEWEN, LLP

Date: August 18, 2011 By: [Signature]

Michael D. Stein
Registration No. 37,240

1400 Eye St. N.W., Suite 300
Washington, D.C. 20005
Telephone: (202) 216-9505
Facsimile: (202) 216-9510
POWER OF ATTORNEY BY ASSIGNEE OF ENTIRE INTEREST
AND REVOCATION OF PRIOR POWERS

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The undersigned corporation is the assignee of record of the entire right, title, and interest of the patent applications and patents identified listed in the enclosed Attachment A:

REVOCATION OF PRIOR POWERS OF ATTORNEY

revokes all powers of attorney previously given, and

NEW POWER OF ATTORNEY

appoints the attorneys and/or agents of STEIN MCEWEN LLP under Customer No. 49,455 to prosecute and transact all business in the United States Patent and Trademark Office connected therewith.

CORRESPONDENCE CHANGE OF ADDRESS

All correspondence and telephone communications should be directed to the address associated with Customer Number 49,455, which is currently:

STEIN MCEWEN LLP
1400 EYE ST., N.W.
SUITE 300
WASHINGTON, D.C. 20005
PHONE: (202) 216-9505
FACSIMILE: (202) 216-9510
STATEMENT AND CERTIFICATION UNDER 37 CFR §3.73(B)

ANYPOINT MEDIA GROUP, a United States corporation, certifies that it is the assignee of the entire right, title and interest in the patent applications and patents identified in the enclosed Attachment A, by way of assignments, and those assignments were recorded in the USPTO with available data identified in the Attachment A and/or are attached hereto as indicated in Attachment A.

The undersigned is empowered to sign this certificate on behalf of the assignee.

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 are made with knowledge that willful false statements, and the like so made, are punishable by fine or imprisonment, or both, under Section 1001, Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

If there are any fees associated with the filing of this Statement and Certification, please charge and/or credit the same to Deposit Account No. 503333.

By:  
Name:  
Title:  

Dated 08/16/11  
Managing Director

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## Electronic Acknowledgement Receipt

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**Title of Invention:** METHOD OF SWITCHING DIGITAL TV APPLICATION

**First Named Inventor/Applicant Name:** Wonjang Baek

**Customer Number:** 20529

**Filer:** James Garrett McEwen/Dana Jenkins

**Filer Authorized By:** James Garrett McEwen

**Attorney Docket Number:** 30397U

**Receipt Date:** 18-AUG-2011

**Filing Date:** 10-SEP-2009

**Time Stamp:** 15:20:20

**Application Type:** U.S. National Stage under 35 USC 371

### Payment information:

Submitted with Payment | no

### File Listing:

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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.
Title: METHOD OF SWITCHING DIGITAL TV APPLICATION

Publication No. US-2010-0043043-A1
Publication Date: 02/18/2010

NOTICE OF PUBLICATION OF APPLICATION

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.

The publication may be accessed through the USPTO’s publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO’s Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101
NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office in its capacity as a Designated / Elected Office (37 CFR 1.495), has determined that the above identified international application has met the requirements of 35 U.S.C. 371, and is ACCEPTED for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above and the relevant dates are:

- **DATE OF RECEIPT OF 35 U.S.C. 371(c)(1), (c)(2) and (c)(4) REQUIREMENTS**: 09/10/2009

A Filing Receipt (PTO-103X) will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE "FILING DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1), (c)(2) and (c)(4) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN ABOVE**. The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363). Once the Filing Receipt has been received, send all correspondence to the Group Art Unit designated thereon.

The following items have been received:

- Indication of Small Entity Status
- Copy of the International Application filed on 09/10/2009
- Copy of the International Search Report filed on 09/10/2009
- Preliminary Amendments filed on 09/10/2009
- Information Disclosure Statements filed on 09/10/2009
- Oath or Declaration filed on 09/10/2009
- Small Entity Statement filed on 09/10/2009
- Request for Immediate Examination filed on 09/10/2009
- U.S. Basic National Fees filed on 09/10/2009
- Substitute Specification filed on 09/10/2009
- Assignment filed on 09/10/2009
- Priority Documents filed on 09/10/2009
- Power of Attorney filed on 09/10/2009
Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

Winston M Alvarado

Telephone: (703) 756-1466
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 submit a written request for a Filing Receipt Correction. 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)

Wonjang Baek, Gyeonggi-do, KOREA, REPUBLIC OF;
John Kim, Seoul, KOREA, REPUBLIC OF;
Seong Baek Lee, Seoul, KOREA, REPUBLIC OF;

Assignment For Published Patent Application

DREAMER, Burbank, CA

Power of Attorney: The patent practitioners associated with Customer Number 20529

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/KR2008/001616 03/21/2008

Foreign Applications

REPUBLIC OF KOREA 10-2007-0027893 03/22/2007

If Required, Foreign Filing License Granted: 11/06/2009

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is US 12/450,066

Projected Publication Date: 02/18/2010

Non-Publication Request: No

Early Publication Request: No

** SMALL ENTITY **
METHOD OF SWITCHING DIGITAL TV APPLICATION

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 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).
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1. \(\checkmark\) This is a FIRST submission of items concerning a submission under 35 U.S.C. 371.
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3. \(\checkmark\) This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.
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Items 11 to 20 below concern document(s) or information included:

11. \(\checkmark\) An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. \(\checkmark\) An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. \(\checkmark\) A preliminary amendment.
14. \(\checkmark\) An Application Data Sheet under 37 CFR 1.76.
15. \(\square\) A substitute specification.
16. \(\square\) A power of attorney and/or change of address letter.
17. \(\square\) A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821-1.825.

This collection of information is required by 37 CFR 1.414 and 1.491-1.492. 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 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering information, preparing, and submitting the completed 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: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
The following fees have been submitted

21. **Basic national fee (37 CFR 1.492(a))**
   - **$330**

22. **Examination fee (37 CFR 1.492(c))**
   - If the written opinion prepared by ISA/US indicates that the claims satisfy provisions of PCT Article 33 (1)-(4) **$0**
   - All other situations **$220**

23. **Search fee (37 CFR 1.492(b))**
   - If the written opinion of the ISA/US indicates that the claims satisfy provisions of PCT Article 33(1)-(4) **$0**
   - Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority **$100**
   - Previously communicated to the US by the IB **$430**
   - All other situations **$540**

**TOTAL OF 21, 22 AND 23 = $980.00**

- **Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing in compliance with 37 CFR 1.821(c) or (e) or computer program listing in an electronic medium) (37 CFR 1.492(j)).**
  - The fee is $270 for each additional 50 sheets of paper or fraction thereof.

Total Sheets | Extra Sheets | Number of each additional 50 or fraction thereof (round up to a whole number) | RATE | Amount
--- | --- | --- | --- | ---
21 - 100 | 0 / 50 | 0 | $270 | **$0.00**

Surcharges of $130.00 for furnishing any of the search fee, examination fee, or the oath or declaration after the date of commencement of the national stage (37 CFR 1.492(h)).

**CLAIMS** | **NUMBER FILED** | **NUMBER EXTRA** | **RATE** | **Amount**
--- | --- | --- | --- | ---
Total claims | 18 - 20 | 0 | **$52** | **$0.00**
Independent claims | 2 - 3 | 0 | **$220** | **$0.00**
MULTIPLE DEPENDENT CLAIM(S) (if applicable) | 0 | + **$390** | **$0.00**

**TOTAL OF ABOVE CALCULATIONS = $980.00**

- **Applicant claims small entity status. See 37 CFR 1.27. Fees above are reduced by 50%.

**SUBTOTAL = $490.00**

Processing fee of $130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(i)).

**TOTAL NATIONAL FEE = $490.00 + $40.00 = $530.00**

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property

Amount to be refunded: **$**
Amount to be charged: **$**
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.

a. ☒ A check in the amount of $530.00 ____________ to cover the above fee is enclosed.

b. ☐ Please charge my Deposit Account No. ____________ in the amount of $ ____________ to cover the above fees.
   A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account no. 14-0112 ____________ A duplicate copy of this sheet is enclosed.

d. ☐ Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038. The PTO-2038 should only be mailed or faxed to the USPTO. However, when paying the basic national fee, the PTO-2038 may NOT be faxed to the USPTO.
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NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b) must be filed and granted to restore the International Application to pending status.

SEND ALL CORRESPONDENCE TO:

Customer No. 20529

Gerald L. Meyer

41194

REGISTRATION NUMBER
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Wonjang BAEK, et al.

Appl. No.: Not Yet Assigned

Filed: September 10, 2009


Intl. Filing Date: 21 March 2008

For: METHOD OF SWITCHING DIGITAL TV APPLICATION (as amended)

TRANSMITTAL LETTER

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Submitted herewith for filing in the U.S. Patent and Trademark Office is the following:

(1) PTO Form-1390, three (3) pages;

(2) Application Data Sheet, six (6) pages;

(3) Cover Page of International Publication No.: WO 2008/115031 A1, one (1) page;

(4) Preliminary Amendment, fifty-six (56) pages, to be Examined, including twenty-two (22) pages of Substitute Specification – Clean Copy and twenty-three (23) pages of Substitute Specification – Marked-up Copy;

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(12) Our check no.: 89444 in the amount of $530.00 for the filing fees as a small entity ($490.00), as well as the recordation fee ($40.00); and

(13) Early Notification Postcard.

In the event this paper is not timely filed, Applicants petition for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,

THE NATH LAW GROUP

Jerald L. Meyer, Reg. No. 41,194
Derek Richmond, Reg. No. 45,771
Customer No. 20529

Date: September 10, 2009

THE NATH LAW GROUP
112 S. West Street, Alexandria, Virginia 22314
Tel: (703) 548-6284; Fax: (703) 683-8396
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371

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ATTORNEY'S DOCKET NUMBER
30397U

U.S. APPLICATION NO. (If known, see 27 CFR 2.7)
Not yet assigned

12/450066

TITLE OF INVENTION
METHOD OF SWITCHING DIGITAL TV APPLICATION (as amended)

APPLICANT(S) FOR DO/EO/US
BAEK, Wonjung; KIM, John; LEE, Seong Baek

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Page 1 of 3
Word version Copyright 2007 Forms in Word (www.formsinword.com).
20. Other items or information:

Cover Sheet of International Publication No. WO 2008/115031 A1; PCT/ISA/210 (International Search Report); PCT/IB/306 (Notification of the Recording of a Change); Transmittal Letter; Postcard for early notification of serial number; Copy of cited IDS reference

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Customer No. 20529

[Signature]

Gerald L. Meyer
NAME

41194
REGISTRATION NUMBER
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Wonjang BAEK, et al. Conf. No.: Not Yet Assigned
Appl. No.: Not Yet Assigned Examiner: Not Yet Assigned
Filed: September 10, 2009 Art Unit: Not Yet Assigned
Intl. Filing Date: 21 March 2008

For: METHOD OF SWITCHING DIGITAL TV APPLICATION (as amended)

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Derek Richmond, Reg. No. 45,771
Customer No. 20529

Date: September 10, 2009

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112 S. West Street, Alexandria, Virginia 22314
Tel: (703) 548-6284; Fax: (703) 683-8396
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Latin name::

Variety denomination name::

Petition included?:: No

Petition Type:: N/a

Licensed U.S. Govt. Agency:: N/a

Contract or Grant Numbers:: N/a

Secrecy Order in Parent Appl.?:: No

**Applicant Information (1)**

Applicant Authority type:: Inventor

Primary Citizenship Country:: KR

Status:: Full Capacity

Given Name:: Wonjang

Middle Name::

Family Name:: BAEK

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Domestic Priority Information

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Title: METHOD OF SWITCHING DIGITAL TV APPLICATION AND COMPUTER-READABLE MEDIUM HAVING THEREON PROGRAM PERFORMING FUNCTION EMBODYING THE SAME

Abstract: A method of switching a digital TV application and a computer-readable medium having thereon a program performing a function embodying the same are disclosed. In accordance with the method of the present invention, a channel changing event corresponding to a changing of a channel is used to minimize a time required for providing the digital TV application suitable for the changed channel.
[DESCRIPTION]

METHOD OF SWITCHING DIGITAL TV APPLICATION

[Technical Field]

The present invention relates to a method of switching a digital TV application, and more particularly to a method of switching a digital TV application that minimizes a time required for providing a digital TV application.

[Background Art]

An environment of a broadcasting is changing as a technology progresses and a demand of a viewer changes. Recently, an analog broadcasting is switched to a digital broadcasting, and a broadcast medium is diversified from a terrestrial broadcasting to a cable broadcasting, a satellite broadcasting and an IP-TV service using a high speed communication network.

The digital broadcast is capable of providing additional services in various filed such as sports, movies, home shoppings and musics because a capacity thereof is four to eight times that of the analog broadcasting. A wide variety of choices for the viewer is also provided since various types of the broadcasting such as the cable broadcasting, the satellite broadcasting, a DMB (Digital Multimedia Broadcasting) and the IP-TV are possible.

In addition, under a digital broadcasting environment, a digital TV application may be transmitted as well as a conventional TV program signal, and an interactivity may be embodied by associating with a communication network. Various data services using the
digital TV application is expected to play an important role in spreading the digital broadcasting since a viewer may easily use the digital TV application.

However, the provision of the digital TV application in accordance with an conventional art wherein the digital TV application is transmitted to a receiver via a broadcasting network and the receiver executes the digital TV application to be provided to the viewer has following drawbacks.

A head-end system is a system of a digital broadcasting provider for transmitting the TV program signal including audio/video data and the digital TV application to the receiver via the broadcasting network.

Herein, the broadcasting network refers to various broadcasting networks such as a terrestrial broadcasting network, a cable broadcasting network, a satellite broadcasting network, an IP-TV service using the high speed communication network, and a DMB network.

The receiver decodes the broadcast program signal and the digital TV application received from the head-end system to be provided to the viewer. For instance, the receiver may be a digital TV or a set-top box in compliance with the terrestrial broadcasting specification such as the ATSC and interactive data broadcasting specification such as DASE in case of a terrestrial digital broadcasting. The receiver may be a set-top box supporting the broadcasting specification such as OpenCable and DVB and a data broadcasting specification suitable for the broadcasting network such as OCAP and MHP in case of the cable broadcasting or the satellite broadcasting. The receiver may be a set-top box or a mobile communication terminal supporting a corresponding data broadcasting
specification in case of the IP-TV or the DMB.

The receiver may be embodied in a form of the set-top box, the television or a display device. In case of the set-top box, the receiver is connected to the display device to provide the digital broadcasting. In case of the DMB, the receiver may be is built into the mobile communication terminal or an independent DMB receiver. The receiver may be embodied in a form of a PC peripheral when the digital broadcasting is received by a personal computer. When the digital broadcasting is received by the personal computer, the digital broadcasting may be provided on a monitor connected to the personal computer.

However, when the digital TV application is transmitted via the broadcasting network, the digital TV application for a plurality of broadcasting channels are transmitted to the receiver.

For instance, the digital TV application is generally transmitted using a DSM-CC data/object carousel in the terrestrial broadcasting. In addition, the digital TV application is transmitted using an IP multicast scheme in the IP-TV.

Therefore, a number of the digital TV application is limited, and a size and a configuration the digital TV application are also limited.

For instance, a size of a data of the digital TV application corresponding to an HD broadcasting is larger than that of an SD broadcasting.

Therefore, the digital TV application corresponding to the HD broadcasting requires a large bandwidth for transmission, and the number of the digital TV application that can be transmitted via the broadcasting network is smaller than that of the SD broadcasting. In addition, a screen configuration or a scene configuration should be
minimized such that the digital TV application can be transmitted within the usable bandwidth. Accordingly, various configurations cannot be used for the digital TV application corresponding to the HD broadcasting.

That is, because the digital TV application is transmitted using a limited resource, the number of and the configuration of the digital TV application are limited.

Therefore, a personalized digital TV application cannot be provided for the viewer.

Moreover, a long time is required from selecting of the digital TV application to loading of the digital TV application.

That is, when the head-end system transmits the digital TV application, the head-end system divides the digital TV application into packets having a fixed size similar to the transmission of a conventional TV program packet. The receiver combines the received packets to generate the digital TV application. When the packet is lost during the transmission, the digital TV application cannot be executed for some cases.

A video data included in a digital broadcast program may be reproduced even when a portion of packets is lost by ignoring the lost packets and using other packets. However, the digital TV application cannot be executed when a portion of the packets thereof is lost. Therefore, an entirety of the data application should be re-transmitted, re-received and re-executed when an error occurs.

In addition, when the receiver receives the packet of the digital TV application, the packet should be combined according to a predetermined order, thereby required an additional time for the combination.

Moreover, even after the combination of the packets is complete, the digital TV
application cannot be loaded dividedly, and the entirety of the digital TV application should be loaded and executed. Therefore, an execution speed is slow and a resource of the receiver is excessively used.

Due to above-described problems, the time required for receiving, executing and providing the digital TV application is 10 to 30 seconds. Therefore, it is very inconvenient for the viewer.

Particularly, in case of a broadcast network using the communication network such as the IP-TV, a TV program for a channel requested by the receiver and the digital TV application corresponding to the channel are provided to the receiver from the head-end system rather than providing an entirety of the channel and the digital TV application. Such configuration using the communication network may be used for the cable broadcasting, the terrestrial broadcasting, the satellite broadcasting using the return channel and the DMB in order to provide more channels.

In accordance with the configuration, the changing of the channel is notified to the head-end system, and the head-end system extracts the TV program and the digital TV application for the corresponding channel to be transmitted to the receiver. The receiver receives and provides the TV program and the digital TV application.

Therefore, the head-end system should additionally carry out a switching of the TV program and the digital TV application for the corresponding channel to correspond to the changing of the channel.

Because the time for receiving the digital TV application by the receiver and providing the received digital TV application to the viewer to correspond to the changing of
the channel includes time for switching in the head-end system, more than 30 - 40 seconds of time are required to provide the digital TV application in the receiver. Therefore, it is very inconvenient for the viewer.

Moreover, the execution of the digital TV application is limited by a processing capacity or a storage capacity of the receiver.

That is, when a size of the digital TV application is too large, the digital TV application cannot be executed. Therefore, the number of and the configuration of the digital TV application are limited.

Accordingly, a method for minimizing the time required for transceiving and providing the digital TV application is needed.

[Disclosure of Invention]

[Technical Problem]

It is an object of the present invention to provide a method for switching a digital TV application that minimizes a time required for providing the digital TV application corresponding to a changing of a channel.

It is another object of the present invention to provide a method for switching a digital TV application wherein the time required for providing the digital TV application is minimized by dividing the digital TV application into a minimum execution data and an additional execution data and receiving and executing only a required data.

It is another object of the present invention to provide a method for switching a digital TV application wherein a limit in a number or a size of the digital TV application is
minimized and a personalized digital TV application may be provided based on a device identification information or a user identification information.

[Technical Solution]

In order to achieve above-described object of the present invention, there is provided a method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of: (a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel; (b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a channel identification information of the second channel, a device identification information of the receiver and a user identification information of a user of the receiver; (c) transmitting the application switching event to an application providing server for providing the digital TV application; and (d) receiving and executing the digital TV application corresponding to the application switching event.

 Preferably, the step (a) comprises (a-1) receiving the channel changing event including the channel identification information of the second channel.

 Preferably, the step (d) comprises: (d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and (d-2) executing the minimum execution data.

 Preferably, the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.
Preferably, the step (d) comprises: (d-3) requesting an additional execution data required during the execution of the minimum execution data to the application providing server; (d-4) receiving the additional execution data from the application providing server; and (d-5) executing the additional execution data.

Preferably, the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

There is also provided a method for switching a digital TV application in an application providing server for providing the digital TV application, the method comprising steps of: (a) receiving, from a receiver executing and providing the digital TV application, an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver; and (b) extracting and transmitting the digital TV application based on the application switching event to the receiver.

Preferably, the step (b) comprises (b-1) extracting the digital TV application to be provided to the receiver based on at least one of the channel identification information, the device identification information and the user identification information.

Preferably, the method in accordance with the present invention further comprises (c) dividing the digital TV application into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

Preferably, the step (b) comprises: (b-2) extracting the minimum execution data for
the digital TV application to be provided to the receiver based on the application switching event; and (b-3) transmitting the minimum execution data to the receiver.

Preferably, the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

Preferably, the step (b) comprises: (b-4) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and (b-5) extracting and transmitting the additional execution data to the receiver.

Preferably, the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

Preferably, dividing each of a plurality if the digital TV applications into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

Preferably, the step (b) comprises: (b-6) extracting the minimum execution data corresponding to the digital TV application to be provided to the receiver from the plurality of the digital TV applications based on the application switching event; and (b-7) transmitting the extracted minimum execution data to the receiver.

Preferably, the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

Preferably, the step (b) comprises: (b-8) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from
the receiver; and (b-9) extracting and transmitting the additional execution data corresponding to the transmission request to the receiver.

Preferably, the additional execution data transmitted in the step (b-9) includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application corresponding to the minimum execution data transmitted in the step (b-7).

[Advantageous Effects]

As described above, the time required for providing the digital TV application corresponding to the changing of the channel is minimizes in accordance with the present invention.

In addition, the time required for providing the digital TV application is minimized by dividing the digital TV application into the minimum execution data and the additional execution data and receiving and executing only the required data.

Moreover, the limit in the number of or the size of the digital TV application is minimized.

The personalized digital TV application may be provided based on the device identification information or the user identification information.

[Brief Description of the Drawings]

Fig. 1 is a flow diagram exemplifying a method for switching a digital TV application in accordance with the present invention.
Fig. 2 is a flow diagram exemplifying another method for switching a digital TV application in accordance with the present invention.

[Best Mode for Carrying Out the Invention]

A method for switching a digital TV application in accordance with the present invention will now be described in detail with reference to the accompanied drawings.

Fig. 1 is a flow diagram exemplifying a method for switching a digital TV application in accordance with the present invention wherein the method is embodied in a receiver for receiving and executing the digital TV application.

Referring to Fig. 1, a channel changing event is received (S110).

The channel changing event is generated when a viewer or a user changes a first channel to a second channel while watching the first channel. When the channel changing event is generated, the receiver receives the digital TV application for the second channel and provides the received digital TV application to the user.

For instance, the channel changing event is generated when the user changes the channel using a remote controller, and the receiver receives the channel changing event from the remote controller.

The channel changing event includes a channel identification information of the changed channel, i.e. the second channel.

The channel identification information of the second channel may be a channel number of the second channel wherein the channel number may include a physical channel number or a logical channel number. Alternately, the channel number may be represented in
a form of a packet ID.

When the channel changing event is received in the step S110, the receiver generates an application switching event in order to receive the digital TV application suitable for the second channel (S130).

The application switching event may include at least one of the channel identification information of the second channel, a device identification information of the receiver and a user identification information of the receiver.

The channel identification information of the second channel may be used to received the digital TV application suitable for the second channel.

The device identification information and the user identification information may be used to receive the digital TV application suitable for the receiver and the user, respectively.

That is, the device identification information or the user identification information of the receiver may be used as a basic data for providing a personalized digital TV application when a server providing the digital TV application extracts the digital TV application to be transmitted to the receiver.

Thereafter, the application switching event generated in the step S130 is transmitted to an application providing server that provides the digital TV application (S150).

The application providing server stores the digital TV application corresponding to each channel. In addition, the application providing server provides the digital TV application corresponding to the application switching event according to a request of the
receiver.

The application providing server may store the digital TV application according to a predetermined profile as well as the digital TV application according to the channel, and transmit the digital TV application corresponding to the device identification information or the user identification information received from the receiver according to the request of the receiver.

The application switching event is transmitted to the application providing server via a return channel.

Preferably, the return channel may include a high speed communication network such as VDSL and FTTH.

The application switching event is transmitted to the application providing server rather than to the head-end system.

The head-end system requires a longer switching time and a transmission scheme thereof is not suitable for the digital TV application. Thus, the application switching event is transmitted to the application providing server that is capable of a fast switching and transmitting the digital TV application in high speed using the return channel.

The time required for switching and receiving the digital TV application is minimized through the steps S150 and S170.

Thereafter, the receiver receives and executes the digital TV application corresponding to the application switching event (S170).

The digital TV application may be executed when an entirety of the digital TV application is received similar to the conventional art.
However, a number, the size, and the configuration of the provided digital TV application may be limited.

Therefore, it is preferable that the digital TV application is received and provided as describe below.

Firstly, the digital TV application is divided into a minimum execution data and an additional execution data, the application providing server may transmit the minimum execution data and the additional execution data, and the receiver receives and executes the minimum execution data and the additional execution data separately.

The minimum execution data may include at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application. The additional execution data may include at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

The executable code is an independently executable code to correspond to a scene. That is, the executable code is independently executable for each scene contrary to that of the conventional art that is executable for the entirety of the digital TV application. Therefore, the executable code is required for each scene of the digital TV application.

The display data is an element displayed on a screen when a mobile application is executed wherein a plurality of scenes corresponding to the user input are divided and stored according to the user input for each scene.

The resource data refers to a data that may be additionally displayed such as a control box, a text box and an image other than the display data.
In accordance with the prior art, the entirety of the digital TV application is stored for an entirety of scenes. In addition, the receiver receives and executes the entirety of the digital TV application.

However, in accordance with the present invention, the application providing server divides and stores the digital TV application for each scene. That is, the application providing server divides and stores the digital TV application into the minimum execution data and the additional execution data in advance so as to include the executable code for the initial screen and other screen, a display data constituting the screen and the resource data including the image. Thereafter, the application providing server transmits the minimum execution data or the additional execution data according to the request of the receiver, and the receiver executes the minimum execution data or the additional execution data to provide the digital TV application.

The key feature of the present invention is referred to as a "scene-by-scene loading".

Loading and executing the digital TV application divided into the minimum execution data and the additional execution data are described below in detail.

The receiver receives and executes the minimum execution data required for executing the digital TV application from the application providing server.

The minimum execution data includes at least one of an executable code, a display data and a resource data for the initial screen, i.e. a screen that is provided first when the digital TV application is executed.

Thereafter, the receiver requests the additional execution data required during the
execution of the minimum execution data to the application providing server. The receiver then receives and executes the additional execution data from the application providing server.

That is, after the receiver provides the initial screen through the minimum execution data, a data for a second scene (or a second screen), i.e. the additional execution data is received and executed.

When the digital TV application divided into the minimum execution data and the additional execution data is loaded scene-by-scene, the limitation of the number, the size and the configuration of the digital TV application that may be provide by the digital broadcasting system may be minimized.

In accordance with the conventional method for providing the digital TV application, because the digital TV application generated to include an entirety of the scene is transmitted from the head-end system to the receiver and the receiver receives and executes the same, a bandwidth or a resource of the receiver is not efficiently utilized.

However, in accordance with the present invention, because the digital TV application is divided into the minimum execution data and the additional execution data and only the required data is received and provided through scene-by-scene loading, the bandwidth or the resource of the receiver is efficiently utilized even for the digital TV application in the HD broadcasting.

In addition, the transmission of the digital TV application between the application providing server and the receiver is carried out through the return channel.

Therefore, a limit of the bandwidth due to the transmission of the digital TV
application may be minimized when the high speed communication network such as the VDSL and the FTTH is used.

[Mode for the Invention]

Fig. 2 is a flow diagram exemplifying another method for switching a digital TV application in accordance with the present invention wherein the method is embodied in the application providing server providing the digital TV application according to the request of the receiver.

Referring to Fig. 2, the application switching event is received from the receiver that executes and provides the digital TV application (S210).

As described above, the application switching event may include at least one of the channel identification information of the second channel, the device identification information of the receiver and the user identification information of the receiver.

The application switching event is received through the return channel.

Preferably, the return channel may include the high speed communication network such as the VDSL and the FTTH.

Thereafter, the digital TV application to be provided to the receiver is extracted based on the application switching event received in the step S210 (S230).

The process of extracting the digital TV application is described below in detail.

Firstly, the digital TV application suitable for the second channel is extracted based on the channel identification information of the second channel.

That is, the application providing server configures, in advance, the digital TV
application for each channel in a form of a from-to table based on a channel information for instance. Thereafter, the application providing server extracts the digital TV application corresponding to the channel identification information of the second channel by referring to the from-to table.

In addition, the application providing server may extract the personalized digital TV application based on the device identification information or the user identification information of the receiver suitable for the receiver or the viewer.

That is, the application providing server configures the digital TV application that is to be provided according to the device identification information or the user identification information in the form of the from-to table based on a profile. Thereafter, the application providing server extracts the digital TV application corresponding to a certain device identification information or a certain user identification information by referring to the from-to table.

The digital TV application is extracted according to above-described process.

Thereafter, the digital TV application extracted in the step S230 is transmitted to the receiver (S250).

The application providing server may transmit the digital TV application to the receiver via the return channel.

Preferably, the return channel may include the high speed communication network such as the VDSL and the FTTH.

On the other hand, the extraction and the transmission of the digital TV application in the step S230 and S250 may be carried out similar to the conventional art wherein the
entirety of the digital TV application is extracted and transmitted.

However, the number, the size, and the configuration of the digital TV application may be limited.

Therefore, it is preferable that the digital TV application is extracted and transmitted as described below.

Firstly, the digital TV application is divided into the minimum execution data and the additional execution data. The application providing server transmits each of the minimum execution data and the additional execution data to the receiver, and the receiver receives and executes each of the minimum execution data and the additional execution data.

The minimum execution data and the additional execution data are identical to the minimum execution data and the additional execution data described with reference to Fig. 1.

That is, the application providing server stores the digital TV application by dividing into the minimum execution data and the additional execution data in advance prior to carrying out the step S210.

Thereafter, when the application switching event is received (S210), the application providing server extracts the minimum execution data corresponding to the digital TV application that is to be provided to the receiver (S230).

When the extraction of the minimum execution data is complete, the application providing server transmits the minimum execution data to the receiver (S250). The receiver executes the received minimum execution data to be provided to the viewer.
The receiver requests the additional execution data required during the execution of the digital TV application to the application providing server.

When the transmission request of the additional execution data is received, the application providing server extracts the requested additional execution data (S230). Thereafter, the application providing server transmits the extracted additional execution data to the receiver (S250). The receiver then receives and executes the additional execution data.

As described above, when the digital TV application divided into the minimum execution data and the additional execution data is loaded scene-by-scene, the limitation of the number, the size and the configuration of the digital TV application that may be provide by the digital broadcasting system may be minimized.

In addition, when a plurality of the digital TV applications exist, the extraction and the transmission of the digital TV application may be carried out as follows.

Prior to carrying out the step S210, the application providing server divides the plurality of the digital TV application into a plurality of the minimum execution data and a plurality of the additional execution data and stores the same in advance. The plurality of the minimum execution data and the plurality of the additional execution data are identical to the minimum execution data and the additional execution data described with reference to Fig. 1.

Thereafter, when the application switching event is received (S210), the application providing server extracts the minimum execution data to be provided to the receiver. That is, the application providing server extracts the minimum execution data that is to be provided
to the receiver from the plurality of the minimum execution data.

Thereafter, the application providing server transmits the extracted minimum execution data to the receiver (S250). Thereafter, the receiver executes the minimum execution data transmitted by the application providing server to be provided to the viewer.

Thereafter, the receiver requests the additional execution data required during the execution of the minimum execution data to the application providing server.

The application providing server then extracts the additional execution data requested by the receiver (S230), and transmits the extracted additional execution data to the receiver (S250).

The receiver then executes the additional execution data received from the application providing server.

In accordance with above-described configuration, the additional execution data may be selectively reused for the plurality of the digital TV applications. Therefore, a storage capacity of the application providing server may be maximized.

In accordance with the present invention, the reuse of the digital TV application may be reinforced. For instance, the minimum execution data or the additional execution data representing a same executable code, a same screen or a same resource may be reused without a recreation thereof.

While the present invention has been particularly shown and described with reference to the preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be effected therein without departing from the spirit and scope of the invention as defined by the appended claims.
[Industrial Applicability]

As described above, the time required for providing the digital TV application corresponding to the changing of the channel is minimized in accordance with the present invention.

In addition, the time required for providing the digital TV application is minimized by dividing the digital TV application into the minimum execution data and the additional execution data and receiving and executing only the required data.

Moreover, the limit in the number of or the size of the digital TV application is minimized.

The personalized digital TV application may be provided based on the device identification information or the user identification information.
DECLARATION FOR PATENT APPLICATION
Attorney Docket: 30397U
Page 1 of 2

As a below-named inventor(s), I/we hereby declare that:

My/Our residence(s), post office address(es) and citizenship(s) is/are as stated below next to my/our name(s).

I/We believe I/we am/are the original inventor, first and sole (if only one name is listed below) or the original, first and joint inventors (if plural names are listed below) of the subject matter which is claimed, and for which a patent is sought on the invention entitled:

METHOD OF SWITCHING DIGITAL TV APPLICATION

the specification of which: (check one)

[X] was filed on 31 March 2008, as Serial No. PCT/KR2008/001616,

and was amended on ______________ (if applicable).

I/We hereby state that we have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I/We acknowledge the duty to disclose information which is material to the patentability of this application as defined by 37 CFR § 1.56.

I/We hereby claim foreign priority benefits under 35 U.S.C. § 119 of any foreign application(s) for patent or inventor's certificate listed below, and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

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U.S.A.

I/We hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by 35 U.S.C. § 112, first paragraph, I/we acknowledge the duty to disclose material information as defined in 37 CFR § 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

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<th>U.S. Application Serial No.</th>
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I/we hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below:

Application Number(s)                                                                 Filing Date

We 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 are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Country of Citizenship: Republic of Korea

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Wonjang BAEK, et al.

Appl. No.: Not Yet Assigned

Filed: September 10, 2009


Intl. Filing Date: 21 March 2008

For: METHOD OF SWITCHING DIGITAL TV APPLICATION (as amended)

PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Prior to examination on the merits and calculating the filing fee for the national phase application under 35 USC 371, filed herewith, please enter the following amendments:

Amendments to the Specification begin on page 2 of this paper.

An Abstract appears on page 4 of this paper.

Amendments to the Claims begin on page 5 of this paper.

Remarks begin on page 10 of this paper.

A Conclusion appears on page 11 of this paper.
Amendments to the Specification:

On page 1 of the Specification, please insert the cross-reference to the prior application after the title and before the heading of the first paragraph (Field of the Invention) by adding the following:

-- This is a National Phase Application filed under 35 USC 371 of International Application No. PCT/KR2008/001616, filed on March 21, 2008, which claims foreign priority benefit under 35 USC 119 of Korean Application No. 10-2007-0027893, filed on March 22, 2007, the entire content of each of which is hereby incorporated herein by reference in its entirety. --
In the Specification:

Please enter the twenty-two (22) pages of a Substitute Specification attached hereto; following the Conclusion page of this amendment.
ABSTRACT:

Please place the following Abstract on a new last page of the Application.

A method of switching a digital TV application is disclosed. In accordance with the method of the present invention, a channel changing event corresponding to a changing of a channel is used to minimize a time required for providing the digital TV application suitable for a changed channel.
Amendments to the Claims

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

1. (Original) A method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of:

   (a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel;

   (b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a channel identification information of the second channel, a device identification information of the receiver and a user identification information of a user of the receiver;

   (c) transmitting the application switching event to an application providing server for providing the digital TV application; and

   (d) receiving and executing the digital TV application corresponding to the application switching event.

2. (Original) The method in accordance with claim 1, wherein the step (a) comprises (a-1) receiving the channel changing event including the channel identification information of the second channel.

3. (Original) The method in accordance with claim 1, wherein the step (d)
comprises:

(d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and

(d-2) executing the minimum execution data.

4. (Original) The method in accordance with claim 3, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

5. (Original) The method in accordance with claim 3, wherein the step (d) comprises:

(d-3) requesting an additional execution data required during the execution of the minimum execution data to the application providing server;

(d-4) receiving the additional execution data from the application providing server; and

(d-5) executing the additional execution data.

6. (Original) The method in accordance with claim 5, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

7. (Original) A method for switching a digital TV application in an application
providing server for providing the digital TV application, the method comprising steps of:

(a) receiving, from a receiver executing and providing the digital TV application, an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver; and

(b) extracting and transmitting the digital TV application based on the application switching event to the receiver.

8. (Original) The method in accordance with claim 7, wherein the step (b) comprises (b-1) extracting the digital TV application to be provided to the receiver based on at least one of the channel identification information, the device identification information and the user identification information.

9. (Original) The method in accordance with claim 7, further comprising (c) dividing the digital TV application into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

10. (Original) The method in accordance with claim 9, wherein the step (b) comprises:

(b-2) extracting the minimum execution data for the digital TV application to be provided to the receiver based on the application switching event; and

(b-3) transmitting the minimum execution data to the receiver.
11. (Original) The method in accordance with claim 10, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

12. (Original) The method in accordance with claim 10, wherein the step (b) comprises:

   (b-4) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and

   (b-5) extracting and transmitting the additional execution data to the receiver.

13. (Original) The method in accordance with claim 12, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

14. (Original) The method in accordance with claim 7, wherein dividing each of a plurality if the digital TV applications into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

15. (Original) The method in accordance with claim 14, wherein the step (b) comprises:
(b-6) extracting the minimum execution data corresponding to the digital TV application to be provided to the receiver from the plurality of the digital TV applications based on the application switching event; and

(b-7) transmitting the extracted minimum execution data to the receiver.

16. (Original) The method in accordance with claim 15, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

17. (Original) The method in accordance with claim 15, wherein the step (b) comprises:

(b-8) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and

(b-9) extracting and transmitting the additional execution data corresponding to the transmission request to the receiver.

18. (Original) The method in accordance with claim 17, wherein the additional execution data transmitted in the step (b-9) includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application corresponding to the minimum execution data transmitted in the step (b-7).

19. (Cancelled)
REMARKS

The above amendment has been made to the specification to incorporate by reference the earlier filed applications.

The specification has also been amended in order to incorporate extensive changes. No new matter has been added.

A marked-up substitute specification is attached behind the clean substitute specification to show the changes.

An Abstract has been newly added and is in proper U.S. form.

The amendments to the claims have been made to correspond with the amended specification.

Upon entry of the above amendment, claim 19 is cancelled and claims 1 – 18 are pending in this application. The amendments to the claims do not introduce new matter within the meaning of 35 U.S.C. §132.

Applicants reserve the right to reintroduce any cancelled subject matter to this application or to any child applications.

Accordingly, the examiner is respectfully requested to enter the above amendment before examination.

Favorable consideration is respectfully requested.
CONCLUSION

The Examiner is welcomed to telephone the undersigned attorney if any questions or comments should arise.

In the event this paper is not timely filed, Applicants hereby petition for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,

THE NATH LAW GROUP

Date: September 19, 2009

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[DESCRIPTION]

METHOD OF SWITCHING DIGITAL TV APPLICATION AND COMPUTER-READABLE MEDIUM HAVING THEREON PROGRAM PERFORMING FUNCTION EMBODYING THE-SAME

[Technical Field]

The present invention relates to a method of switching a digital TV application and a computer-readable medium having thereon a program performing a function embodying the same, and more particularly to a method of switching a digital TV application and a computer-readable medium having thereon a program performing a function embodying the same that minimizes a time required for providing a digital TV application.

[Background Art]

An environment of a broadcasting is changing as a technology progresses and a demand of a viewer changes. Recently, an analog broadcasting is switched to a digital broadcasting, and a broadcast medium is diversified from a terrestrial broadcasting to a cable broadcasting, a satellite broadcasting and an IP-TV service using a high speed communication network.

The digital broadcast is capable of providing additional services in various filed such as sports, movies, home shoppings and musics because a capacity thereof is four to eight times that of the analog broadcasting. A wide variety of choices for the viewer is also provided since various types of the broadcasting such as the cable broadcasting, the satellite
broadcasting, a DMB (Digital Multimedia Broadcasting) and the IP-TV are possible.

In addition, under a digital broadcasting environment, a digital TV application may be transmitted as well as a conventional TV program signal, and an interactivity may be embodied by associating with a communication network. Various data services using the digital TV application is expected to play an important role in spreading the digital broadcasting since a viewer may easily use the digital TV application.

However, the provision of the digital TV application in accordance with an conventional art wherein the digital TV application is transmitted to a receiver via a broadcasting network and the receiver executes the digital TV application to be provided to the viewer has following drawbacks.

A head-end system is a system of a digital broadcasting provider for transmitting the TV program signal including audio/video data and the digital TV application to the receiver via the broadcasting network.

Herein, the broadcasting network refers to various broadcasting networks such as a terrestrial broadcasting network, a cable broadcasting network, a satellite broadcasting network, an IP-TV service using the high speed communication network, and a DMB network.

The receiver decodes the broadcast program signal and the digital TV application received from the head-end system to be provided to the viewer. For instance, the receiver may be a digital TV or a set-top box in compliance with the terrestrial broadcasting specification such as the ATSC and interactive data broadcasting specification such as DASE in case of a terrestrial digital broadcasting. The receiver may be a set-top box
supporting the broadcasting specification such as OpenCable and DVB and a data broadcasting specification suitable for the broadcasting network such as OCAP and MHP in case of the cable broadcasting or the satellite broadcasting. The receiver may be a set-top box or a mobile communication terminal supporting a corresponding data broadcasting specification in case of the IP-TV or the DMB.

The receiver may be embodied in a form of the set-top box, the television or a display device. In case of the set-top box, the receiver is connected to the display device to provide the digital broadcasting. In case of the DMB, the receiver may be is built into the mobile communication terminal or an independent DMB receiver. The receiver may be embodied in a form of a PC peripheral when the digital broadcasting is received by a personal computer. When the digital broadcasting is received by the personal computer, the digital broadcasting may be provided on a monitor connected to the personal computer.

However, when the digital TV application is transmitted via the broadcasting network, the digital TV application for a plurality of broadcasting channels are transmitted to the receiver.

For instance, the digital TV application is generally transmitted using a DSM-CC data/object carousel in the terrestrial broadcasting. In addition, the digital TV application is transmitted using an IP multicast scheme in the IP-TV.

Therefore, a number of the digital TV application is limited, and a size and a configuration the digital TV application are also limited.

For instance, a size of a data of the digital TV application corresponding to an HD broadcasting is larger than that of an SD broadcasting.
Therefore, the digital TV application corresponding to the HD broadcasting requires a large bandwidth for transmission, and the number of the digital TV application that can be transmitted via the broadcasting network is smaller than that of the SD broadcasting. In addition, a screen configuration or a scene configuration should be minimized such that the digital TV application can be transmitted within the usable bandwidth. Accordingly, various configurations cannot be used for the digital TV application corresponding to the HD broadcasting.

That is, because the digital TV application is transmitted using a limited resource, the number of and the configuration of the digital TV application are limited.

Therefore, a personalized digital TV application cannot be provided for the viewer.

Moreover, a long time is required from selecting of the digital TV application to loading of the digital TV application.

That is, when the head-end system transmits the digital TV application, the head-end system divides the digital TV application into packets having a fixed size similar to the transmission of a conventional TV program packet. The receiver combines the received packets to generate the digital TV application. When the packet is lost during the transmission, the digital TV application cannot be executed for some cases.

A video data included in a digital broadcast program may be reproduced even when a portion of packets is lost by ignoring the lost packets and using other packets. However, the digital TV application cannot be executed when a portion of the packets thereof is lost. Therefore, an entirety of the data application should be re-transmitted, re-received and re-executed when an error occurs.
In addition, when the receiver receives the packet of the digital TV application, the packet should be combined according to a predetermined order, thereby required an additional time for the combination.

Moreover, even after the combination of the packets is complete, the digital TV application cannot be loaded dividedly, and the entirety of the digital TV application should be loaded and executed. Therefore, an execution speed is slow and a resource of the receiver is excessively used.

Due to above-described problems, the time required for receiving, executing and providing the digital TV application is 10 to 30 seconds. Therefore, it is very inconvenient for the viewer.

Particularly, in case of a broadcast network using the communication network such as the IP-TV, a TV program for a channel requested by the receiver and the digital TV application corresponding to the channel are provided to the receiver from the head-end system rather than providing an entirety of the channel and the digital TV application. Such configuration using the communication network may be used for the cable broadcasting, the terrestrial broadcasting, the satellite broadcasting using the return channel and the DMB in order to provide more channels.

In accordance with the configuration, the changing of the channel is notified to the head-end system, and the head-end system extracts the TV program and the digital TV application for the corresponding channel to be transmitted to the receiver. The receiver receives and provides the TV program and the digital TV application.

Therefore, the head-end system should additionally carry out a switching of the TV
program and the digital TV application for the corresponding channel to correspond to the changing of the channel.

Because the time for receiving the digital TV application by the receiver and providing the received digital TV application to the viewer to correspond to the changing of the channel includes time for switching in the head-end system, more than 30 - 40 seconds of time are required to provide the digital TV application in the receiver. Therefore, it is very inconvenient for the viewer.

Moreover, the execution of the digital TV application is limited by a processing capacity or a storage capacity of the receiver.

That is, when a size of the digital TV application is too large, the digital TV application cannot be executed. Therefore, the number of and the configuration of the digital TV application are limited.

Accordingly, a method for minimizing the time required for transceiving and providing the digital TV application is needed.

[Disclosure of Invention]

[Technical Problem]

It is an object of the present invention to provide a method for switching a digital TV application that minimizes a time required for providing the digital TV application corresponding to a changing of a channel.

It is another object of the present invention to provide a method for switching a digital TV application wherein the time required for providing the digital TV application is
minimized by dividing the digital TV application into a minimum execution data and an
additional execution data and receiving and executing only a required data.

It is another object of the present invention to provide a method for switching a
digital TV application wherein a limit in a number or a size of the digital TV application is
minimized and a personalized digital TV application may be provided based on a device
identification information or a user identification information.

It is yet another object of the present invention to provide a computer-readable
medium having thereon a program performing a function embodying a method for
switching the digital TV application.

[Technical Solution]

In order to achieve above-described object of the present invention, there is
provided a method for switching a digital TV application in a receiver for receiving and
providing the digital TV application, the method comprising steps of: (a) receiving a
channel changing event corresponding to a channel changing from a first channel to a
second channel; (b) generating an application switching event corresponding to the digital
TV application suitable for the second channel, the application switching event including at
least one of a channel identification information of the second channel, a device
identification information of the receiver and a user identification information of a user of
the receiver; (c) transmitting the application switching event to an application providing
server for providing the digital TV application; and (d) receiving and executing the digital
TV application corresponding to the application switching event.
Preferably, the step (a) comprises (a-1) receiving the channel changing event including the channel identification information of the second channel.

Preferably, the step (d) comprises: (d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and (d-2) executing the minimum execution data.

Preferably, the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

Preferably, the step (d) comprises: (d-3) requesting an additional execution data required during the execution of the minimum execution data to the application providing server; (d-4) receiving the additional execution data from the application providing server; and (d-5) executing the additional execution data.

Preferably, the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

There is also provided a method for switching a digital TV application in an application providing server for providing the digital TV application, the method comprising steps of: (a) receiving, from a receiver executing and providing the digital TV application, an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver; and (b) extracting and transmitting the digital TV application based on the application switching event to the receiver.

Preferably, the step (b) comprises (b-1) extracting the digital TV application to be
provided to the receiver based on at least one of the channel identification information, the
device identification information and the user identification information.

Preferably, the method in accordance with the present invention further comprises
(c) dividing the digital TV application into a minimum execution data and an additional
execution data and storing the minimum execution data and the additional execution data
prior to carrying out the step (a).

Preferably, the step (b) comprises: (b-2) extracting the minimum execution data for
the digital TV application to be provided to the receiver based on the application switching
event; and (b-3) transmitting the minimum execution data to the receiver.

Preferably, the minimum execution data includes at least one of an executable code,
a display data and a resource data for an initial screen of the digital TV application.

Preferably, the step (b) comprises: (b-4) receiving a transmission request for the
additional execution data required during an execution of the minimum execution data from
the receiver; and (b-5) extracting and transmitting the additional execution data to the
receiver.

Preferably, the additional execution data includes at least one of an executable code,
a display data and a resource data for a screen to be displayed corresponding to a user input
during the execution of the digital TV application based on the minimum execution data.

Preferably, dividing each of a plurality if the digital TV applications into a
minimum execution data and an additional execution data and storing the minimum
execution data and the additional execution data prior to carrying out the step (a).

Preferably, the step (b) comprises: (b-6) extracting the minimum execution data
corresponding to the digital TV application to be provided to the receiver from the plurality of the digital TV applications based on the application switching event; and (b-7) transmitting the extracted minimum execution data to the receiver.

Preferably, the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

Preferably, the step (b) comprises: (b-8) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and (b-9) extracting and transmitting the additional execution data corresponding to the transmission request to the receiver.

Preferably, the additional execution data transmitted in the step (b-9) includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application corresponding to the minimum execution data transmitted in the step (b-7).

[Advantageous Effects]

As described above, the time required for providing the digital TV application corresponding to the changing of the channel is minimizes in accordance with the present invention.

In addition, the time required for providing the digital TV application is minimized by dividing the digital TV application into the minimum execution data and the additional execution data and receiving and executing only the required data.

Moreover, the limit in the number of or the size of the digital TV application is
minimized.

The personalized digital TV application may be provided based on the device identification information or the user identification information.

[Brief Description of the Drawings]

Fig. 1 is a flow diagram exemplifying a method for switching a digital TV application in accordance with the present invention.

Fig. 2 is a flow diagram exemplifying another method for switching a digital TV application in accordance with the present invention.

[Best Mode for Carrying Out the Invention]

A method for switching a digital TV application and a computer readable medium having thereon a program performing a function embodying the same in accordance with the present invention will now be described in detail with reference to the accompanied drawings.

Fig. 1 is a flow diagram exemplifying a method for switching a digital TV application in accordance with the present invention wherein the method is embodied in a receiver for receiving and executing the digital TV application.

Referring to Fig. 1, a channel changing event is received (S110).

The channel changing event is generated when a viewer or a user changes a first channel to a second channel while watching the first channel. When the channel changing event is generated, the receiver receives the digital TV application for the second channel
and provides the received digital TV application to the user.

For instance, the channel changing event is generated when the user changes the channel using a remote controller, and the receiver receives the channel changing event from the remote controller.

The channel changing event includes a channel identification information of the changed channel, i.e. the second channel.

The channel identification information of the second channel may be a channel number of the second channel wherein the channel number may include a physical channel number or a logical channel number. Alternately, the channel number may be represented in a form of a packet ID.

When the channel changing event is received in the step S110, the receiver generates an application switching event in order to receive the digital TV application suitable for the second channel (S130).

The application switching event may include at least one of the channel identification information of the second channel, a device identification information of the receiver and a user identification information of the receiver.

The channel identification information of the second channel may be used to received the digital TV application suitable for the second channel.

The device identification information and the user identification information may be used to receive the digital TV application suitable for the receiver and the user, respectively.

That is, the device identification information or the user identification information
of the receiver may be used as a basic data for providing a personalized digital TV application when a server providing the digital TV application extracts the digital TV application to be transmitted to the receiver.

Thereafter, the application switching event generated in the step S130 is transmitted to an application providing server that provides the digital TV application (S150).

The application providing server stores the digital TV application corresponding to each channel. In addition, the application providing server provides the digital TV application corresponding to the application switching event according to a request of the receiver.

The application providing server may store the digital TV application according to a predetermined profile as well as the digital TV application according to the channel, and transmit the digital TV application corresponding to the device identification information or the user identification information received from the receiver according to the request of the receiver.

The application switching event is transmitted to the application providing server via a return channel.

Preferably, the return channel may include a high speed communication network such as VDSL and FTTH.

The application switching event is transmitted to the application providing server rather than to the head-end system.

The head-end system requires a longer switching time and a transmission scheme
thereof is not suitable for the digital TV application. Thus, the application switching event
is transmitted to the application providing server that is capable of a fast switching and
transmitting the digital TV application in high speed using the return channel.

The time required for switching and receiving the digital TV application is
minimized through the steps S150 and S170.

Thereafter, the receiver receives and executes the digital TV application
 Corresponding to the application switching event (S170).

The digital TV application may be executed when an entirety of the digital TV
application is received similar to the conventional art.

However, a number, the size, and the configuration of the provided digital TV
application may be limited.

Therefore, it is preferable that the digital TV application is received and provided
as describe below.

Firstly, the digital TV application is divided into a minimum execution data and an
additional execution data, the application providing server may transmit the minimum
execution data and the additional execution data, and the receiver receives and executes the
minimum execution data and the additional execution data separately.

The minimum execution data may include at least one of an executable code, a
display data and a resource data for an initial screen of the digital TV application. The
additional execution data may include at least one of an executable code, a display data and
a resource data for a screen to be displayed corresponding to a user input during the
execution of the digital TV application based on the minimum execution data.
The executable code is an independently executable code to correspond to a scene. That is, the executable code is independently executable for each scene contrary to that of the conventional art that is executable for the entirety of the digital TV application. Therefore, the executable code is required for each scene of the digital TV application.

The display data is an element displayed on a screen when a mobile application is executed wherein a plurality of scenes corresponding to the user input are divided and stored according to the user input for each scene.

The resource data refers to a data that may be additionally displayed such as a control box, a text box and an image other than the display data.

In accordance with the prior art, the entirety of the digital TV application is stored for an entirety of scenes. In addition, the receiver receives and executes the entirety of the digital TV application.

However, in accordance with the present invention, the application providing server divides and stores the digital TV application for each scene. That is, the application providing server divides and stores the digital TV application into the minimum execution data and the additional execution data in advance so as to include the executable code for the initial screen and other screen, a display data constituting the screen and the resource data including the image. Thereafter, the application providing server transmits the minimum execution data or the additional execution data according to the request of the receiver, and the receiver executes the minimum execution data or the additional execution data to provide the digital TV application.

The key feature of the present invention is referred to as a "scene-by-scene
loading”.

Loading and executing the digital TV application divided into the minimum execution data and the additional execution data are described below in detail.

The receiver receives and executes the minimum execution data required for executing the digital TV application from the application providing server.

The minimum execution data includes at least one of an executable code, a display data and a resource data for the initial screen, i.e. a screen that is provided first when the digital TV application is executed.

Thereafter, the receiver requests the additional execution data required during the execution of the minimum execution data to the application providing server. The receiver then receives and executes the additional execution data from the application providing server.

That is, after the receiver provides the initial screen through the minimum execution data, a data for a second scene (or a second screen), i.e. the additional execution data is received and executed.

When the digital TV application divided into the minimum execution data and the additional execution data is loaded scene-by-scene, the limitation of the number, the size and the configuration of the digital TV application that may be provide by the digital broadcasting system may be minimized.

In accordance with the conventional method for providing the digital TV application, because the digital TV application generated to include an entirety of the scene is transmitted from the head-end system to the receiver and the receiver receives and
executes the same, a bandwidth or a resource of the receiver is not efficiently utilized.

However, in accordance with the present invention, because the digital TV application is divided into the minimum execution data and the additional execution data and only the required data is received and provided through scene-by-scene loading, the bandwidth or the resource of the receiver is efficiently utilized even for the digital TV application in the HD broadcasting.

In addition, the transmission of the digital TV application between the application providing server and the receiver is carried out through the return channel.

Therefore, a limit of the bandwidth due to the transmission of the digital TV application may be minimized when the high speed communication network such as the VDSL and the FTTH is used.

[Mode for the Invention]

Fig. 2 is a flow diagram exemplifying another method for switching a digital TV application in accordance with the present invention wherein the method is embodied in the application providing server providing the digital TV application according to the request of the receiver.

Referring to Fig. 2, the application switching event is received from the receiver that executes and provides the digital TV application (S210).

As described above, the application switching event may include at least one of the channel identification information of the second channel, the device identification information of the receiver and the user identification information of the receiver.
The application switching event is received through the return channel.

Preferably, the return channel may include the high speed communication network such as the VDSL and the FTTH.

Thereafter, the digital TV application to be provided to the receiver is extracted based on the application switching event received in the step S210 (S230).

The process of extracting the digital TV application is described below in detail.

Firstly, the digital TV application suitable for the second channel is extracted based on the channel identification information of the second channel.

That is, the application providing server configures, in advance, the digital TV application for each channel in a form of a from-to table based on a channel information for instance. Thereafter, the application providing server extracts the digital TV application corresponding to the channel identification information of the second channel by referring to the from-to table.

In addition, the application providing server may extract the personalized digital TV application based on the device identification information or the user identification information of the receiver suitable for the receiver or the viewer.

That is, the application providing server configures the digital TV application that is to be provided according to the device identification information or the user identification information in the form of the from-to table based on a profile. Thereafter, the application providing server extracts the digital TV application corresponding to a certain device identification information or a certain user identification information by referring to the from-to table.
The digital TV application is extracted according to above-described process.

Thereafter, the digital TV application extracted in the step S230 is transmitted to the receiver (S250).

The application providing server may transmit the digital TV application to the receiver via the return channel.

Preferably, the return channel may include the high speed communication network such as the VDSL and the FTTH.

On the other hand, the extraction and the transmission of the digital TV application in the step S230 and S250 may be carried out similar to the conventional art wherein the entirety of the digital TV application is extracted and transmitted.

However, the number, the size, and the configuration of the digital TV application may be limited.

Therefore, it is preferable that the digital TV application is extracted and transmitted as describe below.

Firstly, the digital TV application is divided into the minimum execution data and the additional execution data. The application providing server transmits each of the minimum execution data and the additional execution data to the receiver, and the receiver receives and executes each of the minimum execution data and the additional execution data.

The minimum execution data and the additional execution data are identical to the minimum execution data and the additional execution data described with reference to Fig. 1.
That is, the application providing server stores the digital TV application by dividing into the minimum execution data and the additional execution data in advance prior to carrying out the step S210.

Thereafter, when the application switching event is received (S210), the application providing server extracts the minimum execution data corresponding to the digital TV application that is to be provided to the receiver (S230).

When the extraction of the minimum execution data is complete, the application providing server transmits the minimum execution data to the receiver (S250). The receiver executes the received minimum execution data to be provided to the viewer.

The receiver requests the additional execution data required during the execution of the digital TV application to the application providing server.

When the transmission request of the additional execution data is received, the application providing server extracts the requested additional execution data (S230). Thereafter, the application providing server transmits the extracted additional execution data to the receiver (S250). The receiver then receives and executes the additional execution data.

As described above, when the digital TV application divided into the minimum execution data and the additional execution data is loaded scene-by-scene, the limitation of the number, the size and the configuration of the digital TV application that may be provided by the digital broadcasting system may be minimized.

In addition, when a plurality of the digital TV applications exist, the extraction and the transmission of the digital TV application may be carried out as follows.
Prior to carrying out the step S210, the application providing server divides the plurality of the digital TV application into a plurality of the minimum execution data and a plurality of the additional execution data and stores the same in advance. The plurality of the minimum execution data and the plurality of the additional execution data are identical to the minimum execution data and the additional execution data described with reference to Fig. 1.

Thereafter, when the application switching event is received (S210), the application providing server extracts the minimum execution data to be provided to the receiver. That is, the application providing server extracts the minimum execution data that is to be provided to the receiver from the plurality of the minimum execution data.

Thereafter, the application providing server transmits the extracted minimum execution data to the receiver (S250). Thereafter, the receiver executes the minimum execution data transmitted by the application providing server to be provided to the viewer.

Thereafter, the receiver requests the additional execution data required during the execution of the minimum execution data to the application providing server.

The application providing server then extracts the additional execution data requested by the receiver (S230), and transmits the extracted additional execution data to the receiver (S250).

The receiver then executes the additional execution data received from the application providing server.

In accordance with above-described configuration, the additional execution data may be selectively reused for the plurality of the digital TV applications. Therefore, a
storage capacity of the application providing server may be maximized.

In accordance with the present invention, the reuse of the digital TV application may be reinforced. For instance, the minimum execution data or the additional execution data representing a same executable code, a same screen or a same resource may be reused without a recreation thereof.

In addition, the present invention provides a computer-readable medium having thereon a program performing function embodying the method for switching the digital TV application.

The computer-readable medium refers to various storage mediums for storing a data in a code or a program format that may be read by a computer system. The computer-readable medium may include a memory such as a ROM and a RAM, a storage medium such as CD-ROM and a DVD ROM, a magnetic storage medium such as a magnetic tape and a floppy disk, and an optical data storage medium. The computer-readable medium may include data transferred via the Internet. The computer-readable medium may be embodied by a computer-readable data divided and stored over computer systems connected through a network.

Since the computer-readable medium in accordance with the present invention is substantially identical to that of the method in accordance with the present invention described with reference to Figs. 1 and 2, a detailed description thereof is omitted.

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

[Industrial Applicability]

As described above, the time required for providing the digital TV application corresponding to the changing of the channel is minimized in accordance with the present invention.

In addition, the time required for providing the digital TV application is minimized by dividing the digital TV application into the minimum execution data and the additional execution data and receiving and executing only the required data.

Moreover, the limit in the number of or the size of the digital TV application is minimized.

The personalized digital TV application may be provided based on the device identification information or the user identification information.
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Wonjang BAEK, et al. Conf. No.: Not Yet Assigned
Appl. No.: Not Yet Assigned Examiner: Not Yet Assigned
Filed: September 12, 2009 Art Unit: Not Yet Assigned
Intl. Filing Date: 21 March 2008

For: METHOD OF SWITCHING DIGITAL TV APPLICATION (as amended)

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Pursuant to 37 CFR §§ 1.97 and 1.98, the documents listed on the enclosed Form PTO/SB/08 are submitted for consideration by the Examiner in the examination of the above-identified patent application.

This submission is not a representation that a search has been made, or that better art does or does not exist. In addition, this submission does not constitute an admission that each or all of the listed documents are material or constitute "prior art." If the Examiner applies any of the documents as "prior art" against any claim in this application and Applicant(s) determine that the cited documents do not constitute "prior art" under United States law, Applicant(s) expressly reserve the right to present, to the United States Patent and Trademark Office, the relevant facts and law regarding the appropriate status of such documents. Likewise, Applicant(s) expressly reserve the right to establish an earlier date of invention of any or all of the subject matter disclosed in this application, or any application claiming priority from this application, in order to remove any reference submitted herewith as prior art.

Applicant(s) further reserve the right to take appropriate action to establish the patentability of the disclosed subject matter over the listed documents, should one or more of the documents be applied against the claims of the present application. This submission of documents is not to be taken as a concession that any document represents art that is relevant or analogous to the subject matter claimed at any time throughout the prosecution of this or any application claiming priority from this
application. Accordingly, the right to argue that any document is not properly within the scope of prior art relevant to an examination of the present claims is also expressly reserved.

The Information Disclosure Statement (hereinafter "IDS") is being filed as follows:

a. [X] The IDS is being filed within three months of the filing date of a national application, or within three months of the date of entry into the national stage as set forth in 37 C.F.R. 1.491 in an international application, or before the mailing date of a first Official Action on the merits, whichever event occurs last.

b. [ ] The IDS is being filed after a first action on the merits but before the mailing date of a final Official Action under 37 C.F.R. 1.113, or a Notice of Allowance under 37 C.F.R. 1.311.

The IDS is accompanied by:

i. [ ] a certification in part (e) below as specified in 37 C.F.R. 1.97(e),

or

ii. [ ] a check in the amount required by 37 C.F.R. 1.17(p).

c. [ ] The IDS is being filed after the mailing date of a final Official Action under 37 CFR 1.113, or a Notice of Allowance under 37 CFR 1.311, but before payment of the issue fee.

The IDS is accompanied by:

i. [ ] Certification report(e) below;

and

ii. [ ] A check in the amount as required by 1.17(p).

d. [ ] The IDS is being filed pursuant to 37 C.F.R. 1.97(i), for placement in the file.

e. Certification:

[ ] I hereby certify that each item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent
office in a counterpart foreign application or in a counterpart United States patent application not more than three months prior to the filing of this statement,

or

[ ] I hereby certify that no item of information cited in the 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.

or

[ ] Appropriate certification is attached.

f. [X] If no check is enclosed and a fee is due in connection with this communication or if the check enclosed is insufficient, the Commissioner is authorized to charge any fee or additional fee due in connection with this communication to Deposit Account No. 14-0112.

g. [X] Copies of the documents are attached herewith with a completed PTO/SB/08

or

[ ] Copies of the documents are not attached, with a completed Form PTO/SB/08 as allowed under CFR 1.98(d)(1) and (2). The earlier application is identified as:

and/or

[ ] Copies of US Patents/Publications are not attached, with a completed Form PTO/SB/08 as allowed in Official Gazette Aug. 5, 2003/ Vol. 1273, no. 1.

h. [ ] A copy of the International Search Report is enclosed herewith.

i. [ ] A copy of the European Search Report or Supplementary European Search Report is enclosed herewith.

The Examiner is respectfully requested to cite the documents listed on the attached Form PTO/SB/08 in the next Official Action. In so doing, the Examiner is respectfully requested to initial in the space adjacent to the listing of each document on
the Form PTO/SB/08, and return a copy of the initialed Form PTO/SB/08 with the next communication to Applicant(s), to confirm that these documents have been considered by the Examiner and made of record in this application.

Should any additional fees be owed in connection with this Information Disclosure Statement, please charge any such fee deficiency to Deposit Account No. 14-0112. Likewise, please credit any overpayment to Deposit Account No. 14-0112.

The Examiner is invited to contact the undersigned attorney at the below-listed telephone number, with regard to any questions that may arise.

Respectfully submitted,

THE NATH LAW GROUP

Date: September 10, 2009
THE NATH LAW GROUP
112 S. West Street
Alexandria, VA 22314
Tel: (703) 548-6284
Fax: (703) 683-8396
JLM/DR/brd
**INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

<table>
<thead>
<tr>
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**FOREIGN PATENT DOCUMENTS**

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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. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 2 hours 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.

**Copyright 2005 Forms in Word (www.formsinword.com)**
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

**H04N 7/173(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 8 H04N

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

Korean Utility models and applications for Utility Models : IPC as above

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

eKIPASS(KIPO Internal): "TV application", "switching"

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<td>JP 2001-243190 A (NIPPON TELEGR &amp; TELEPH CORP) 7 Sep. 2001</td>
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☐ Further documents are listed in the continuation of Box C.  
× See patent family annex.

* Special categories of cited documents:
  
  "A" document defining the general state of the art which is not considered to be of particular relevance
  
  "E" earlier application or patent but published on or after the international filing date
  
  "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)
  
  "O" document referring to an oral disclosure, use, exhibition or other means
  
  "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

**Date of the actual completion of the international search**  
26 JUNE 2008 (26.06.2008)

**Date of mailing of the international search report**  
26 JUNE 2008 (26.06.2008)

**Name and mailing address of the ISA/KR**

Korean Intellectual Property Office  
Government Complex-Daejeon, 139 Seonsa-ro, Seogu, Daejeon 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

**Authorized officer**

CHOI, Seong Jin  
Telephone No. 82-42-481-8366

Form PCT/ISA/210 (second sheet) (April 2007)
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PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

JIMYUNG PATENT FIRM
6F, Jungwoo Bldg., 1689-1
Seocho-4-Dong, Seocho-Gu
Seoul 137-882
RÉPUBLIQUE DE COREÉ

Date of mailing (day/month/year)
25 May 2009 (25.05.2009)

Applicant’s or agent’s file reference
08-PCT-0007

International application No.
PCT/KR2008/001616

International filing date (day/month/year)
21 March 2008 (21.03.2008)

1. The following indications appeared on record concerning:

☒ the applicant
☐ the inventor
☐ the agent
☐ the common representative

Name and Address

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2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person
☐ the name
☐ the address
☐ the nationality
☒ the residence

Name and Address

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☐ Notifications by e-mail authorized

3. Further observations, if necessary:

The person identified in Box 2 is now recorded as applicant for all designated States except the United States of America.

4. A copy of this notification has been sent to:

☒ the receiving Office
☒ the International Preliminary Examining Authority
☐ the International Searching Authority
☐ the designated Offices concerned
☐ the Authority(ies) specified for supplementary search
☐ the elected Offices concerned
☐ other:

The International Bureau of WIPO
34, chemin des Colonettes
1211 Geneva 20, Switzerland

Authorized officer
Lachavanne Mylene

e-mail pt12.pct@wipo.int
Telephone No. +41 22 338 74 12

Facsimile No. +41 22 338 70 90

Form PCT/AB/306 (January 2009)
TELEVISION RECEIVER AND A METHOD FOR SEARCHING FOR AN APPLICATION, ESPECIALLY CONCERNED WITH ACHIEVING THE REAL-TIME SEARCH OF THE APPLICATION

PURPOSE: A television receiver and a method for searching for an application are provided to search for applications transmitted through a plurality of broadcasting channels in real-time by additively installing a tuner for tuning the broadcasting channels except the current broadcasting channel. CONSTITUTION: A first tuner(101) selectively tunes a first broadcasting channel corresponding to a channel selecting command to receive broadcasting. A second tuner(109) tunes a second broadcasting channel according to a channel tuning mode to receive an application. An image processor(107) outputs the received broadcasting as a main image and the received application as a sub-image on a screen. A controller(111) performs the conversion of channel into the second broadcasting channel in real-time when a selection signal regarding the outputted application is inputted after the received broadcasting and application are outputted.

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Legal Status
Date of request for an examination (20050604)
Notification date of refusal decision (00000000)
Final disposal of an application (registration)
Date of final disposal of an application (20070329)
Patent registration number (1007103040000)
Date of registration (20070416)
Number of opposition against the grant of a patent ( )
Date of opposition against the grant of a patent (00000000)
Number of trial against decision to refuse ( )
Date of requesting trial against decision to refuse ( )
Date of extinction of right ( )
## (19) 대한민국특허청(KR)  
(12) 동록특허공보(B1)

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### (73) 특허권자
엘지전자 주식회사
서울특별시 영등포구 여의도동 20번지

### (72) 발명자
유영재
인천 연수구 동춘2동 한양2차아파트 12103

### (74) 대리인
김용인
신장섭

### (56) 선행기술조사문헌

| JP07107410 A | JP08242414 A |
| JP200152116 A | KR1019970024964 A |
| KR1020050046986 A |

* 심사관에 의하여 인용된 문헌

심사관: 박전우

전체 청구항 수: 총 12 항

### (54) 어플리케이션 검색 기능을 갖는 텔레비전 수상기 및 방법

### (57) 요약

본 발명은 어플리케이션 검색 기능을 갖는 텔레비전 수상기 및 방법을 제공하는 것으로, 리모コン을 통해 입력되는 채널 선택 명령에 따라 해당 방송채널을 선택적으로 튜닝하여 방송물을 수신하는 제1 튜너; 제1 튜너에 의해 해당 방송채널이 튜닝되고 있는 상태에서, 리모콘을 통해 입력되는 어플리케이션 검색 명령에 따라 소정의 방송채널을 튜닝하여 어플리케이션을 수신하는 제2 튜너; 제2 튜너에 의해 수신된 방송물을 스크린상에 정화면으로 출력시키고, 방송물이 정화면으로 출력되는 상태에서 제2 튜너에 의해 수신된 어플리케이션을 부화면으로 출력시키는 영상 처리부; 및 영상 처리부를 제어하여 제1 튜너에 의해 수신된 방송물을 정화면으로 출력시키고, 리모콘을 통해 입력되는 어플리케이션 검색 명령에 따라 제2 튜너에 의해 수신된 어플리케이션을 부화면으로 출력시킨 후, 부화면에 출력된 어플리케이션에 대한 선택신호가 입력되면 해당 어플리케이션이 제공되는 방송채널로의 채널전환을 수행하는 제어부를 포함하여 구성된다.

대표도

도 2

특허청구의 범위
청구항 1.
방송국별로 할당된 다수의 방송채널을 투입하고, 투입된 방송채널을 통해 전송되는 방송물 및 어플리케이션을 수신하여 스크린상에 출력시키는 텔레비전 수상기이 있어서,
리모콘을 통해 입력되는 채널선택 명령에 따라 해당 방송채널을 선택적으로 투입하여 방송물을 수신하는 제1 투너;
상기 제1 투너에 의해 상기 방송채널이 투입되고 있는 상태에서, 상기 리모콘을 통해 입력되는 소형의 채널투입모드에 따라 소형의 방송채널을 투입하여 어플리케이션을 수신하는 제2 투너;
상기 제1 투너의 출력되는 방송물은 스크린상에 정화면으로 출력시키고, 상기 방송물이 정화면으로 출력되는 상태에서 상기 제2 투너의 출력되는 어플리케이션을 부화면으로 출력시키는 영상 처리부; 및
상기 영상 처리부를 제어하여 상기 제1 투너에 의해 수신된 방송물을 정화면으로 출력시키고, 상기 리모콘을 통해 입력되는 어플리케이션 감색 명령에 따라 상기 제2 투너에 의해 수신된 어플리케이션을 부화면으로 출력시킨 후, 상기 부화면에 출력된 어플리케이션에 대한 선택신호가 입력되면 상기 제1 투너의 투입을 중단시키고, 상기 제2 투너를 채널투입모드로 설정하고, 상기 제2 투너의 투입을 제어하여 선택된 해당 어플리케이션이 수신되는 방송채널로의 채널전환을 수행하는 제어부
물 포함하여 구성된 것을 특징으로 하는 텔레비전 수상기.

청구항 2.
제1 항에 있어서.
상기 제2 투너에 의해 수신된 어플리케이션과 상기 텔레비전 수상기를 구동시키기 위한 각종 구동프로그램을 저장하는 저장부
물 더 포함하여 구성된 것을 특징으로 하는 텔레비전 수상기.

청구항 3.
제2 항에 있어서.
상기 저장부에 저장된 어플리케이션에 대한 실행명령이 입력되면, 제어부는 입력된 실행명령에 연동하여 해당 어플리케이션을 실행시키는 것을 특징으로 하는 텔레비전 수상기.

청구항 4.
제1 항에 있어서.
상기 어플리케이션 감색을 위한 수동투입모드가 설정된 경우, 상기 제어부는 상기 제2 투너를 제어하여 리모콘을 통해 입력되는 채널번호에 대응하는 방송채널에 대한 투입을 수동으로 수행하는 것을 특징으로 하는 텔레비전 수상기.

청구항 5.
제1 항에 있어서.
상기 어플리케이션 검색을 위한 자동튜닝모드가 설정된 경우, 상기 제어부는 상기 2 튜너를 제어하여 기 설정된 소정의 방송채널에 대한 튜닝을 자동으로 수행하는 것을 특징으로 하는 텔레비전 수상기.

청구항 6.

제 1 항에 있어서.

상기 영상 처리부는 상기 제 2 튜너에 의해 수신된 어플리케이션을 PIP 방식 또는 패업 방식을 통해 스크린상에 부화면으로 출력시키는 것을 특징으로 하는 텔레비전 수상기.

청구항 7.

방송국별로 할당된 다수의 방송채널을 투영하고, 투영된 방송 채널을 통해 전송되는 방송물과 어플리케이션 정보를 수신하는 제 1 튜너 및 제 2 튜너를 구비한 텔레비전 수상기의 어플리케이션 실행 방법에 있어서,

리모콘을 통해 입력되는 채널선택 명령에 따라, 텔레비전 수상기가 상기 제 1 튜너에 의해 수신된 방송물을 스크린상에 정화면으로 출력시키는 제 1 단계;

상기 리모콘을 통해 상기 제 2 튜너의 채널튜닝모드에 대한 선택명령이 입력됨에 따라, 상기 텔레비전 수상기가 상기 제 2 튜너에 의해 수신된 어플리케이션을 스크린상에 부화면으로 출력하는 제 2 단계; 및

상기 부화면 상에 출력된 어플리케이션에 대한 선택신호가 입력됨에 따라, 상기 텔레비전 수상기가 선택된 어플리케이션을 제공되는 방송채널로의 채널전환을 수행하는 제 3 단계

를 포함하고,

상기 제 3 단계는

상기 어플리케이션을 스크린상에 부화면으로 출력한 상태에서, 상기 텔레비전 수상기가 리모콘을 통해 소정의 어플리케이션에 대한 선택신호를 입력받는 제 3-1 단계;

소정의 어플리케이션에 대한 선택신호가 입력됨에 따라, 상기 텔레비전 수상기가 상기 제 1 튜너의 튜닝을 중단시키는 동시에 상기 제 2 튜너를 채널튜닝모드로 설정하는 제 3-2 단계; 및

상기 제 2 튜너를 채널튜닝모드로 설정한 후, 상기 텔레비전 수상기가 상기 제 2 튜너의 튜닝을 제어하여 선택된 해당 어플리케이션이 수신되는 방송채널로의 채널전환을 수행하는 제 3-3 단계

를 포함하여 구성된 것을 특징으로 하는 어플리케이션 검색 방법.

청구항 8.

제 7 항에 있어서.

상기 제 2 튜너에 의해 채널전환 된 방송채널을 통해 제공되는 어플리케이션에 대한 실행명령이 입력됨에 따라, 상기 텔레비전 수상기가 해당 어플리케이션을 실시간으로 실행시키는 제 4 단계

를 더 포함하여 구성된 것을 특징으로 어플리케이션 검색 방법.
청구항 9.

제 7 항에 있어서, 상기 제 1 단계는,

상기 리모콘을 통해 채널선택 명령이 입력되면, 상기 텔레비전 수상기가상기 제 1 튜너를 채널튜닝모드로 설정하여 해당 방송채널에 대한 튜닝을 수행하는 제 1-1 단계;

채널튜닝모드가 설정된 상태에서, 상기 텔레비전 수상기가 상기 제 1 튜너에 의해 튜닝된 방송채널을 통해 전송되는 방송을 수신하는 제 1-2 단계;

상기 제 1 튜너에 의해 방송물을 수신한 후, 상기 텔레비전 수상기가 상기 수신된 방송물을 스크린상에 정화면으로 출력시키는 제 1-3 단계

을 포함하여 구성된 것을 특징으로 하는 어플리케이션 검색 방법.

청구항 10.

제 7 항에 있어서, 상기 제 2 단계는,

상기 리모콘으로부터 제 2 튜너를 조정의 채널튜닝모드로 설정하기 위한 선택신호가 입력되면, 상기 텔레비전 수상기가 입력된 선택신호가 상기 제 2 튜너를 수동 또는 자동튜닝모드 중 어느 튜닝모드로 설정하기 위한 선택신호인지로 판단하는 제 2-1 단계;

상기 제 2-1 단계의 판단 결과 수동튜닝모드로 설정하기 위한 선택신호인 경우, 상기 텔레비전 수상기가 상기 제 2 튜너를 수동튜닝모드로 설정하는 제 2-2 단계;

수동튜닝모드로 설정한 상태에서 조정의 방송채널에 대한 선택신호가 입력되면, 상기 텔레비전 수상기가 상기 제 2 튜너를 제어하여 선택된 방송채널에 대한 튜닝을 수행하여 어플리케이션을 수신하는 제 2-3 단계;

수동채널모드로 설정된 제 2 튜너를 통해 어플리케이션을 수신한 후, 상기 텔레비전 수상기가 수신된 어플리케이션을 스크린상에 부화면으로 출력시키는 제 2-4 단계.

상기 제 2-1 단계의 판단 결과 자동튜닝모드로 설정하기 위한 선택신호인 경우, 상기 텔레비전 수상기가 상기 제 2 튜너를 자동튜닝모드로 설정하는 제 2-5 단계;

상기 제 2 튜너를 자동튜닝모드로 설정한 후, 상기 텔레비전 수상기가 상기 제 2 튜너에 의해 튜닝된 조정의 방송채널을 통해 전송되는 어플리케이션을 수신하는 제 2-5 단계; 및

자동차튜닝모드로 설정된 상기 제 2 튜너를 통해 어플리케이션을 수신한 후, 상기 텔레비전 수상기가 수신된 어플리케이션을 스크린상에 부화면으로 출력시키는 제 2-6 단계

를 포함하여 구성된 것을 특징으로 하는 어플리케이션 검색 방법.

청구항 11.

제 10 항에 있어서,

상기 제 2 튜너에 의해 수신된 어플리케이션은 PIP 방식 또는 패업 방식을 통해 스크린상에 부화면으로 출력되는 것을 특징으로 하는 어플리케이션 검색 방법.
청구항 12.

제 7 항에 있어서, 상기 제 3 단계는

상기 어플리케이션을 스캔상에 부화면으로 출력한 상태에서, 상기 텔레비전 수상기가 리모컨을 통해 소정의 어플리케이션에 대한 선택신호를 입력받는 제 3-1 단계;

소정의 어플리케이션에 대한 선택신호가 입력됨에 따라, 상기 텔레비전 수상기가 상기 제 1 튜너의 뮤넘을 중단시키는 동시에 상기 제 2 튜너를 채널투영모드로 설정하는 제 3-2 단계; 및

상기 제 2 튜너를 채널투영모드로 설정한 후, 상기 텔레비전 수상기가 상기 제 2 튜너의 뮤넘을 제어하여 선택된 해당 어플리케이션이 수신되는 방송채널로의 채널전환을 수행하는 제 3-3 단계

d) 포함하여 구성된 것을 특성으로 하는 어플리케이션 검색 방법.

명세서

발명의 상세한 설명

발명의 목적

발명을 수행하는 기술 및 그 분야의 종래기술

본 발명은 어플리케이션 검색 기능을 갖춘 텔레비전 수상기 및 방법에 관한 것으로서, 특히 소정의 방송채널을 통해 전송되는 어플리케이션을 검색하여 해당 방송채널로의 채널전환을 수행하는 튜너를 구비한 텔레비전 수상기 및 어플리케이션 검색 방법에 관한 것이다.

과학 기술의 비약적인 발전과 더불어 영상이나 오디오 등 여러 형태의 정보를 전달하는 디지털 디바이스에 대처할 수 있는 정보통신의 급속한 발전 속도에서 디지털 기술이 사람들과 긴밀한 관계를 맺고 발전하고 있는 만큼, 그 정보의 저장 및 복구, 증가 및 문제 해결에 이르기까지의 디지털 기술은 중요한 역할을 하고 있으며, 디지털 기술의 발전은 주로 디지털 영상데이터의 크기가 줄어드는 결과로 디지털 데이터의 공간 절약과合わせ 이더넷, 복사, 가전, 통신 등 전자적으로 거래 주는 분야에 적용되어 디지털 비디오 및 오디오 서비스가 제공되고, 그러한 서비스를 제공하기 위한 디지털 기기들이 등장하게 되었다.

그 중에 TV는 실생활에서 쉽고, 효과적인 정보 전달 데크로서 중요한 자리를 차지하고 있는데, 상기와 같은 디지털 기술이 발전하여 비디오 데이터와 오디오 데이터를 MPEG 기술로 압축하여 전송함으로써, 많은 양의 정보를 더욱 빠르고 안정적으로 제공할 수 있는 디지털 TV의 등장으로 더욱 많은 방송을 더욱 정확한 화질, 더욱 다양한 음향으로 가정에서도 손쉽게 감상할 수 있게 되었다. 이러한 디지털 TV의 보급으로 시청자는 다양한 프로그램과 그 프로그램에 대한 정보를 제공하고, 그 정보들을 가지고 사용자의 기호에 따라 프로그램을 선택해서 시청할 수 있게 되었다.

또한, 디지털 TV의 보급은 기존의 아날로그 TV보다 및 심지어는 다양한 어플리케이션, 예를 들면 교통정보, 뉴스정보, 날씨정보, 중권정보 및 예능정보 등 다양한 어플리케이션을 제공함으로써 시청자료 하여금 자신의 안방에서 다양한 종류의 어플리케이션을 이용할 수 있게 되었는데, 이를테면 텔레비전번호 제 202-0076235호에는 데이터 방송 중을 어플리케이션 행정에 존재하는 경우, 어플리케이션 정보 표시 마크와 함께 활성 가능한 어플리케이션의 미리보기 화면을 제공하는 어플리케이션 정보 제공 방법을 제안하고 있다.

상기 국내특허출원 발명에 대해 간략히 살펴보면, (a) 디지털 방송 중 오디오 및 비디오 정보와 함께 어플리케이션이 수신되는 경우, 상기 어플리케이션이 존재함을 표시하는 마크를 표시하는 단계; (b) 메타 데이터를 검색하여 상기 어플리케이션의 미리보기 이미지를 생성하는 단계; (c) 상기 마크가 선택되면, 상기 어플리케이션의 텍스트 정보와 함께 미리보기 이미지를 디스플레이 하는 단계; 및 (d) 상기 미리보기 이미지를 확인하고 상기 어플리케이션 활성화 여부를 결정하는 단계를 포함하여 구성된 것을 특성으로 한다.
그러나, 상기한 바와 같은 증례의 어플리케이션 정보 제공 방법의 경우, 튜너에 의해 튜닝되는 방송제널을 통해 전송되는 어플리케이션 정보에 대해서는 검색이 가능하나 다른 방송제널에서 제공되는 어플리케이션 정보를 검색할 수 없었다.

즉, 다른 방송제널에서 제공되는 어플리케이션을 검색하기 위해서는 해당 방송제널로의 제널을 변경해야만 가능하였고, 이에 의해 시청자는 자신이 원하는 어플리케이션을 실시간으로 검색할 수 없어 자신이 원하는 어플리케이션을 이용할 수 없었다는 문제점이 있었다.

발명이 이루고자 하는 기술적 과제

본 발명은 상기와 같은 문제점을 해결하기 위하여 안출된 것으로서, 본 발명의 목적은 현재 수신중인 방송제널 이외의 다른 방송제널을 튜닝하는 튜너를 부가적으로 설치함으로써, 다수의 방송제널을 통해 전송되는 방송제널을 실시간으로 검색할 수 있는 텔레비전 수상기 및 방법을 제공한다.

본 발명의 목적은 현재 수신중인 방송제널 이외의 다른 방송제널을 튜닝하는 튜너에 의해 검색된 어플리케이션에 대한 선택신호가 입력됨에 따라, 해당 어플리케이션이 제공되는 방송제널로의 제널변환을 자동으로 수행할 수 있는 텔레비전 수상기 및 방법을 제공한다.

발명의 구성

이와 같은 목적을 달성하기 위한 본 발명은, 방송국岁以下로 할당된 다수의 방송제널을 튜닝하고, 튜닝된 방송제널을 통해 전송되는 방송물 및 어플리케이션을 수신하여 스크린상에 출력시키는 텔레비전 수상기에 있어서, 리모콘을 통해 입력되는 채널선택 명령에 따라 해당 방송제널을 선택적으로 튜닝하여 방송물을 수신하는 제 1 튜너; 제 1 튜너에 의해 해당 방송제널이 튜닝되고 있는 상태에서, 리모콘을 통해 입력되는 어플리케이션 검색 명령에 따라 소정의 방송제널을 튜닝하여 어플리케이션을 수신하는 제 2 튜너; 제 1 튜너에 의해 수신된 방송물을 스크린상에 정화면으로 출력시키고, 방송물이 정화면으로 출력되는 상에서 제 2 튜너에 의해 수신된 어플리케이션을 부화면으로 출력시키는 영상 처리부; 및 영상 처리부를 제어하여 제 1 튜너에 의해 수신된 방송물을 정화면으로 출력시키고, 리모콘을 통해 입력되는 어플리케이션 검색 명령에 따라 제 2 튜너에 의해 수신된 어플리케이션을 부화면으로 출력시킨 후, 부화면에 출력된 어플리케이션에 대한 선택신호가 입력되면 해당 어플리케이션이 제공되는 방송제널로의 제널변환을 실시간으로 수행하는 제어부를 포함한다.

본 발명은 방송국岁以下로 할당된 다수의 방송제널을 튜닝하고, 튜닝된 방송제널을 통해 전송되는 방송물 및 어플리케이션 정보를 수신하는 제 1 튜너 및 제 2 튜너를 구비한 텔레비전 수상기의 어플리케이션 검색 방법에 있어서, 리모콘을 통해 입력되는 채널선택 명령에 따라, 텔레비전 수상기가 제 1 튜너에 의해 수신된 방송물을 스크린상에 정화면으로 출력하는 제 1 단계; 방송물이 정화면으로 출력되는 상태에서 리모콘으로부터 어플리케이션 검색 명령이 입력되면, 텔레비전 수상기가 제 2 튜너에 의해 검색된 어플리케이션을 스크린상에 부화면으로 출력하는 제 2 단계; 및 리모콘으로부터 부화면에 출력되는 어플리케이션에 대한 선택신호가 입력되면, 텔레비전 수상기가 제 2 튜너를 제어하여 해당 어플리케이션이 제공되는 방송제널로의 제널변환을 수행하는 제 3 단계를 포함한다.

이하, 첨부된 도면을 참조하여 본 발명의 바람직한 실시예를 상세하게 설명한다.

여기서, 도 1은 본 발명의 실시예에 따른 어플리케이션이 전송되는 방송제널을 튜닝하기 위한 별도의 튜너를 구비한 텔레비전 수상기의 구성도이다.

도 1을 참조하면, 본 발명의 텔레비전 수상기(100)는, 방송국岁以下로 할당된 복합영상신호를 수신하여 아날로그 영상신호와 소리신호를 출력하기 위한 제 1 튜너(101)와, 영상신호를 디스플레이하기 위한 스크린(102)과, 소리신호를 출력하기 위한 스피커(103)와, 제 1 튜너(101)로부터 출력된 아날로그 영상신호를 디지털 영상신호로 변환하기 위한 A/D 컨버터(104)와, A/D 컨버터(104)로부터 출력되는 디지털 영상신호를 스크린(102)에 적합한 신호형태로 만들어 주는 비디오 처리부(105)와, 튜너(101)로부터 출력되는 소리신호를 스피커(103)에 적합한 신호로 만들어 주는 오디오 처리부(106)과, 비디오 처리부(105)로부터 출력된 영상신호를 스크린(102)에 출력시키기 위한 영상 처리부(107)와, 오디오 처리부(106)로부터 출력되는 소리신호를 종속시키는 스피커(103)로부터 출력하는 종합기(108)를 구비한다.

그리고, 본 발명의 텔레비전 수상기(100)는, 제 1 튜너(101)에 의해 해당 방송제널이 튜닝되고 있는 상태에서, 리모콘을 통해 입력되는 어플리케이션 검색 명령에 따라 소정의 방송제널을 튜닝하여 어플리케이션을 수신하는 제 2 튜너(109); 제 2 튜너에 의해 수신된 어플리케이션을 텔레비전 수상기의 구동기기화 작동을 저장하는 저장부(110);
및 영상 처리부(107)를 제어하여 제 1 트너(101)에 의해 수신된 방송물을 정화되므로 출력시키고, 리모콘을 통해 입력되는 아플리케이션 선택 명령에 따라 제 2 트너(109)에 의해 수신된 아플리케이션을 부화되므로 출력시킨 후, 부화면에 출력되는 아플리케이션에 대한 선택신호가 입력되면 해당 아플리케이션이 제공되는 방송채널로의 채널전환을 실시간으로 수행하는 제어부(111)를 구비한다.

제 1 트너(101)는 방송국별로 설정된 방송채널 중에서 제어부(111)의 제어에 따라 특정 방송채널에 대한 튜닝을 수행하고, 튜닝된 방송채널을 통해 전송되는 방송물이 포함된 방송신호를 구성하는 아날로그 영상신호와 소리신호를 분리하여 A/D 컨버터(104)와 오디오 처리부(106)로 각각 출력한다.

스크린(102)은 영상 처리부(107)에 의해 소정 형태로 출력 처리된 방송물과 아플리케이션을 정화되며 부화되며 출력시키는 역할을 수행한다.

즉, 영상 처리부(107)가 제 1 트너(101)에 의해 튜닝된 방송채널을 통해 전송되는 방송물을 정화되므로 처리하여 출력시킨다면, 스크린(102)은 영상 처리부(107)에 의해 처리된 방송물을 정화되므로 출력한다. 이로, 영상 처리부(107)가 제 1 트너(101)에 의해 수신된 방송물을 부화되므로 처리하여 출력시킨다면, 스크린(102)은 영상 처리부(107)에 의해 처리된 방송물을 부화되므로 생성된 PIP(Picture In Picture) 형태나 팝업(Pop Up) 형태로 출력할 수 있다.

또한, 영상 처리부(107)가 제 2 트너(109)에 의해 튜닝된 다수의 방송채널을 통해 전송되는 아플리케이션을 정화되므로 처리하여 출력시킨다면, 스크린(102)은 영상 처리부(107)에 의해 출력 처리된 아플리케이션을 정화되므로 출력한다. 이로, 영상 처리부(107)가 제 2 트너(109)에 의해 수신된 아플리케이션을 부화되므로 처리하여 출력하면, 스크린(102)은 영상 처리부(107)에 의해 처리된 아플리케이션을 부화되므로 생성된 PIP(Picture In Picture) 형태나 팝업(Pop Up) 형태로 출력할 수 있다.

A/D 컨버터(104)는 제어부(111)의 제어에 따라 제 1 트너(101) 및 제 2 트너(109)로부터 각각 출력되는 아날로그 영상신호를 샘플링하여 디지털신호로 변환하고 변환된 디지털 영상신호를 비디오 처리부(105)로 출력한다.

비디오 처리부(105)는 제어부(111)의 제어에 따라 A/D 컨버터(104)에 의해 변환된 디지털 영상신호를 스크린(102)에 적합한 신호로 변환하여 영상 처리부(107)로 출력한다.

오디오 처리부(106)는 제어부(111)의 제어에 따라 제 1 트너(101) 및 제 2 트너(102)로부터 각각 출력되는 음성신호를 스피커(103)에 적합한 전기적 음성신호로 변환시켜 음성부(108)로 출력한다. 이로, 중복부(108)에 의해 소정 크기에 중복된 음성신호를 스피커(103)를 통해 외부로 출력한다.

영상 처리부(107)는 제어부(111)의 제어에 따라 비디오 처리부(105)로부터 출력되는 제 1 트너(101)에 의해 튜닝된 방송채널을 통해 수신된 방송물을 스크린(102) 상에 정화되므로 출력시킨다.

이로, 리모콘을 통해 아플리케이션 선택 명령이 입력되면, 영상 처리부(107)는 제어부(111)의 제어에 따라 비디오 처리부(105)로부터 출력되는 제 2 트너(109)에 의해 튜닝된 방송채널을 통해 수신된 아플리케이션을 스크린(102) 상에 PIP방식 또는 팝업 방식을 통해 부화되므로 출력시킨다.

제 2 트너(109)는 제어부(111)의 제어에 따라 제 1 트너(101)에 의해 현재 튜닝되는 방송채널을 제외한 소정의 방송채널에 대한 튜닝을 수행하고, 튜닝된 소정의 방송채널을 통해 전송되는 아플리케이션이 포함된 방송신호를 구성하는 아날로그 영상신호와 소리신호를 분리하여 A/D 컨버터(104)와 오디오 처리부(106)로 각각 출력한다.

즉, 리모콘을 통해 제 1 트너(101)에 의해 튜닝되는 방송채널을 제외한 소정의 방송채널을 튜닝하기 위한 "수동튜닝모드"를 설정하기 위한 제어명령이 입력되면, 제 2 트너(109)는 제어부(111)의 제어에 따라 리모콘을 통해 입력되는 방송채널에 대한 튜닝을 수행하고, 튜닝된 방송채널을 통해 전송되는 아플리케이션이 포함된 방송신호를 수신하여 역할을 수행한다.

또한, 리모콘을 통해 제 1 트너(101)에 의해 튜닝되는 방송채널을 제외한 소정의 방송채널을 튜닝하기 위한 "자동튜닝모드"를 설정하기 위한 제어명령이 입력되면, 제 2 트너(109)는 제어부(111)의 제어에 따라 소정의 방송채널에 대한 튜닝을 자동으로 수행하고, 튜닝된 방송채널을 통해 전송되는 아플리케이션이 포함된 방송신호를 수신하여 역할을 수행한다.
저장부(110)는 각종 정보를 저장하기 위한 저장매체로서, 캡(RAM)이나 이어폰(EEPROM) 등과 같은 메모리 소자 또는 하드디스크 드라이브(HDD : Hard Disc Driver)로 구현될 수 있으며, 이러한 저장부(110)에는 제2 튜너(109)에 의해 튜닝된 방송채널을 통해 수신되는 각종 어플리케이션이 해당 방송채널과 연동하여 저장되어 있다.

제어부(111)는 리모컨을 통해 입력되는 어플리케이션에 대한 선택신호에 연동하여 해당 어플리케이션이 제공되는 방송채널의 채널전환을 수행하는 것으로서, 이에 대해 보다 구체적으로 살펴보면 다음과 같다.

리모콘을 통해 소정의 방송채널에 대한 선택신호가 입력되면, 제어부(111)는 제1 튜너(101)를 제어하여 선택된 방송채널에 대한 튜닝을 수행하여 방송물을 수신한 후, 영상 처리부(107)를 제어하여 수신된 방송물을 스크린(102) 상에 정화되므로 출력시킨다.

이때, 리모콘을 통해 소정의 방송채널을 통해 전송되는 어플리케이션을 수신하기 위해 제2 튜너(109)를 수동채널모드로 설정하는 제어명령이 입력되면, 제어부(111)는 입력된 제어명령에 따라 제2 튜너(109)를 수동채널모드로 설정한다.

이후, 리모콘을 통해 소정의 방송채널에 대한 선택명령이 입력되면, 제어부(111)는 수동채널모드로 설정된 제2 튜너(109)를 제어하여 선택된 방송채널에 대한 튜닝을 수행하여 어플리케이션을 수신한 후, 영상 처리부(107)를 제어하여 수신된 어플리케이션을 스크린(102) 상에 정화되므로 출력시킨다.

그러나, 리모콘을 통해 소정의 방송채널을 통해 전송되는 어플리케이션을 수신하기 위해 제2 튜너(109)를 자동채널모드로 설정하는 제어명령이 입력되면, 제어부(111)는 입력된 제어명령에 따라 제2 튜너(109)를 자동채널모드로 설정한다.

이후, 제어부(111)는 자동채널모드로 설정된 제2 튜너(109)에 의해 튜닝된 방송채널을 통해 어플리케이션을 수신한 후, 영상 처리부(107)를 제어하여 수신된 어플리케이션을 스크린(102) 상에 정화되므로 출력시킨다. 이때, 어플리케이션이 출력되는 부분은 영상 처리부(107)에 의해 PIP방식 또는 탑업 방식을 통해 스크린상의 소정 영역에 출력된다.

상술한 바와 같이 수동채널모드 또는 자동채널모드로 설정된 제2 튜너(109)를 통해 수신된 어플리케이션을 스크린(102) 상에 정화되므로 출력시킨 상태에서 리모콘을 통해 소정의 어플리케이션에 대한 선택신호가 입력되면, 제어부(111)는 제1 튜너(101)에 의해 튜닝되고 있는 방송채널을 선택된 어플리케이션이 제공되는 소정의 방송채널의 채널전환을 수행한다.

이후, 리모콘을 통해 채널 전환된 방송채널을 통해 제공되는 어플리케이션에 대한 제어명령이 입력되면, 제어부(111)는 입력된 제어명령에 따라 해당 어플리케이션에 대한 제어를 수행한다.

상기한 바와 같은 구성 및 기능을 갖는 본 발명의 텔레비전 수상기가 채널의 수신신호 세기에 따라 채널을 자동으로 전환하는 과정에 대해 요약도를 참조하여 설명한다.

여기서, 도 2는 본 발명에 따른 텔레비전 수상기가 소정의 방송채널을 통해 전송되는 어플리케이션을 정착 및 실행시키는 과정을 도시한 전체 요약도이고, 도 3은 본 발명에 따른 텔레비전 수상기가 제1 튜너에 의해 수신된 방송물을 스크린상에 출력시키는 과정을 도시한 순서도이고, 도 4는 본 발명에 따른 텔레비전 수상기가 제2 튜너에 의해 제공된 어플리케이션을 스크린상에 출력시키는 과정을 도시한 순서도이고, 도 5는 본 발명에 따른 텔레비전 수상기가 사용자에 의해 선택된 어플리케이션이 제공되는 방송채널의 채널전환을 수행하는 과정을 도시한 순서도이다.

먼저, 텔레비전 수상기(100)는 도 2에 도시된 바와 같이 제1 튜너에 의해 튜닝된 방송채널을 통해 수신된 방송물을 스크린 상에 정화되므로 출력시킨다(S100).

도 3을 참조하여 보다 구체적으로 설명하면, 리모콘을 통해 메뉴키 신호가 입력됨에 따라(S101), 텔레비전 수상기(100)는 도 6a에 도시된 바와 같이 소정의 방송채널을 선택하기 위한 "채널선택" 메뉴가 포함된 메뉴화면을 스크린(102)상에 출력시킨다(S102).

이때, 사용자가 도 6b에 도시된 바와 같이 리모콘을 통해 "채널선택" 메뉴를 선택한 후 소정의 방송채널을 입력하면(S103), 텔레비전 수상기(100)는 선택된 방송채널을 튜닝하기 위해 제1 튜너(101)를 채널튜닝모드로 설정한다(S104).
이후, 제 1 튜닝(101)에 의해 튜닝된 방송채널로부터 전송되는 방송물을 수신한 후(S105), 텔레비전 수상기(100)는 도 6c에 도시된 바와 같이 영상 처리부(107)에 의해 출력 처리된 소정의 방송물을 스크린(102) 상에 정화면으로 출력시킨다(S106).

상술한 바와 같이 제 1 튜닝에 의해 수신된 방송물을 정화면으로 출력시킨 후, 텔레비전 수상기(100)는 도 2에 도시된 바와 같이 제 2 튜닝(109)에 의해 튜닝된 방송채널을 통해 수신된 어플리케이션을 스크린(102) 상에 부화면으로 출력시킨다(S200).

도 5를 참조하여 보다 구체적으로 설명하면, 상기 방송물이 정화면으로 출력되는 상태에서 상기 리모콘으로부터 제 2 튜닝(102)을 소정의 채널투명도로 설정하기 위한 선택신호가 입력되면(S201), 텔레비전 수상기(100)는 입력된 선택신호가 제 2 튜닝(109)을 수동투명도로 설정하기 위한 선택신호인지 또는 자동투명도로 설정하기 위한 선택신호인지 여부를 판단한다(S202).

단계(S202)의 판단결과 제 2 튜닝(109)을 수동투명도로 설정하기 위한 선택신호인 경우, 텔레비전 수상기(100)는 입력된 선택신호에 연동하여 제 2 튜닝(109)을 수동투명도로 설정한다(S203).

상술한 바와 같이 제 2 튜닝(109)을 수동투명도로 설정한 상태에서 리모콘을 통해 소정의 방송채널에 대한 선택신호가 입력되면(S204), 텔레비전 수상기(100)는 제 2 튜닝(109)을 제어하여 선택된 방송채널에 대한 튜닝을 수행하고(S205), 제 2 튜닝(109)에 의해 튜닝된 방송채널을 통해 제공되는 어플리케이션을 수신한다(S206).

이후, 텔레비전 수상기(100)는 도 7a에 도시된 바와 같이 수동투명도로 설정된 제 2 튜닝(109)에 의해 수신된 어플리케이션을 스크린(102) 상에 PIP 방식 또는 패업 방식을 통해 부화면으로 출력시킨다(S207).

그러나, 단계(S202)의 판단결과 제 2 튜닝(109)을 자동투명도로 설정하기 위한 선택신호인 경우, 텔레비전 수상기(100)는 입력된 선택신호에 연동하여 제 2 튜닝(109)을 자동투명도로 설정한다(S208).

이제, 텔레비전 수상기(100)는 자동투명도로 설정된 제 2 튜닝(109)을 제어하여 소정의 방송채널에 대한 튜닝을 수행하고(S209), 제 2 튜닝(109)에 의해 튜닝된 소정의 방송채널을 통해 전송되는 어플리케이션을 수신한다(S210).

이후, 텔레비전 수상기(100)는 도 7b에 도시된 바와 같이 자동투명도로 설정된 제 2 튜닝(109)에 의해 수신된 어플리케이션을 스크린(102) 상에 PIP 방식 또는 패업 방식을 통해 부화면으로 출력시킨다(S211).

상술한 바와 같이 제 2 튜닝(109)에 의해 수신된 어플리케이션을 스크린(102) 상에 부화면으로 출력시킨 후, 텔레비전 수상기(100)는 도 8에 도시된 바와 같이 자동투명도로 설정된 방송채널의 채널전환이 수행되어 해당 어플리케이션을 실행시킨다(S300).

도 5를 참조하여 보다 구체적으로 설명하면, 제 2 튜닝(109)에 의해 수신된 어플리케이션이 부화면으로 출력된 상태에서 리모콘을 통해 도 8a에 도시된 바와 같이 소정의 어플리케이션에 대한 선택신호가 입력되면(S301), 텔레비전 수상기(100)는 스크린(102) 상에 정화면으로 출력되는 방송채널을 튜닝하는 제 1 튜닝(101)의 튜닝을 중단시킨 후(S302), 제 2 튜닝(109)의 튜닝을 제어하여 선택된 어플리케이션이 제공되는 방송채널로의 채널전환을 실행시킨다(S303).

이후, 리모콘을 통해 제 2 튜닝(109)에 의해 채널전환된 방송채널을 통해 제공되는 어플리케이션에 대한 실행명령이 입력되면(S304), 텔레비전 수상기(100)는 도 8b에 도시된 바와 같이 입력된 실행명령에 따라 해당 어플리케이션에 대한 실행을 수행한다(S305).

본 발명의 기술사항은 상기 바탕을한 실시예에 따라 구체적으로 기술되었으나, 상기한 실시예는 그 설명을 위한 것이며, 그 제한을 위한 것이 아님을 주의하여야 한다. 또한, 본 발명의 기술분야의 통상의 전문가라면 본 발명의 기술사항의 범위에 대하여 다양한 실시예가 가능함을 이해할 수 있음을 것이다.

발명의 효과

이상에서 설명한 바와 같이 본 발명은, 현재 수신중인 방송채널 이외의 다수의 방송채널을 튜닝하는 텔레비전의 부가적으로 설치함으로써, 다수의 방송채널을 통해 전송되는 어플리케이션을 실시간으로 검색할 수 있다는 효과를 제공한다.
또한, 본 발명은 현재 수신중인 방송채널 이외의 다수의 방송채널을 트넘하는 튜너에 의해 검색된 어플리케이션에 대한 선택신호가 입력됨에 따라, 해당 어플리케이션이 제공되는 방송채널로의 채널변환을 자동으로 수행할 수 있다는 효과를 제공한다.

도면의 간단한 설명

도 1은 본 발명의 실시예에 따른 어플리케이션 검색 기능을 갖는 텔레비전 수상기의 구성도.

도 2는 본 발명에 따른 텔레비전 수상기가 소정의 방송채널을 통해 전송되는 어플리케이션을 검색 및 실행시키는 과정을 도시한 전체 흐름도.

도 3은 본 발명에 따른 텔레비전 수상기가 제 1 튜너에 의해 수신된 방송물을 스크린상에 출력시키는 과정을 도시한 순서도.

도 4는 본 발명에 따른 텔레비전 수상기가 제 2 튜너에 의해 검색된 어플리케이션을 스크린상에 출력시키는 과정을 도시한 순서도.

도 5는 본 발명에 따른 텔레비전 수상기가 제 2 튜너에 의해 트넘된 방송채널로의 채널전환을 수행하여 어플리케이션을 실행시키는 과정을 도시한 순서도.

6a는 본 발명에 따른 텔레비전 수상기가 "채널선택" 메뉴가 포함된 메뉴화면을 스크린(102)상에 출력시킨 도면.

도 6b는 본 발명에 따른 텔레비전 수상기가 소정의 채널번호를 입력받기 위한 채널 입력창을 스크린상에 출력시킨 도면.

도 6c는 본 발명에 따른 텔레비전 수상기가 입력된 채널번호에 제 1 튜너에 의해 트넘된 방송채널을 통해 수신된 방송물을 스크린 상에 출력시킨 도면.

도 7a는 본 발명에 따른 텔레비전 수상기가 수동튜닝모드로 설정된 제 2 튜너에 의해 수신된 어플리케이션을 스크린 상에 출력시킨 도면.

도 7b는 본 발명에 따른 텔레비전 수상기가 자동튜닝모드로 설정된 제 2 튜너에 의해 수신된 어플리케이션을 스크린 상에 출력시킨 도면.

도 8a는 본 발명에 따른 텔레비전 수상기가 부화면으로 출력된 어플리케이션에 대한 선택영역을 입력받는 도면.

도 8b는 본 발명에 따른 텔레비전 수상기가 선택된 어플리케이션에 대한 실행을 수행하는 도면.

* 도면의 주요 부분에 대한 부호의 설명 *

100 : 텔레비전 수상기 101 : 제 1 튜너
102 : 스크린 103 : 스피커
104 : A/D 컨버터 105 : 비디오 처리부
106 : 오디오 처리부 107 : 영상 처리부
108 : 중복기 109 : 제 2 튜너
110 : 저장부 111 : 케이부
도면 2

시작

제1튜너에 의해 수신된 방송물은 정화면 으로 출력하는 과정 S100

제2튜너에 의해 수신된 어플리케이션을 부화면으로 출력하는 과정 S200

어플리케이션이 제공되는 방송채널로의 채널변환을 수행하여 해당 어플리케이션을 실행시키는 과정 S300

종료
도면3

시작

메뉴키 입력 S101

"채널선택" 메뉴가 포함된 메뉴화면 출력 S102

소정의 방송채널 선택 S103

제1튜너를 선택된 방송채널을 투영하기
채널투영모드를 설정 S104

제1튜너에 의해 투영된 방송채널을 통해
방송물을 수신 S105

수신된 방송물을 스크린상에 정화면
으로 출력 S106

종료
도면 4

시작

제2 튜너를 자동/수동튜닝모드로
설정하기위한 선택하신 활약

S201

수동튜닝 모드로 셋팅?

아니오 -> S208

예 -> S203

제2 튜너를 수동튜닝모드로 설정

S209

방송채널에 대한 선택신호 입력

S204

수동튜닝모드로 설정한 제2튜너를
통해 선택된 방송채널을 투영

S205

선택된 방송채널을 통해 어플리케이션
수신

S206

수신된 어플리케이션용 스크린상에
부착chematic으로 출력

S207

종료

자동튜닝모드로 설정된 제2 튜너를 통해 소정의
방송채널을 투영

S210

소정의 방송채널을 통해 어플리케이션 수신

S211
도면 5

시작

어플리케이션에 대한 선택신호 입력
S301

제1유너의 튜닝동작을 중단시키기
S302

제 2 유너의 튜닝동작을 실행시켜 선택된 어플리케이션을 제공되는 방송채널로의 채널 전환을 수행
S303

어플리케이션에 대한 실행명령 입력
S304

해당 어플리케이션을 실행시킴
S305

중료

도면 6a

도면 6b
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(54) Title: METHOD OF SWITCHING DIGITAL TV APPLICATION AND COMPUTER-READABLE MEDIUM HAVING THEREON PROGRAM PERFORMING FUNCTION EMBODYING THE SAME

Fig. 1

START

RECEIVE CHANNEL CHANGING EVENT ▼ S110

GENERATE APPLICATION SWITCHING EVENT ▼ S130

TRANSMIT APPLICATION SWITCHING EVENT TO APPLICATION PROVIDING SERVER ▼ S150

RECEIVE AND EXECUTE DIGITAL TV APPLICATION SWITCHING EVENT ▼ S170

END

(57) Abstract: A method of switching a digital TV application and a computer-readable medium having thereon a program performing a function embodying the same are disclosed. In accordance with the method of the present invention, a channel changing event corresponding to a changing of a channel is used to minimize a time required for providing the digital TV application suitable for a changed channel.
Description

METHOD OF SWITCHING DIGITAL TV APPLICATION AND COMPUTER-READABLE MEDIUM HAVING THEREON PROGRAM PERFORMING FUNCTION EMBODYING THE SAME

Technical Field

The present invention relates to a method of switching a digital TV application and a computer-readable medium having thereon a program performing a function embodying the same, and more particularly to a method of switching a digital TV application and a computer-readable medium having thereon a program performing a function embodying the same that minimizes a time required for providing a digital TV application.

Background Art

An environment of a broadcasting is changing as a technology progresses and a demand of a viewer changes. Recently, an analog broadcasting is switched to a digital broadcasting, and a broadcast medium is diversified from a terrestrial broadcasting to a cable broadcasting, a satellite broadcasting and an IP-TV service using a high speed communication network.

The digital broadcast is capable of providing additional services in various filed such as sports, movies, home shopings and musics because a capacity thereof is four to eight times that of the analog broadcasting. A wide variety of choices for the viewer is also provided since various types of the broadcasting such as the cable broadcasting, the satellite broadcasting, a DMB (Digital Multimedia Broadcasting) and the IP-TV are possible.

In addition, under a digital broadcasting environment, a digital TV application may be transmitted as well as a conventional TV program signal, and an interactivity may be embodied by associating with a communication network. Various data services using the digital TV application is expected to play an important role in spreading the digital broadcasting since a viewer may easily use the digital TV application.

However, the provision of the digital TV application in accordance with an conventional art wherein the digital TV application is transmitted to a receiver via a broadcasting network and the receiver executes the digital TV application to be provided to the viewer has following drawbacks.

A head-end system is a system of a digital broadcasting provider for transmitting the TV program signal including audio/video data and the digital TV application to the
receiver via the broadcasting network.

Herein, the broadcasting network refers to various broadcasting networks such as a terrestrial broadcasting network, a cable broadcasting network, a satellite broadcasting network, an IP-TV service using the high speed communication network, and a DMB network.

The receiver decodes the broadcast program signal and the digital TV application received from the head-end system to be provided to the viewer. For instance, the receiver may be a digital TV or a set-top box in compliance with the terrestrial broadcasting specification such as the ATSC and interactive data broadcasting specification such as DASE in case of a terrestrial digital broadcasting. The receiver may be a set-top box supporting the broadcasting specification such as OpenCable and DVB and a data broadcasting specification suitable for the broadcasting network such as OCAP and MHP in case of the cable broadcasting or the satellite broadcasting. The receiver may be a set-top box or a mobile communication terminal supporting a corresponding data broadcasting specification in case of the IP-TV or the DMB.

The receiver may be embodied in a form of the set-top box, the television or a display device. In case of the set-top box, the receiver is connected to the display device to provide the digital broadcasting. In case of the DMB, the receiver may be built into the mobile communication terminal or an independent DMB receiver. The receiver may be embodied in a form of a PC peripheral when the digital broadcasting is received by a personal computer. When the digital broadcasting is received by the personal computer, the digital broadcasting may be provided on a monitor connected to the personal computer.

However, when the digital TV application is transmitted via the broadcasting network, the digital TV application for a plurality of broadcasting channels are transmitted to the receiver.

For instance, the digital TV application is generally transmitted using a DSM-CC data/object carousel in the terrestrial broadcasting. In addition, the digital TV application is transmitted using an IP multicast scheme in the IP-TV.

Therefore, a number of the digital TV application is limited, and a size and a configuration the digital TV application are also limited.

For instance, a size of a data of the digital TV application corresponding to an HD broadcasting is larger than that of an SD broadcasting.

Therefore, the digital TV application corresponding to the HD broadcasting requires a large bandwidth for transmission, and the number of the digital TV application that can be transmitted via the broadcasting network is smaller than that of the SD broadcasting. In addition, a screen configuration or a scene configuration should be minimized such that the digital TV application can be transmitted within the usable
bandwidth. Accordingly, various configurations cannot be used for the digital TV application corresponding to the HD broadcasting.

That is, because the digital TV application is transmitted using a limited resource, the number of and the configuration of the digital TV application are limited.

Therefore, a personalized digital TV application cannot be provided for the viewer.

Moreover, a long time is required from selecting of the digital TV application to loading of the digital TV application.

That is, when the head-end system transmits the digital TV application, the head-end system divides the digital TV application into packets having a fixed size similar to the transmission of a conventional TV program packet. The receiver combines the received packets to generate the digital TV application. When the packet is lost during the transmission, the digital TV application cannot be executed for some cases.

A video data included in a digital broadcast program may be reproduced even when a portion of packets is lost by ignoring the lost packets and using other packets. However, the digital TV application cannot be executed when a portion of the packets thereof is lost. Therefore, an entirety of the data application should be re-transmitted, re-received and re-executed when an error occurs.

In addition, when the receiver receives the packet of the digital TV application, the packet should be combined according to a predetermined order, thereby required an additional time for the combination.

Moreover, even after the combination of the packets is complete, the digital TV application cannot be loaded dividedly, and the entirety of the digital TV application should be loaded and executed. Therefore, an execution speed is slow and a resource of the receiver is excessively used.

Due to above-described problems, the time required for receiving, executing and providing the digital TV application is 10 to 30 seconds. Therefore, it is very inconvenient for the viewer.

Particularly, in case of a broadcast network using the communication network such as the IP-TV, a TV program for a channel requested by the receiver and the digital TV application corresponding to the channel are provided to the receiver from the head-end system rather than providing an entirety of the channel and the digital TV application. Such configuration using the communication network may be used for the cable broadcasting, the terrestrial broadcasting, the satellite broadcasting using the return channel and the DMB in order to provide more channels.

In accordance with the configuration, the changing of the channel is notified to the head-end system, and the head-end system extracts the TV program and the digital TV application for the corresponding channel to be transmitted to the receiver. The receiver receives and provides the TV program and the digital TV application.
Therefore, the head-end system should additionally carry out a switching of the TV program and the digital TV application for the corresponding channel to correspond to the changing of the channel.

Because the time for receiving the digital TV application by the receiver and providing the received digital TV application to the viewer to correspond to the changing of the channel includes time for switching in the head-end system, more than 30 - 40 seconds of time are required to provide the digital TV application in the receiver. Therefore, it is very inconvenient for the viewer.

Moreover, the execution of the digital TV application is limited by a processing capacity or a storage capacity of the receiver.

That is, when a size of the digital TV application is too large, the digital TV application cannot be executed. Therefore, the number of and the configuration of the digital TV application are limited.

Accordingly, a method for minimizing the time required for transceiving and providing the digital TV application is needed.

**Disclosure of Invention**

**Technical Problem**

It is an object of the present invention to provide a method for switching a digital TV application that minimizes a time required for providing the digital TV application corresponding to a changing of a channel.

It is another object of the present invention to provide a method for switching a digital TV application wherein the time required for providing the digital TV application is minimized by dividing the digital TV application into a minimum execution data and an additional execution data and receiving and executing only a required data.

It is another object of the present invention to provide a method for switching a digital TV application wherein a limit in a number or a size of the digital TV application is minimized and a personalized digital TV application may be provided based on a device identification information or a user identification information.

It is yet another object of the present invention to provide a computer-readable medium having thereon a program performing a function embodying a method for switching the digital TV application.

**Technical Solution**

In order to achieve above-described object of the present invention, there is provided a method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of: (a) receiving a channel changing event corresponding to a channel changing from a first channel to a
second channel; (b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a channel identification information of the second channel, a device identification information of the receiver and a user identification information of a user of the receiver; (c) transmitting the application switching event to an application providing server for providing the digital TV application; and (d) receiving and executing the digital TV application corresponding to the application switching event.

[35] Preferably, the step (a) comprises (a-1) receiving the channel changing event including the channel identification information of the second channel.

[36] Preferably, the step (d) comprises: (d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and (d-2) executing the minimum execution data.

[37] Preferably, the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

[38] Preferably, the step (d) comprises: (d-3) requesting an additional execution data required during the execution of the minimum execution data to the application providing server; (d-4) receiving the additional execution data from the application providing server; and (d-5) executing the additional execution data.

[39] Preferably, the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

[40] There is also provided a method for switching a digital TV application in an application providing server for providing the digital TV application, the method comprising steps of: (a) receiving, from a receiver executing and providing the digital TV application, an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver; and (b) extracting and transmitting the digital TV application based on the application switching event to the receiver.

[41] Preferably, the step (b) comprises (b-1) extracting the digital TV application to be provided to the receiver based on at least one of the channel identification information, the device identification information and the user identification information.

[42] Preferably, the method in accordance with the present invention further comprises (c) dividing the digital TV application into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).
Preferably, the step (b) comprises: (b-2) extracting the minimum execution data for the digital TV application to be provided to the receiver based on the application switching event; and (b-3) transmitting the minimum execution data to the receiver.

Preferably, the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

Preferably, the step (b) comprises: (b-4) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and (b-5) extracting and transmitting the additional execution data to the receiver.

Preferably, the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

Preferably, dividing each of a plurality if the digital TV applications into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

Preferably, the step (b) comprises: (b-6) extracting the minimum execution data corresponding to the digital TV application to be provided to the receiver from the plurality of the digital TV applications based on the application switching event; and (b-7) transmitting the extracted minimum execution data to the receiver.

Preferably, the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

Preferably, the step (b) comprises: (b-8) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and (b-9) extracting and transmitting the additional execution data corresponding to the transmission request to the receiver.

Preferably, the additional execution data transmitted in the step (b-9) includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application corresponding to the minimum execution data transmitted in the step (b-7).

**Advantageous Effects**

As described above, the time required for providing the digital TV application corresponding to the changing of the channel is minimizes in accordance with the present invention.

In addition, the time required for providing the digital TV application is minimized by dividing the digital TV application into the minimum execution data and the additional execution data and receiving and executing only the required data.
Moreover, the limit in the number of or the size of the digital TV application is minimized.

The personalized digital TV application may be provided based on the device identification information or the user identification information.

**Brief Description of the Drawings**

Fig. 1 is a flow diagram exemplifying a method for switching a digital TV application in accordance with the present invention.

Fig. 2 is a flow diagram exemplifying another method for switching a digital TV application in accordance with the present invention.

**Best Mode for Carrying Out the Invention**

A method for switching a digital TV application and a computer-readable medium having thereon a program performing a function embodying the same in accordance with the present invention will now be described in detail with reference to the accompanied drawings.

Fig. 1 is a flow diagram exemplifying a method for switching a digital TV application in accordance with the present invention wherein the method is embodied in a receiver for receiving and executing the digital TV application.

Referring to Fig. 1, a channel changing event is received (S110).

The channel changing event is generated when a viewer or a user changes a first channel to a second channel while watching the first channel. When the channel changing event is generated, the receiver receives the digital TV application for the second channel and provides the received digital TV application to the user.

For instance, the channel changing event is generated when the user changes the channel using a remote controller, and the receiver receives the channel changing event from the remote controller.

The channel changing event includes a channel identification information of the changed channel, i.e. the second channel.

The channel identification information of the second channel may be a channel number of the second channel wherein the channel number may include a physical channel number or a logical channel number. Alternately, the channel number may be represented in a form of a packet ID.

When the channel changing event is received in the step S110, the receiver generates an application switching event in order to receive the digital TV application suitable for the second channel (S130).

The application switching event may include at least one of the channel identification information of the second channel, a device identification information of the receiver and a user identification information of the receiver.
The channel identification information of the second channel may be used to receive the digital TV application suitable for the second channel.

The device identification information and the user identification information may be used to receive the digital TV application suitable for the receiver and the user, respectively.

That is, the device identification information or the user identification information of the receiver may be used as a basic data for providing a personalized digital TV application when a server providing the digital TV application extracts the digital TV application to be transmitted to the receiver.

Thereafter, the application switching event generated in the step S130 is transmitted to an application providing server that provides the digital TV application (S150).

The application providing server stores the digital TV application corresponding to each channel. In addition, the application providing server provides the digital TV application corresponding to the application switching event according to a request of the receiver.

The application providing server may store the digital TV application according to a predetermined profile as well as the digital TV application according to the channel, and transmit the digital TV application corresponding to the device identification information or the user identification information received from the receiver according to the request of the receiver.

The application switching event is transmitted to the application providing server via a return channel.

Preferably, the return channel may include a high speed communication network such as VDSL and FTTH.

The application switching event is transmitted to the application providing server rather than to the head-end system.

The head-end system requires a longer switching time and a transmission scheme thereof is not suitable for the digital TV application. Thus, the application switching event is transmitted to the application providing server that is capable of a fast switching and transmitting the digital TV application in high speed using the return channel.

The time required for switching and receiving the digital TV application is minimized through the steps S150 and S170.

Thereafter, the receiver receives and executes the digital TV application corresponding to the application switching event (S170).

The digital TV application may be executed when an entirety of the digital TV application is received similar to the conventional art.

However, a number, the size, and the configuration of the provided digital TV ap-
plication may be limited.

Therefore, it is preferable that the digital TV application is received and provided as describe below.

Firstly, the digital TV application is divided into a minimum execution data and an additional execution data, the application providing server may transmit the minimum execution data and the additional execution data, and the receiver receives and executes the minimum execution data and the additional execution data separately.

The minimum execution data may include at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application. The additional execution data may include at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

The executable code is an independently executable code to correspond to a scene. That is, the executable code is independently executable for each scene contrary to that of the conventional art that is executable for the entirety of the digital TV application. Therefore, the executable code is required for each scene of the digital TV application.

The display data is an element displayed on a screen when a mobile application is executed wherein a plurality of scenes corresponding to the user input are divided and stored according to the user input for each scene.

The resource data refers to a data that may be additionally displayed such as a control box, a text box and an image other than the display data.

In accordance with the prior art, the entirety of the digital TV application is stored for an entirety of scenes. In addition, the receiver receives and executes the entirety of the digital TV application.

However, in accordance with the present invention, the application providing server divides and stores the digital TV application for each scene. That is, the application providing server divides and stores the digital TV application into the minimum execution data and the additional execution data in advance so as to include the executable code for the initial screen and other screen, a display data constituting the screen and the resource data including the image. Thereafter, the application providing server transmits the minimum execution data or the additional execution data according to the request of the receiver, and the receiver executes the minimum execution data or the additional execution data to provide the digital TV application.

The key feature of the present invention is referred to as a "scene-by-scene loading".

Loading and executing the digital TV application divided into the minimum execution data and the additional execution data are described below in detail.

The receiver receives and executes the minimum execution data required for execut
ing the digital TV application from the application providing server.

The minimum execution data includes at least one of an executable code, a display
data and a resource data for the initial screen, i.e. a screen that is provided first when
the digital TV application is executed.

Thereafter, the receiver requests the additional execution data required during the
execution of the minimum execution data to the application providing server. The
receiver then receives and executes the additional execution data from the application
providing server.

That is, after the receiver provides the initial screen through the minimum execution
data, a data for a second scene (or a second screen), i.e. the additional execution data is
received and executed.

When the digital TV application divided into the minimum execution data and the
additional execution data is loaded scene-by-scene, the limitation of the number, the
size and the configuration of the digital TV application that may be provide by the
digital broadcasting system may be minimized.

In accordance with the conventional method for providing the digital TV app-
lication, because the digital TV application generated to include an entirety of the
scene is transmitted from the head-end system to the receiver and the receiver receives
and executes the same, a bandwidth or a resource of the receiver is not efficiently
utilized.

However, in accordance with the present invention, because the digital TV app-
lication is divided into the minimum execution data and the additional execution data
and only the required data is received and provided through scene-by-scene loading,
the bandwidth or the resource of the receiver is efficiently utilized even for the digital
TV application in the HD broadcasting.

In addition, the transmission of the digital TV application between the application
providing server and the receiver is carried out through the return channel.

Therefore, a limit of the bandwidth due to the transmission of the digital TV app-
lication may be minimized when the high speed communication network such as the
VDSL and the FTTH is used.

**Mode for the Invention**

Fig. 2 is a flow diagram exemplifying another method for switching a digital TV
application in accordance with the present invention wherein the method is embodied
in the application providing server providing the digital TV application according to
the request of the receiver.

Referring to Fig. 2, the application switching event is received from the receiver
that executes and provides the digital TV application (S210).
As described above, the application switching event may include at least one of the channel identification information of the second channel, the device identification information of the receiver and the user identification information of the receiver.

The application switching event is received through the return channel.

Preferably, the return channel may include the high speed communication network such as the VDSL and the FTTH.

Thereafter, the digital TV application to be provided to the receiver is extracted based on the application switching event received in the step S210 (S230).

The process of extracting the digital TV application is described below in detail.

Firstly, the digital TV application suitable for the second channel is extracted based on the channel identification information of the second channel.

That is, the application providing server configures, in advance, the digital TV application for each channel in a form of a from-to table based on a channel information for instance. Thereafter, the application providing server extracts the digital TV application corresponding to the channel identification information of the second channel by referring to the from-to table.

In addition, the application providing server may extract the personalized digital TV application based on the device identification information or the user identification information of the receiver suitable for the receiver or the viewer.

That is, the application providing server configures the digital TV application that is to be provided according to the device identification information or the user identification information in the form of the from-to table based on a profile. Thereafter, the application providing server extracts the digital TV application corresponding to a certain device identification information or a certain user identification information by referring to the from-to table.

The digital TV application is extracted according to above-described process.

Thereafter, the digital TV application extracted in the step S230 is transmitted to the receiver (S250).

The application providing server may transmit the digital TV application to the receiver via the return channel.

Preferably, the return channel may include the high speed communication network such as the VDSL and the FTTH.

On the other hand, the extraction and the transmission of the digital TV application in the step S230 and S250 may be carried out similar to the conventional art wherein the entirety of the digital TV application is extracted and transmitted.

However, the number, the size, and the configuration of the digital TV application may be limited.

Therefore, it is preferable that the digital TV application is extracted and
transmitted as describe below.

Firstly, the digital TV application is divided into the minimum execution data and the additional execution data. The application providing server transmits each of the minimum execution data and the additional execution data to the receiver, and the receiver receives and executes each of the minimum execution data and the additional execution data.

The minimum execution data and the additional execution data are identical to the minimum execution data and the additional execution data described with reference to Fig. 1.

That is, the application providing server stores the digital TV application by dividing into the minimum execution data and the additional execution data in advance prior to carrying out the step S210.

Thereafter, when the application switching event is received (S210), the application providing server extracts the minimum execution data corresponding to the digital TV application that is to be provided to the receiver (S230).

When the extraction of the minimum execution data is complete, the application providing server transmits the minimum execution data to the receiver (S250). The receiver executes the received minimum execution data to be provided to the viewer.

The receiver requests the additional execution data required during the execution of the digital TV application to the application providing server.

When the transmission request of the additional execution data is received, the application providing server extracts the requested additional execution data (S230). Thereafter, the application providing server transmits the extracted additional execution data to the receiver (S250). The receiver then receives and executes the additional execution data.

As described above, when the digital TV application divided into the minimum execution data and the additional execution data is loaded scene-by-scene, the limitation of the number, the size and the configuration of the digital TV application that may be provide by the digital broadcasting system may be minimized.

In addition, when a plurality of the digital TV applications exist, the extraction and the transmission of the digital TV application may be carried out as follows.

Prior to carrying out the step S210, the application providing server divides the plurality of the digital TV application into a plurality of the minimum execution data and a plurality of the additional execution data and stores the same in advance. The plurality of the minimum execution data and the plurality of the additional execution data are identical to the minimum execution data and the additional execution data described with reference to Fig. 1.

Thereafter, when the application switching event is received (S210), the application
providing server extracts the minimum execution data to be provided to the receiver. That is, the application providing server extracts the minimum execution data that is to be provided to the receiver from the plurality of the minimum execution data.

[129] Thereafter, the application providing server transmits the extracted minimum execution data to the receiver (S250). Thereafter, the receiver executes the minimum execution data transmitted by the application providing server to be provided to the viewer.

[130] Thereafter, the receiver requests the additional execution data required during the execution of the minimum execution data to the application providing server.

[131] The application providing server then extracts the additional execution data requested by the receiver (S230), and transmits the extracted additional execution data to the receiver (S250).

[132] The receiver then executes the additional execution data received from the application providing server.

[133] In accordance with above-described configuration, the additional execution data may be selectively reused for the plurality of the digital TV applications. Therefore, a storage capacity of the application providing server may be maximized.

[134] In accordance with the present invention, the reuse of the digital TV application may be reinforced. For instance, the minimum execution data or the additional execution data representing a same executable code, a same screen or a same resource may be reused without a recreation thereof.

[135] In addition, the present invention provides a computer-readable medium having thereon a program performing function embodying the method for switching the digital TV application.

[136] The computer-readable medium refers to various storage mediums for storing a data in a code or a program format that may be read by a computer system. The computer-readable medium may include a memory such as a ROM and a RAM, a storage medium such as CD-ROM and a DVD-ROM, a magnetic storage medium such as a magnetic tape and a floppy disk, and an optical data storage medium. The computer-readable medium may include a data transferred via the Internet. The computer-readable medium may be embodied by a computer-readable data divided and stored over computer systems connected through a network.

[137] Since the computer-readable medium in accordance with the present invention is substantially identical to that of the method in accordance with the present invention described with reference to Figs. 1 and 2, a detailed description thereof is omitted.

[138] While the present invention has been particularly shown and described with reference to the preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be effected therein without
departing from the spirit and scope of the invention as defined by the appended claims.

**Industrial Applicability**

[139] As described above, the time required for providing the digital TV application corresponding to the changing of the channel is minimizes in accordance with the present invention.

[140] In addition, the time required for providing the digital TV application is minimized by dividing the digital TV application into the minimum execution data and the additional execution data and receiving and executing only the required data.

[141] Moreover, the limit in the number of or the size of the digital TV application is minimized.

[142] The personalized digital TV application may be provided based on the device identification information or the user identification information.
Claims

[1] A method for switching a digital TV application in a receiver for receiving and providing the digital TV application, the method comprising steps of:
(a) receiving a channel changing event corresponding to a channel changing from a first channel to a second channel;
(b) generating an application switching event corresponding to the digital TV application suitable for the second channel, the application switching event including at least one of a channel identification information of the second channel, a device identification information of the receiver and a user identification information of a user of the receiver;
(c) transmitting the application switching event to an application providing server for providing the digital TV application; and
(d) receiving and executing the digital TV application corresponding to the application switching event.

[2] The method in accordance with claim 1, wherein the step (a) comprises (a-1) receiving the channel changing event including the channel identification information of the second channel.

[3] The method in accordance with claim 1, wherein the step (d) comprises:
(d-1) receiving a minimum execution data required for executing the digital TV application from the application providing server; and
(d-2) executing the minimum execution data.

[4] The method in accordance with claim 3, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

[5] The method in accordance with claim 3, wherein the step (d) comprises:
(d-3) requesting an additional execution data required during the execution of the minimum execution data to the application providing server;
(d-4) receiving the additional execution data from the application providing server; and
(d-5) executing the additional execution data.

[6] The method in accordance with claim 5, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

[7] A method for switching a digital TV application in an application providing server for providing the digital TV application, the method comprising steps of:
(a) receiving, from a receiver executing and providing the digital TV application,
an application switching event including at least one of a channel identification information of a channel, a device identification information of the receiver and a user identification information of a user of the receiver; and
(b) extracting and transmitting the digital TV application based on the application switching event to the receiver.

[8] The method in accordance with claim 7, wherein the step (b) comprises (b-1) extracting the digital TV application to be provided to the receiver based on at least one of the channel identification information, the device identification information and the user identification information.

[9] The method in accordance with claim 7, further comprising (c) dividing the digital TV application into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

[10] The method in accordance with claim 9, wherein the step (b) comprises:
(b-2) extracting the minimum execution data for the digital TV application to be provided to the receiver based on the application switching event; and
(b-3) transmitting the minimum execution data to the receiver.

[11] The method in accordance with claim 10, wherein the minimum execution data includes at least one of an executable code, a display data and a resource data for an initial screen of the digital TV application.

[12] The method in accordance with claim 10, wherein the step (b) comprises:
(b-4) receiving a transmission request for the additional execution data required during an execution of the minimum execution data from the receiver; and
(b-5) extracting and transmitting the additional execution data to the receiver.

[13] The method in accordance with claim 12, wherein the additional execution data includes at least one of an executable code, a display data and a resource data for a screen to be displayed corresponding to a user input during the execution of the digital TV application based on the minimum execution data.

[14] The method in accordance with claim 7, wherein dividing each of a plurality if the digital TV applications into a minimum execution data and an additional execution data and storing the minimum execution data and the additional execution data prior to carrying out the step (a).

[15] The method in accordance with claim 14, wherein the step (b) comprises:
(b-6) extracting the minimum execution data corresponding to the digital TV application to be provided to the receiver from the plurality of the digital TV applications based on the application switching event; and
(b-7) transmitting the extracted minimum execution data to the receiver.

[16] The method in accordance with claim 15, wherein the minimum execution data
includes at least one of an executable code, a display data and a resource data for
an initial screen of the digital TV application.

[17] The method in accordance with claim 15, wherein the step (b) comprises:
(b-8) receiving a transmission request for the additional execution data required
during an execution of the minimum execution data from the receiver; and
(b-9) extracting and transmitting the additional execution data corresponding to
the transmission request to the receiver.

[18] The method in accordance with claim 17, wherein the additional execution data
transmitted in the step (b-9) includes at least one of an executable code, a display
data and a resource data for a screen to be displayed corresponding to a user
input during the execution of the digital TV application corresponding to the
minimum execution data transmitted in the step (b-7).

[19] A computer-readable medium having thereon a program performing a function
embodying a method for switching a digital TV application in accordance with
one of claims 1 through 18.
START

RECEIVE CHANNEL CHANGING EVENT ~ S110

GENERATE APPLICATION SWITCHING EVENT ~ S130

TRANSMIT APPLICATION SWITCHING EVENT TO APPLICATION PROVIDING SERVER ~ S150

RECEIVE AND EXECUTE DIGITAL TV APPLICATION CORRESPONDING TO APPLICATION SWITCHING EVENT ~ S170

END [Fig. 2]

START

RECEIVE CHANNEL CHANGING EVENT FROM RECEIVER ~ S210

EXTRACT DIGITAL TV APPLICATION BASED ON APPLICATION SWITCHING EVENT ~ S230

TRANSMIT EXTRACTED DIGITAL TV APPLICATION TO RECEIVER ~ S250

END
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Applicant(s) : DREAMER CO., LTD.

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COMMISSIONER
사전사항

특허출원서
특허
특허청장
0045
2007.03.22
디지털 방송 애플리케이션 스위칭 방법 및 이를 실현시키기 위한 프로그램을 기록한 컴퓨터로 판독 가능한 기록 매체
METHOD OF SWITCHING DIGITAL TV APPLICATION AND COMPUTER-READABLE MEDIUM HAVING THEREON PROGRAM PERFORMING FUNCTION EMBODYING THE SAME

출원인

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대리인

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【심사청구】 청구
【취지】 특허법 제42조의 규정에 의한 출원, 특허법 제60조의 규정에 의한 심사청구를 합니다.

대리인 특허법인 지명 (인)

【수수료】
【기본출원료】 0 면 38,000 원
【가산출원료】 35 면 0 원
【우선권주창료】 0 건 0 원
【심사청구료】 21 항 781,000 원
【합계】 819,000 원
【감면사유】 소기업(70%감면)
【감면후 수수료】 245,700 원
【첨부서류】

1. 중소기업기본법 제2조의 규정에 따른 소기업에 해당함을 증명하는 서류_1통
[요약서]

[요약]

본 발명은 디지털 방송 애플리케이션을 수신하여 제공하는 수신기에서의 디지털 방송 애플리케이션 스위칭 방법으로서, (a) 채널 변경 이벤트를 수신하는 단계와, (b) 상기 채널 변경 이벤트에 대응하여 변경된 채널에 적합한 디지털 방송 애플리케이션을 요청하는 애플리케이션 스위칭 이벤트를 생성하는 단계와, (c) 상기 애플리케이션 스위칭 이벤트를 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버에게 전송하는 단계와, (d) 상기 애플리케이션 제공 서버로부터 전송되는 상기 애플리케이션 스위칭 이벤트에 대응한 상기 디지털 방송 애플리케이션을 수신하여 실행하는 단계를 포함하는 디지털 방송 애플리케이션 스위칭 방법에 관한 것이다.

본 발명에 따르면, 채널 변경에 대응하여 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버로부터 해당 채널에 대응한 디지털 방송 애플리케이션을 수신하여 디지털 방송 애플리케이션의 수신 및 실행에 필요한 시간을 최소화하며, 디지털 방송 애플리케이션을 최소 실행 데이터 및 추가 실행 데이터로 분할하고 필요한 데이터만을 장부 단위로 수신하여 실행함으로써 디지털 방송 애플리케이션의 수신 및 실행에 필요한 시간을 최소화하며, 제공 가능한 디지털 방송 애플리케이션의 개수 또는 크기에 대한 제한을 최소화할 수 있으며, 수신기 또는 사용자 정보를 기초로 개인화된 디지털 방송 애플리케이션의 제공이 가능하다.

【대표도】
도 1

【색인어】

디지털 방송, 디지털 방송 애플리케이션, 채널 변경 이벤트, 애플리케이션 스위칭 이벤트, 최소 실행 데이터, 추가 실행 데이터, 수신기, 세탑 박스, 애플리케이션 제공 서버, 장면 단위 로딩(scene-by-scene loading)
【명세서】

【발명의 명칭】

디지털 방송 애플리케이션 스위치 방법 및 이를 실행시키기 위한 프로그램을 기록한 컴퓨터로 관독 가능한 기록매체(METHOD OF SWITCHING DIGITAL TV APPLICATION AND COMPUTER-READABLE MEDIUM HAVING THEREON PROGRAM PERFORMING FUNCTION EMBODYING THE SAME)

【도면의 간단한 설명】

<1> 도 1은 본 발명에 따른 디지털 방송 애플리케이션 스위치 방법의 예시적인 확률도.

<2> 도 2는 본 발명에 따른 디지털 방송 애플리케이션 스위치 방법의 다른 예시적인 확률도.

【발명의 상세한 설명】

【발명의 목적】

【발명이 속하는 기술분야 및 그 분야의 종래기술】

본 발명은 디지털 방송 애플리케이션 스위치 방법 및 이를 실행시키기 위한 프로그램을 기록한 컴퓨터로 관독 가능한 기록매체에 관한 것으로, 더욱 구체적으로는 채널 변경에 대응하여 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버로부터 해당 채널에 대응한 디지털 방송 애플리케이션을 수신하여 디지털 방송 애플리케이션의 수신 및 실행에 필요한 시간을 최소화하며, 디지털 방송 애플
리케이션을 최소 실행 데이터 및 추가 실행 데이터로 분할하고 필요한 데이터만을 장면 단위로 수신하여 실행함으로써 디지털 방송 애플리케이션의 수신 및 실행에 필요한 시간을 최소화하며, 제공 가능한 디지털 방송 애플리케이션의 개수 또는 크기에 대한 제한을 최소화할 수 있으며, 수신기 또는 사용자 정보를 기초로 개인화된 디지털 방송 애플리케이션의 제공이 가능한 디지털 방송 애플리케이션 스위칭 방법 및 이를 실현시키기 위한 프로그램을 기록된 컴퓨터로 판독 가능한 기록 매체에 관한 것이다.

기술의 발전과 시청자의 수요변화에 따라 방송 환경이 변화하고 있다. 종래의 아날로그 방송에서 디지털 방송으로 전환되고, 지상파 위주에서 채널 방송과 위성 방송, 그리고 초고속 통신 네트워크를 이용한 멀티미디어 데이터의 제공 방식인 소위 IP-TV 서비스, 지상파 및 위성 DMB 서비스 등으로 방송 매체가 다양화되고 있는 상황이다.

디지털 방송은 종래의 아날로그 방송 방식에 비해 용량을 4~8배로 늘릴 수 있어 스포츠, 영화, 홍보영상, 음악 등 다양한 분야의 부가 서비스를 제공할 수 있게 되었고, 또한 지상파 방송을 비롯하여 채널 방송, 위성 방송, DMB 방송, IP-TV, DMB 등의 다양한 방송 형태가 제공됨에 따라 시청자의 선택 폭이 넓어지게 된다.

또한 이러한 디지털 방송 환경 하에서는 종래의 단순한 방송 프로그램 신호의 전송뿐만이 아니라 다양한 디지털 방송 애플리케이션의 전송이 가능하며 또한 통신 네트워크와의 연동으로 양방향성(interactivity)의 구현도 가능하다. 이러한 디지털 방송 애플리케이션을 이용한 다양한 데이터 서비스들은 시청자가 간편하게
이용할 수 있다는 점에서 디지털 방송 보급에 중요한 역할을 할 수 있을 것으로 예상되고 있다.

그러나 종래의 디지털 방송 애플리케이션의 제공은 다음과 같은 문제점을 가지고 있다.

이러한 문제점에 대해서 디지털 방송 애플리케이션이 방송망을 통하여 헤드엔드 시스템으로부터 수신기에게로 전송되어 수신기에서 실행되어 시청자에게 제공되는 방식을 참조로 설명한다.

헤드엔드 시스템은 디지털 방송 사업자 측의 시스템이며, 오디오/비디오 데이터를 포함하는 방송 프로그램과 디지털 방송 애플리케이션을 방송망을 통하여 수신기에게로 전송하기 위한 시스템이다.

본원 명세서에서의 "방송망"은 지상파 방송망, 케이블 방송망, 위성 방송망, IP-TV에서의 초고속 통신 네트워크 또는 DMB 방송망 등 다양한 방송 네트워크를 의미한다.

또한 수신기는 헤드엔드 시스템으로부터 전송되는 방송 프로그램과 디지털 방송 애플리케이션을 수신하여 적절한 디코딩 등의 신호 처리를 수행하여 시청자에게 제공하는 단말이다. 수신기는 예컨대 지상파 디지털 방송의 경우 ATSC 등의 지상파 방송 규격을 만족하며 DASE 등의 양방향 데이터 방송 규격을 지원하는 디지털 TV 또는 셋탑 박스일 수 있다. 또는 케이블 방송 또는 위성 방송의 경우 OpenCable 또는 DVB 등의 방송 규격과 각 방송망에 적합한 데이터 방송 규격, 예컨데 OCAP 또는 MHP 등을 지원하는 셋탑 박스일 수 있다. 또한 IP-TV 또는 DMB 방송의 경우 수
신기는 해당 데이터 방송 규격을 지원하는 셋탑 박스 또는 이동통신 단말기일 수도 있다.

현제 디지털 방송을 수신하여 제공하는 수신기는 에쿠마 셋탑 박스 형태 또는 디지털 방송을 수신하는 TV 또는 디스플레이 장치 형태로 구현될 수 있다. 셋탑 박스 형태인 경우에는 별도의 디스플레이 장치가 연결되어 방송을 제공하게 된다. 또한 에쿠마 수신기는 DMB 등의 경우에는 이동통신 단말기 또는 DMB 수신기의 형태로 구현될 수 있으며, 또한 PC 상에서 디지털 방송 수신을 수행하는 경우도 가능하다. 이 경우에는 PC에 연결된 모니터 상에서 디지털 방송이 제공될 수 있다.

그러나 특히 디지털 방송 애플리케이션의 전송에 있어서 방송망을 통하여 전송을 수행하는 경우에는 다수의 방송 채널에 대한 디지털 방송 애플리케이션이 동시에 전송된다.

에쿠마 ATSC 등의 지상파 방송 규격에서는 DSM-CC 데이터/ 객체 카豪车 (Data/Object Carousel)를 이용하여 전송되며, 또는 IP-TV 등에서는 IP 멀티캐스트 방식을 이용하여 전송된다.

따라서 전송할 수 있는 디지털 방송 애플리케이션의 개수에 제한이 있으며, 또한 전송 가능한 디지털 방송 애플리케이션의 크기 또는 디지털 방송 애플리케이션의 구성에도 제한이 발생한다.

에쿠마 HD 방송에 대응하는 디지털 방송 애플리케이션의 경우 SD 방송에 대응하는 디지털 방송 애플리케이션에 비해서 많은 데이터 크기가 필요로 한다.

따라서 전송 시에 많은 대역폭이 필요하게 되어 전송 가능한 디지털 방송 애플리케이션의 수에 제한이 발생한다.
플리케이션의 개수가 SD 방송에 대응하는 경우보다 작아지게 되며, 또한 내역폭 제한 때문에 디지털 방송 애플리케이션 구성시 사양 가능한 내역폭 내에서 전송 가능하도록 제한적으로 화면 구성이나 장면 구성은 최소화할 수밖에 없으므로 다양한 구성의 사용을 못하는 단점이 있다.

즉 한정된 자원을 이용하여 전송하기 때문에 없으므로 제공 가능한 디지털 방송 애플리케이션의 개수와 구성이 제한받는 단점이 있다.

따라서 예컨대 시청자에 대하여 개인화된 디지털 방송 애플리케이션의 제공은 매우 어렵게 된다.

또한 디지털 방송 애플리케이션을 선택한 후 실제 디지털 방송 애플리케이션을 로딩하기까지 많은 시간이 소요되는 단점이 있다.

즉 해드엔드 시스템에서에서 디지털 방송 애플리케이션을 전송하는 경우 기존의 방송 프로그램용 패킷의 전송과 마찬가지로 디지털 방송 애플리케이션을 고정 패킷 크기에 분할하여 전송하고 수신기 측에서 이를 다시 결합하여 디지털 방송 애플리케이션을 수신하게 된다. 이러한 경우 디지털 방송 애플리케이션 전송 속도가 감소하며 또한 중간에 패킷이 유실되어 디지털 방송 애플리케이션 실행이 불가능한 경우가 발생하게 된다.

즉 디지털 방송 프로그램 등의 동영상 데이터의 경우 일부 패킷이 유실되는 경우에도 실시간 연속성으로 인하여 해당 패킷의 오류는 무시하고 다른 패킷들을 이용하여 동영상 실행이 가능하지만 디지털 방송 애플리케이션의 경우에는 이러한 패킷 유실의 경우 실행 자체가 불가능하다. 따라서 오류가 발생하면 다시 처음부터
디지털 방송 애플리케이션을 수신하여 실행시키어야 할 경우도 발생한다.

또한 수신기가 투시에서 디지털 방송 애플리케이션 패킷을 수신하는 경우에는 각 패킷의 순서를 수신기 내에서 다시 조합하여야 하므로 패킷 조합에 따른 시간이 추가적으로 필요하다.

또한 패킷 조합이 완료된 이후에도 디지털 방송 애플리케이션을 분할하여 로딩하지 못하고 전체 디지털 방송 애플리케이션을 수신 완료한 이후 전체적으로 로딩하여 실행하여야 하므로 실행 속도가 느리지고 수신기 자원을 과다하게 사용하게 된다.

이러한 문제점들로 인하여 종래 수신기에서 디지털 방송 애플리케이션을 수신하여 실행하고 이를 시청자에게 제공하기까지의 시간은 대략 10초 내지 30초 정도가 소요된다. 그러나 이러한 종래의 디지털 방송 애플리케이션 실행에 과도한 시간이 소요되는 것은 사용자에게 많은 불편함을 가져오게 된다.

특히 IP-TV의 경우와 같이 방송방 중에서도 통신 네트워크를 이용하는 경우라면 전체 채널에 대한 방송 프로그램과 디지털 방송 애플리케이션이 헤드엔드로부터 수신기로 제공되는 것이 아니라 수신기 측에서 요청한 채널에 대한 방송 프로그램과 해당 채널에 대응하는 디지털 방송 애플리케이션이 전송되는 구성을 취할 수 있다. 이러한 구성은 예컨대 케이블 방송이나 리턴 채널을 이용하는 위성 방송, 지상파 방송, DMB 방송 등의 경우에도 기존보다 많은 채널을 제공하기 위해서 사용 가능한 구성이다.

이 경우 수신기에서는 헤드엔드 시스템에게로 채널 번호를 통지하고, 헤드엔드
드 측에서는 이를 수신하는 경우 해당 채널에 대한 방송 프로그램과 디지털 방송 애플리케이션을 추출하며 다시 수신기 측에 전송하게 되며, 수신기에서는 해당 채널에 대한 방송 프로그램과 디지털 방송 애플리케이션을 수신하여 제공하게 된다.

즉 해드엔드 시스템에서 채널 변경에 대응하여 해당 채널에 대한 방송 프로그램과 디지털 방송 애플리케이션에 대한 스위칭이 부가적으로 필요하다.

이러한 경우 채널 변경에 대응하여 디지털 방송 애플리케이션을 수신하고 이를 실행하여 시청자에게 제공하기까지의 시간은 해드엔드 시스템에서의 스위칭까지를 더 포함하여 스위칭 처리에 필요한 시간까지 고려하면 대략 30초 내지 40초 이상의 긴 시간이 소요된다. 그러나 이러한 종래의 디지털 방송 애플리케이션 실행에 과도한 시간이 소요되는 것은 사용자에게 많은 불편함을 가져오게 된다.

또한 수신기 내의 처리 용량이나 저장 용량 상의 제한에 의해서 디지털 방송 애플리케이션의 실행에 있어서 제한을 받는다.

즉 수신기 내의 자원이 한정되므로 디지털 방송 애플리케이션의 크기가 너무 큰 경우 등에 있어서는 디지털 방송 애플리케이션 실행이 불가능하게 되므로 이러한 사항 역시 제공 가능하고 디지털 방송 애플리케이션의 개수와 구성에 제한을 가지온다.

【발명이 이루고자 하는 기술적 과제】

본 발명의 목적은 채널 변경에 대응하여 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버로부터 해당 채널에 대응한 디지털 방송 애플리케이션을 수신하여 디지털 방송 애플리케이션의 수신 및 실행에 필요한 시간을 최소화하며,
디지털 방송 애플리케이션을 최소 실행 데이터 및 추가 실행 데이터로 분할하고 필요 한 데이터만을 장면 단위로 수신하여 실행함으로써 디지털 방송 애플리케이션의 수신 및 실행에 필요한 시간을 최소화하며, 제공 가능한 디지털 방송 애플리케이션의 개수 또는 크기에 대한 제한을 최소화할 수 있으며, 수신기 또는 사용자 정보를 기초로 개인화된 디지털 방송 애플리케이션의 제공이 가능한 디지털 방송 애플리케이션 스위칭 방법을 제공하는 데 있다.

본 발명의 다른 목적은 상기 디지털 방송 애플리케이션 스위칭 방법의 각 단계를 실행시키기 위한 프로그램을 기록한 컴퓨터로 판독 가능한 기록 매체를 제공하는데 있다.

【발명의 구성】

상기 기술적 과제를 달성하기 위하여, 본 발명은 디지털 방송 애플리케이션을 수신하여 제공하는 수신기에서의 디지털 방송 애플리케이션 스위칭 방법으로서, (a) 채널 변경 이벤트를 수신하는 단계와, (b) 상기 채널 변경 이벤트에 대응하여 변경된 채널에 적합한 디지털 방송 애플리케이션을 요청하는 애플리케이션 스위칭 이벤트를 생성하는 단계와, (c) 상기 애플리케이션 스위칭 이벤트를 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버에게로 전송하는 단계와, (d) 상기 애플리케이션 제공 서버로부터 전송되는 상기 애플리케이션 스위칭 이벤트에 대응한 상기 디지털 방송 애플리케이션을 수신하여 실행하는 단계를 포함하는 디지털 방송 애플리케이션 스위칭 방법을 제공한다.

본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계
(a)는, (a-1) 상기 변경된 채널에 대한 채널 섹션 정보를 포함하는 상기 채널 변경 이벤트를 수신하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계 (b)는, (b-1) 상기 변경된 채널에 대한 채널 섹션 정보 또는 상기 수신기에 대한 장치 섹션 정보 또는 상기 수신기의 사용자 섹션 정보를 포함하는 상기 애플리케이션 스위칭 이벤트를 생성하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계 (d)는, (d-1) 상기 애플리케이션 제공 서버로부터 상기 디지털 방송 애플리케이션의 실행에 필요한 최소 실행 데이터를 수신하는 단계와, (d-2) 상기 최소 실행 데이터를 실행하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 최소 실행 데이터는 상기 디지털 방송 애플리케이션의 초기 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터일 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계 (d)는, (d-3) 상기 최소 실행 데이터의 실행 도중에 필요한 추가 실행 데이터를 상기 애플리케이션 제공 서버로 요청하는 단계와, (d-4) 상기 애플리케이션 제공 서버로부터 상기 추가 실행 데이터를 수신하는 단계와, (d-5) 상기 추가 실행 데이터를 실행하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 추가 실행 데이터는 상기 최소 실행 데이터를 기초로 한 상기 디지털 방송 애플리케이션의 실행에 필요한 추가 데이터를 포함할 수 있다.
케이선의 실행 도중에 사용자 입력에 대응하여 추가적으로 표시하여야 할 화면에 대한 실행 코드, 화면 테이터 또는 리소스 테이터일 수 있다.

또한 본 발명은 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버에서의 디지털 방송 애플리케이션 스위칭 방법으로서, (a) 디지털 방송 애플리케이션을 실행하여 제공하는 수신기로부터 애플리케이션 스위칭 이벤트를 수신하는 단계와, (b) 상기 애플리케이션 스위칭 이벤트를 기초로 상기 수신기에 제공할 디지털 방송 애플리케이션을 추출하여 상기 수신기에 전송하는 단계를 포함하는 디지털 방송 애플리케이션 스위칭 방법을 제공한다.

본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계 (a)는, (a-1) 채널에 대한 채널 식별 정보 또는 상기 수신기에 대한 장치 식별 정보 또는 상기 수신기의 사용자 식별 정보를 포함하는 상기 애플리케이션 스위칭 이벤트를 수신하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계 (b)는, (b-1) 상기 채널 식별 정보 또는 상기 장치 식별 정보 또는 상기 사용자 식별 정보를 기초로 상기 수신기에 제공할 디지털 방송 애플리케이션을 추출하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계 (a) 이전에, (c) 상기 디지털 방송 애플리케이션에 대해서 최소 실행 데이터와 추가 실행 데이터를 구분하여 저장하는 단계를 더 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기
단계 (b)는, (b-2) 상기 애플리케이션 스위칭 이벤트를 기초로 상기 수신기에 제공할 상기 디지털 방송 애플리케이션에 대한 최소 실행 데이터를 추출하는 단계와, (b-3) 상기 최소 실행 데이터를 상기 수신기에게 전송하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 최소 실행 데이터는 상기 디지털 방송 애플리케이션의 초기 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터일 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계 (b)는, (b-4) 상기 최소 실행 데이터의 실행 도중에 필요한 추가 실행 데이터에 대한 전송 요청을 상기 수신기로부터 수신하는 단계와, (b-5) 상기 추가 실행 데이터를 추출하여 상기 수신기에게로 전송하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 추가 실행 데이터는 상기 최소 실행 데이터를 기초로 한 상기 디지털 방송 애플리케이션의 실행 도중에 사용자 입력에 대응하여 추가적으로 표시하여야 할 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터일 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계 (a) 이전에, (d) 다수의 디지털 방송 애플리케이션에서 사용 가능한 다수의 최소 실행 데이터와 다수의 추가 실행 데이터를 구분하여 저장하는 단계를 더 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기
단계 (b)는, (b-6) 상기 애플리케이션 스위칭 이벤트를 기초로 상기 다수의 최소 실행 데이터 중에서 상기 수신기에 제공할 상기 디지털 방송 애플리케이션에 대한 수신기 최소 실행 데이터를 추출하는 단계와, (b-7) 상기 수신기 최소 실행 데이터를 상기 수신기에게로 전송하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 수신기 최소 실행 데이터는 상기 디지털 방송 애플리케이션의 초기 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터일 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 단계 (b)는, (b-8) 상기 수신기 최소 실행 데이터의 실행 도중에 필요한 수신기 추가 실행 데이터에 대한 전송 요청을 상기 수신기로부터 수신하는 단계와, (b-9) 상기 다수의 추가 실행 데이터 중에서 상기 전송 요청에 대응한 상기 수신기 추가 실행 데이터를 추출하여 상기 수신기에게로 전송하는 단계를 포함할 수 있다.

또한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법에 있어서, 상기 수신기 추가 실행 데이터는 상기 수신기 최소 실행 데이터를 기초로 한 상기 디지털 방송 애플리케이션의 실행 도중에 사용자 입력에 대응하여 추가적으로 표시되어야 할 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터일 수 있다.

또한 본 발명은 전술한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법의 각 단계를 실현시키기 위한 프로그램을 기록한 컴퓨터로 판독 가능한 기록 매체를 제공한다.

이하, 본 발명의 디지털 방송 애플리케이션 스위칭 방법 및 이를 실현시키기
위한 프로그램을 기록한 컴퓨터로 관독 가능한 기록 메체의 실시예를 정부한 도면을 참조로 보다 구체적으로 설명한다.

도 1은 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법의 예시적인 효율도이다.

도 1은 디지털 방송 애플리케이션을 수신하여 실행하는 수신기에서의 예시적인 효율도를 나타낸다.

 우선 체널 변경 이벤트를 수신한다(S110).

체널 변경 이벤트는 시청자가 예컨대 A 체널을 시청하다가 B 체널로 체널을 변경하는 경우 발생한다. 이러한 경우 B 체널에 대한 디지털 방송 애플리케이션을 수신하여 사용자에게 제공할 필요가 있다. 따라서 이러한 체널 변경을 인지하기 위한 것이다.

예컨대 리모컨으로 체널을 변경하는 경우에 체널 변경 이벤트가 발생하고, 수신기에서는 이러한 체널 변경 이벤트를 수신하게 된다.

이 경우 체널 변경 이벤트는 변경된 체널에 대한 체널 섹터 정보를 포함한다.

이러한 변경된 체널에 대한 체널 섹터 정보는 예컨대 체널 번호일 수 있으며, 체널 번호는 물리적 체널 정보 또는 논리적 가상 체널 번호를 포함할 수 있으며, 패킷 ID 형태로 표시될 수도 있다.

단계 S110을 통하여 체널 변경 이벤트를 수신하면, 변경된 체널에 적합한 디지털 방송 애플리케이션을 수신하기 위하여 애플리케이션 스위칭 이벤트를 생성한
나(S130).

애플리케이션 스위칭 이벤트는 이를 위하여 변경된 채널에 대한 채널, 식별 정보 또는 수신기에 대한 장치 식별 정보 또는 수신기의 사용자 식별 정보를 포함할 수 있다.

변경된 채널에 대한 식별 정보는 해당 채널에 적합한 디지털 방송 애플리케이션을 수신하기 위해서 사용될 수 있다.

수신기에 대한 장치 식별 정보 또는 수신기의 사용자 식별 정보는 수신기 또는 시청자에 대해 적합한 디지털 방송 애플리케이션을 수신하기 위해서 사용될 수 있다.

즉 수신기에 대한 장치 식별 정보 또는 수신기의 사용자 식별 정보는 이후 디지털 방송 애플리케이션을 제공하는 서버에서 수신기에게로 전송할 디지털 방송 애플리케이션을 주출할 때 개인화된 디지털 방송 애플리케이션을 주출할 때 기초 자료로 사용될 수 있다.

이후 단계 S130에서 생성된 애플리케이션 스위칭 이벤트를 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버에게로 전송한다(S150).

애플리케이션 제공 서버는 채널 별로 대응되는 디지털 방송 애플리케이션을 저장하고 수신기의 요청에 따라서 애플리케이션 스위칭 이벤트 내에 포함될 수 있는 변경된 채널에 대한 식별 정보에 대응되는 디지털 방송 애플리케이션을 제공하는 서버이다. 또한 애플리케이션 제공 서버는 채널 별 뿐만 아니라 미리 정해진 프로파일 별로 디지털 방송 애플리케이션을 저장하고, 애플리케이션 스위칭 이벤트
네에 포함될 수 있는 수신기에 대한 장치 스펙 정보 또는 수신기의 사용자 스펙 정보를 기초로 대응되는 디지털 방송 애플리케이션을 수신기의 요청에 따라서 제공하는 서비스일 수 있다.

이러한 애플리케이션 제공 서비스로의 전송은 리턴 채널을 통하여 수행된다.

바람직하게는 리턴 채널은 초고속 통신망으로 구현될 수 있으며, 예컨대 VDSL 또는 FTTH 등의 초고속 통신망이 사용될 수 있다.

단계 S150은 애플리케이션 스위칭 이벤트를 헤드엔드 시스템으로 전송하는 것이 아니라 별도의 애플리케이션 제공 서버로 전송하는 것을 특정으로 한다.

즉 헤드엔드 서버의 경우 애플리케이션 스위칭에 따른 시간이 많이 걸리고 또한 전송 방식에 있어서 디지털 방송 애플리케이션의 전송에 적합하지 못하다.

따라서 스위칭이 용이하게 구현되며 리턴 채널을 이용하여 고속으로 디지털 방송 애플리케이션의 전송이 가능한 애플리케이션 제공 서버에게로 전송하는 것이 다.

이러한 단계 S150과 이후의 단계 S170을 통하여 디지털 방송 애플리케이션의 스위칭 및 수신에 따르는 시간을 최소화할 수 있다.

이후 단계 S150에서 전송된 애플리케이션 스위칭 이벤트에 대응하여 애플리케이션 제공 서버로부터 추출되어 전송되는 디지털 방송 애플리케이션을 수신하여 실행한다(S170).

이러한 디지털 방송 애플리케이션은 중래와 마찬가지로 하나의 전체 애플리케이션을 수신하여 수신기에서 실행하는 방식을 취할 수도 있다.
그러나 이러한 경우 전송한 디지털 방송 애플리케이션의 제공 가능 개수나 크기, 또는 구성에 따른 제한이 발생할 수 있다.

따라서 디지털 방송 애플리케이션의 수신 및 실행은 다음과 같은 형태를 취할 수 있다.

우선 디지털 방송 애플리케이션을 최소 실행 데이터와 추가 실행 데이터로 구분하고, 애플리케이션 제공 서버는 이러한 최소 실행 데이터와 추가 실행 데이터를 전송하고, 수신기에서는 최소 실행 데이터와 추가 실행 데이터를 별도로 수신하여 실행하는 것이다.

최소 실행 데이터는 예컨대 디지털 방송 애플리케이션의 초기 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터이며, 추가 실행 데이터는 예컨대 최소 실행 데이터를 기초로 한 디지털 방송 애플리케이션의 실행 도중에 사용자 입력에 대응하여 추가적으로 표시하여야 할 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터일 수 있다.

종래와 같이 디지털 방송 애플리케이션을 구성하는 모든 장면에 대해서 전체적으로 저장되고 이를 수신기 측에서 전부 한 번에 수신하여 전체적으로 실행하는 구성이 아니라, 본원 발명에 따른 경우 디지털 방송 애플리케이션은 각 장면에 대해 분할하여 초기 화면이나 기타 추가 화면에 대한 실행 코드, 또는 화면을 구성하는 장면 데이터 또는 이미지 등의 리소스 데이터를 포함하도록 초기 실행 데이터와 추가 실행 데이터가 미리 분리되어 저장된 이후에, 이후 수신기 측의 요청에 따라 최소 실행 데이터 또는 추가 실행 데이터만을 애플리케이션 제공 서버에서 수
신기 측으로 전송하며, 수신기에서는 최소 실행 데이터 또는 추가 실행 데이터를
실행하여 디지털 방송 애플리케이션을 제공하는 것이다.

이러한 본원 발명의 특징적인 사항은 이하 장면 단위 로딩(scene-by-scene
loading)으로 치명된다.

이러한 최소 실행 데이터와 추가 실행 데이터를 기초로 한 디지털 방송 애플리케이션의 장면 단위 로딩을 통한 실행은 다음과 같다.

우선 애플리케이션 제공 서버로부터 상기 디지털 방송 애플리케이션의 실행
에 필요한 최소 실행 데이터를 수신하고 이를 실행한다.

이 경우 최소 실행 데이터는 일반적으로 디지털 방송 애플리케이션의 최우선
순위 화면, 디지털 방송 애플리케이션이 실행되는 경우 멤 처음에 제공되는 초기
화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터를 의미한다.

이후 최소 실행 데이터의 실행 도중에 필요한 추가 실행 데이터를 애플리케이
션 제공 서버에 요청하며, 애플리케이션 제공 서버로부터 추가 실행 데이터를 수
신하여 이를 실행한다.

즉 최소 실행 데이터를 통한 초기 화면 제공 후 사용자의 입력 등에 따라서
다른 화면, 즉 장면으로 전환하는 경우이다. 이 경우에는 해당 장면에 대한
t데이터, 즉 추가 실행 데이터를 수신하고 실행하는 것이다.

이러한 본원 발명에 따른 최소 실행 데이터와 추가 실행 데이터로 분할된 디
지털 방송 애플리케이션의 장면 단위 로딩 구성은 취하는 경우 디지털 방송 시스템
을 통하여 제공 가능한 디지털 방송 애플리케이션의 개수 또는 크기 또는 구성에

39-22
제한을 최소화할 수 있다.

즉 전체 장면을 모두 포함하는 형태로 디지털 방송 애플리케이션이 헤드엔드 시스템으로부터 수신기에서 전송되고 이를 수신기에서 수신하여 실행하는 경우에는, 대역폭이나 수신기 자원 등에 있어서 제한점이 많다.

그러나 이러한 최소 실행 데이터와 추가 실행 데이터를 기초로 한 장면 단위 로딩을 적용한 디지털 방송 애플리케이션의 실행의 경우에는 예컨대 HD 방송용 디지털 방송 애플리케이션의 경우에도 최소 실행 데이터와 추가 실행 데이터로 구분하여 필요한 경우 추가 실행 데이터를 애플리케이션 제공 서버로부터 수신하여 실행함으로써 종래의 제한점을 최소화할 수 있다.

또한 이러한 애플리케이션 제공 서버로부터 수신기로의 디지털 방송 애플리케이션의 전송은 리턴 채널을 통하여 수행된다.

바람직하게는 리턴 채널은 초고속 통신망으로 구현될 수 있으며, 예컨대 VDSL 또는 FTTH 등의 초고속 통신망이 사용될 수 있다.

따라서 대역폭에 대한 제한점 역시 최소화할 수 있다.

도 2는 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법의 다른 예시적인 흐름도이다.

도 2는 수신기의 요청에 의해서 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버에서의 예시적인 흐름도를 나타낸다.

에플리케이션 제공 서버는 채널 별로 대응되는 디지털 방송 애플리케이션을 저장하고 수신기의 요청에 따라서 애플리케이션 스위칭 이벤트 내에 포함될 수 있
은 변경된 채널에 대한 채널 정보에 대응되는 디지털 방송 애플리케이션을 제공하는 서버이다.

또한 애플리케이션 제공 서버는 채널 별 뿐만 아니라 미리 정해진 프로파일 별로 디지털 방송 애플리케이션을 저장하고, 애플리케이션 스위칭 이벤트 내에 포함될 수 있는 수신기에 대한 장치 식별 정보 또는 수신기의 사용자 식별 정보를 기초로 대응되는 디지털 방송 애플리케이션을 수신기의 요청에 따라서 제공하는 서버일 수 있다.

이하 도 2를 참조로 애플리케이션 제공 서버에서의 본 발병에 따른 디지털 방송 애플리케이션 스위칭 방법을 상세히 설명한다.

우선 디지털 방송 애플리케이션을 실행하여 제공하는 수신기로부터 애플리케이션 스위칭 이벤트를 수신한다(S210).

전술하듯이 애플리케이션 스위칭 이벤트는 이를 위하여 변경된 채널에 대한 채널 식별 정보 또는 수신기에 대한 장치 식별 정보 또는 수신기의 사용자 식별 정보를 포함할 수 있다.

또한 이러한 애플리케이션 스위칭 이벤트의 수신은 리턴 채널을 통하여 수행된다.

바람직하게는 리턴 채널은 초고속 통신망으로 구현될 수 있으며, 예컨대 VDSL 또는 FTTH 등의 초고속 통신망이 사용될 수 있다.

이후 단계 S210에서 수신한 애플리케이션 스위칭 이벤트를 기초로 수신기에 제공할 디지털 방송 애플리케이션을 추출한다(S230).
예전에 애플리케이션 스위칭 이벤트가 변경된 채널에 대한 채널 식별 정보 또는 수신기에 대한 장치 식별 정보 또는 수신기의 사용자 식별 정보를 포함하는 경우를 기초로 수신기에 제공할 디지털 방송 애플리케이션을 추출하는 과정을 설명한다.

우선 변경된 채널에 대한 식별 정보를 기초로 해당 채널에 적합한 디지털 방송 애플리케이션을 추출한다.

즉 미리 채널에 대해서 제공할 디지털 방송 애플리케이션을 예전에 채널 정보를 기초로 프롬투(From-to) 데이터 형태로 구성하고 이 중에서 채널 정보에 대응하는 디지털 방송 애플리케이션을 추출하는 것이다.

또한 수신기에 대한 장치 식별 정보 또는 수신기의 사용자 식별 정보를 기초로 수신기 또는 시청자에 대해 적합한 개인화된 디지털 방송 애플리케이션을 추출할 수도 있다.

즉 미리 제공할 디지털 방송 애플리케이션을 프로파일을 기초로 프롬투 데이터 형태로 구성하고 이 중에서 수신기에 대한 장치 식별 정보 또는 수신기의 사용자 식별 정보에 대응하는 프로파일에 해당하는 디지털 방송 애플리케이션을 추출하는 것이다.

이러한 과정을 통하여 수신기에 제공할 디지털 방송 애플리케이션을 추출할 수 있다.

이후 단계 S230에서 추출한 디지털 방송 애플리케이션이 수신기에게로 전송된다(S250)。

39-25
또한 이러한 애플리케이션 제공 서버로부터 수신기로의 디지털 방송 애플리케이션의 전송은 리턴 채널을 통하여 수행된다.

바람직하게는 리턴 채널은 초고속 통신망으로 구현될 수 있으며, 예컨대 VDSL 또는 FTTH 등의 초고속 통신망이 사용될 수 있다.

한편 단계 S230과 단계 S250에서의 디지털 방송 애플리케이션의 추출과 전송은 중재와 마찬가지로 하나의 전체 애플리케이션을 추출하고 이를 전송하여 수신기에 있어서 실행하는 방식을 취할 수도 있다.

그러나 이러한 경우 전송한 디지털 방송 애플리케이션의 제공 가능 개수나 크기, 또는 구성에 따른 제한이 발생할 수 있다.

따라서 디지털 방송 애플리케이션의 추출과 전송은 다음과 같은 형태를 취할 수 있다.

우선 디지털 방송 애플리케이션을 최소 실행 데이터와 추가 실행 데이터로 구분하고, 애플리케이션 제공 서버는 이러한 최소 실행 데이터와 추가 실행 데이터를 미리 저장하는 것이다.

최소 실행 데이터 또는 추가 실행 데이터에 대한 설명은 전술한 바와 같다.

즉 단계 S210 이전에 애플리케이션 제공 서버는 이러한 최소 실행 데이터와 추가 실행 데이터를 구분하여 미리 저장한다.

이후 단계 S210을 통하여 애플리케이션 스위칭 이벤트를 수신하면, 단계 S230은 애플리케이션 스위칭 이벤트를 기초로 수신기에 제공할 디지털 방송 애플리케이션에 대한 최소 실행 데이터를 추출한다.
이러한 추출이 완료되면 단계 S250을 통하여 최소 실행 데이터를 전송하고, 최소 실행 데이터를 수신기에서 실행한다.

이후 수신기 측에서 최소 실행 데이터의 실행 도중에 필요한 추가 실행 데이터를 요청하게 되면, 애플리케이션 제공 서버에서 이를 수신한다.

이후 단계 S230을 통하여 요청한 추가 실행 데이터를 추출하고 이를 다시 단계 S250을 통하여 수신기에계로 전송하여 수신기 측에서 추가 실행 데이터를 수신하여 실행하도록 구성할 수 있다.

이러한 장면 단위 로딩 구성은 취하는 경우 전송하듯이 디지털 방송 시스템을 통하여 제공 가능한 디지털 방송 애플리케이션의 개수 또는 크기 또는 구성에 제한을 최소화할 수 있다.

또한 다수의 디지털 방송 애플리케이션에서 사용 가능한 다수의 최소 실행 데이터와 다수의 추가 실행 데이터로 구분하고, 애플리케이션 제공 서버는 이러한 다수의 최소 실행 데이터와 다수의 추가 실행 데이터를 미리 저장하는 것이다.

최소 실행 데이터는 예컨대 디지털 방송 애플리케이션의 초기 화면에 대한 데이터이며, 추가 실행 데이터는 예컨대 최소 실행 데이터를 기초로 한 디지털 방송 애플리케이션의 실행 도중에 사용자 입력에 대응하여 추가적으로 표시하여야 할 화면 또는 리소스에 대한 데이터일 수 있다.

즉 단계 S210 이전에 애플리케이션 제공 서버는 이러한 다수의 최소 실행 데이터와 다수의 추가 실행 데이터를 구분하여 미리 저장한다.

이후 단계 S210을 통하여 애플리케이션 스위칭 이벤트를 수신하면, 단계
S230은 애플리케이션 스위칭 이벤트를 기초로 수신기에 제공할 디지털 방송 애플리케이션에 대한 수신기 최소 실행 데이터를 추출한다. 즉 다수의 최소 실행 데이터 중에서 수신기에게 제공할 최소 실행 데이터를 추출하는 것이다.

이러한 추출이 완료되면 단계 S250을 통하여 수신기 최소 실행 데이터를 전송하고, 수신기 최소 실행 데이터를 수신기에서 실행한다.

이후 수신기 측에서 수신기 최소 실행 데이터의 실행 도중에 필요한 수신기 추가 실행 데이터를 요청하게 되면, 애플리케이션 제공 서버에서 이를 수신한다.

이후 단계 S230을 통하여 요청한 수신기 추가 실행 데이터를 추출하고 이를 다시 단계 S250을 통하여 수신기에게로 전송하여 수신기 측에서 수신기 추가 실행 데이터를 수신하여 실행하도록 구성할 수 있다.

이러한 구성을 취하는 경우 특히 추가 실행 데이터를 다수의 디지털 방송 애플리케이션에서 선택적으로 재사용이 가능하여 애플리케이션 제공 서버의 저장 용량을 극대화할 수 있고 또한 디지털 방송 애플리케이션의 제사용을 강화할 수 있다. 예컨대 동일한 실행 코드, 동일한 화면이나 리소스를 나타내는 최소 실행 데이터 또는 추가 실행 데이터를 다수의 디지털 방송 애플리케이션에서 다시 작성하지 않고서도 사용이 가능하다.

또한 본 발명은 전술한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법의 각 단계를 실현시키기 위한 프로그램을 기록한 컴퓨터로 판독 가능한 기록 매체를 제공한다.

컴퓨터로 판독 가능한 기록 매체는 컴퓨터 시스템에 의하여 읽혀질 수 있도록
록 데이터, 즉 코드 또는 프로그램 형태의 데이터가 저장되는 모든 종류의 기록 장치를 지정한다. 이러한 컴퓨터로 판독 가능한 기록 매체는 예컨대 ROM, RAM 등의 메모리와, CD-ROM, DVD-ROM 등의 저장 매체, 자기 테이프, 플로피 디스크 등의 자기 저장 매체, 광 데이터 저장 장치 등이며, 예컨대 인터넷을 통한 전송 형태로 구현되는 경우도 포함한다. 또한 이러한 컴퓨터로 판독 가능한 기록 매체는 네트워크로 연결된 컴퓨터 시스템에 분산되어 분산 방식으로 컴퓨터가 판독 가능한 데이터가 저장되고 실행될 수 있다.

그러나 이러한 컴퓨터로 판독 가능한 기록 매체에 대한 상세한 설명은 도 1 내지 도 2를 참조로 설명한 본 발명에 따른 디지털 방송 애플리케이션 스위칭 방법과 종복됨으로 생략한다.

비록 본 발명의 구성이 구체적으로 설명되었지만 이는 단지 본 발명을 예시적으로 설명한 것에 불과한 것으로, 본 발명이 속하는 기술분야에서 동상의 지식을 가지는 자라면 본 발명의 본질적인 특성에서 벗어나지 않는 범위 내에서 다양한 변형이 가능할 것이다.

따라서 본 명세서에 개시된 실시예들은 본 발명을 한정하기 위한 것이 아니라 설명하기 위한 것이고, 이러한 실시예에 의하여 본 발명의 사상과 범위가 한정되는 것은 아니다. 본 발명의 범위는 아래의 청구범위에 의해 해석되어야 하며, 그와 동등한 범위 내에 있는 모든 기술은 본 발명의 권리범위에 포함되는 것으로 해석되어야 할 것이다.
【발명의 효과】

이상 설명한 바와 같이, 본 발명에 따르면 채널 변경에 대응하여 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버로부터 해당 채널에 대응한 디지털 방송 애플리케이션을 수신하여 디지털 방송 애플리케이션의 수신 및 실행에 필요한 시간을 최소화하며, 디지털 방송 애플리케이션을 최소 실행 데이터 및 추가 실행 데이터로 분할하고 필요한 데이터만을 장면 단위로 수신하여 실행함으로써 디지털 방송 애플리케이션의 수신 및 실행에 필요한 시간을 최소화하며, 제공 가능한 디지털 방송 애플리케이션의 개수 또는 크기에 대한 제한을 최소화할 수 있으며, 수신기 또는 사용자 정보를 기초로 개인화된 디지털 방송 애플리케이션의 제공이 가능하다.
【특허청구범위】

【청구항 1】

디지털 방송 애플리케이션을 수신하여 제공하는 수신기에서의 디지털 방송 애플리케이션 스위칭 방법으로서,

(a) 채널 변경 이벤트를 수신하는 단계와,

(b) 상기 채널 변경 이벤트에 대응하여 변경된 채널에 적합한 디지털 방송 애플리케이션을 요청하는 애플리케이션 스위칭 이벤트를 생성하는 단계와,

(c) 상기 애플리케이션 스위칭 이벤트를 디지털 방송 애플리케이션을 제공하는 애플리케이션 제공 서버에게로 전송하는 단계와,

(d) 상기 애플리케이션 제공 서버로부터 전송되는 상기 애플리케이션 스위칭 이벤트에 대응한 상기 디지털 방송 애플리케이션을 수신하여 실행하는 단계

를 포함하는 디지털 방송 애플리케이션 스위칭 방법.

【청구항 2】

제1항에 있어서,

상기 단계 (a)는, (a-1) 상기 변경된 채널에 대한 채널 식별 정보를 포함하는 상기 채널 변경 이벤트를 수신하는 단계

를 포함하는 것이 디지털 방송 애플리케이션 스위칭 방법.

【청구항 3】

제1항에 있어서,
상기 단계 (b)는, (b-1) 상기 변경된 채널에 대한 채널 섹션 정보 또는 상기 수신기에 대한 장치 섹션 정보 또는 상기 수신기의 사용자 섹션 정보를 포함하는 상기 애플리케이션 스위칭 이벤트를 생성하는 단계

를 포함하는 것이 디지털 방송 애플리케이션 스위칭 방법.

【청구항 4】

제1항에 있어서,

상기 단계 (d)는,

(d-1) 상기 애플리케이션 제공 서버로부터 상기 디지털 방송 애플리케이션의 실행에 필요한 최소 실행 데이터를 수신하는 단계와,

(d-2) 상기 최소 실행 데이터를 실행하는 단계

를 포함하는 것이 디지털 방송 애플리케이션 스위칭 방법.

【청구항 5】

제4항에 있어서,

상기 최소 실행 데이터는 상기 디지털 방송 애플리케이션의 초기 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터인 것이 디지털 방송 애플리케이션 스위칭 방법.

【청구항 6】

제4항에 있어서,

상기 단계 (d)는,
(d-3) 상기 최소 실행 데이터의 실행 도중에 필요한 추가 실행 데이터를 상기 에플리케이션 제공 서버에 요청하는 단계와,

(d-4) 상기 에플리케이션 제공 서버로부터 상기 추가 실행 데이터를 수신하는 단계와,

(d-5) 상기 추가 실행 데이터를 실행하는 단계

를 포함하는 것인 디지털 방송 에플리케이션 스위칭 방법.

【청구항 7】

제6항에 있어서,

상기 추가 실행 데이터는 상기 최소 실행 데이터를 기초로 한 상기 디지털 방송 에플리케이션의 실행 도중에 사용자 입력에 대응하여 추가적으로 표시하여야 할 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터인 것인 디지털 방송 에플리케이션 스위칭 방법.

【청구항 8】

디지털 방송 에플리케이션을 제공하는 에플리케이션 제공 서버에서의 디지털 방송 에플리케이션 스위칭 방법으로서,

(a) 디지털 방송 에플리케이션을 실행하여 제공하는 수신기로부터 에플리케이션 스위칭 이벤트를 수신하는 단계와,

(b) 상기 에플리케이션 스위칭 이벤트를 기초로 상기 수신기에 제공할 디지털 방송 에플리케이션을 추출하여 상기 수신기에게로 전송하는 단계
물을 포함하는 디지털 방송 애플리케이션 스위칭 방법.

【청구항 9】

제8항에 있어서,

상기 단계 (a)는, (a-1) 채널에 대한 채널 식별 정보 또는 상기 수신기에 대한 장치 식별 정보 또는 상기 수신기의 사용자 식별 정보를 포함하는 상기 애플리케이션 스위칭 이벤트를 수신하는 단계

를 포함하는 것인 디지털 방송 애플리케이션 스위칭 방법.

【청구항 10】

제9항에 있어서,

상기 단계 (b)는, (b-1) 상기 채널 식별 정보 또는 상기 장치 식별 정보 또는 상기 사용자 식별 정보를 기초로 상기 수신기에 제공할 디지털 방송 애플리케이션을 주출하는 단계

를 포함하는 것인 디지털 방송 애플리케이션 스위칭 방법.

【청구항 11】

제8항에 있어서,

상기 단계 (a) 이전에,

(c) 상기 디지털 방송 애플리케이션에 대해서 최소 실행 데이터와 추가 실행 데이터를 구분하여 저장하는 단계

를 더 포함하는 디지털 방송 애플리케이션 스위칭 방법.
【청구항 12】

제1항에 있어서,

상기 단계 (b)는,

(b-2) 상기 애플리케이션 스위칭 이벤트를 기초로 상기 수신기에게 제공할 상기 디지털 방송 애플리케이션에 대한 최소 실행 데이터를 추출하는 단계와,

(b-3) 상기 최소 실행 데이터를 상기 수신기에게 전송하는 단계

을 포함하는 것인 디지털 방송 애플리케이션 스위칭 방법.

【청구항 13】

제1항에 있어서,

상기 최소 실행 데이터는 상기 디지털 방송 애플리케이션의 초기 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터인 것인 디지털 방송 애플리케이션 스위칭 방법.

【청구항 14】

제1항에 있어서,

상기 단계 (b)는,

(b-4) 상기 최소 실행 데이터의 실행 도중에 필요한 추가 실행 데이터에 대한 전송 요청을 상기 수신기로부터 수신하는 단계와,

(b-5) 상기 추가 실행 데이터를 추출하여 상기 수신기에게로 전송하는 단계

을 포함하는 것인 디지털 방송 애플리케이션 스위칭 방법.
【청구항 15】

제14항에 있어서,

상기 추가 실험 데이터는 상기 최소 실험 데이터를 기초로 한 상기 디지털 방송 애플리케이션의 실험 도중에 사용자 입력에 대응하여 상기 추가 실험 데이터는 상기 최소 실험 데이터를 기초로 한 상기 디지털 방송 애플리케이션의 실험 도중에 사용자 입력에 대응하여 추가적으로 표시하여야 할 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터인 것인 디지털 방송 애플리케이션 스위칭 방법.

【청구항 16】

제8항에 있어서,

상기 단계 (a) 이전에,

(d) 다수의 디지털 방송 애플리케이션에서 사용 가능한 다수의 최소 실험 데이터와 다수의 추가 실험 데이터를 구분하여 저장하는 단계

를 더 포함하는 디지털 방송 애플리케이션 스위칭 방법.

【청구항 17】

제16항에 있어서,

상기 단계 (b)는,

(b-6) 상기 애플리케이션 스위칭 이벤트를 기초로 상기 다수의 최소 실험 데이터 중에서 상기 수신기에 제공할 상기 디지털 방송 애플리케이션에 대한 수신기 최소 실행 데이터를 추출하는 단계와,
(b-7) 상기 수신기 최소 실행 데이터를 상기 수신기에게로 전송하는 단계를 포함하는 것이 디지털 방송 애플리케이션 스위칭 방법.

【청구항 18】

제17항에 있어서,

상기 수신기 최소 실행 데이터는 상기 디지털 방송 애플리케이션의 초기 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터인 것인 디지털 방송 애플리케이션 스위칭 방법.

【청구항 19】

제17항에 있어서,

상기 단계 (b)는,

(b-8) 상기 수신기 최소 실행 데이터의 실행 도중에 필요한 수신기 추가 실행 데이터에 대한 전송 요청을 상기 수신기로부터 수신하는 단계와,

(b-9) 상기 단수의 추가 실행 데이터 중에서 상기 전송 요청에 대응한 상기 수신기 추가 실행 데이터를 추출하여 상기 수신기에게로 전송하는 단계를 포함하는 것이 디지털 방송 애플리케이션 스위칭 방법.

【청구항 20】

제19항에 있어서,

상기 수신기 추가 실행 데이터는 상기 수신기 최소 실행 데이터를 기초로 한 상기 디지털 방송 애플리케이션의 실행 도중에 사용자 입력에 대응하여 추가적으로

39-37
표시하여야 할 화면에 대한 실행 코드, 화면 데이터 또는 리소스 데이터인 것인 디지털 방송 애플리케이션 스위칭 방법.

【청구항 21】

제1항 내지 제20항 중 어느 한 항에 따른 디지털 방송 애플리케이션 스위칭 방법의 각 단계를 실현시키기 위한 프로그램을 기록한 컴퓨터로 판독 가능한 기록매체.
【도면】

【도 1】

시작

채널 변경 이벤트 수신 → S110

애플리케이션 스위칭 이벤트 생성 → S130

애플리케이션 제공 서버에게 애플리케이션 스위칭 이벤트 전송 → S150

애플리케이션 스위칭 이벤트에 대응한 디지털 방송 애플리케이션 수신 및 실행 → S170

종료

【도 2】

시작

수신기로부터 애플리케이션 스위칭 이벤트 수신 → S210

애플리케이션 스위칭 이벤트를 기초로 디지털 방송 애플리케이션 추출 → S230

추출된 디지털 방송 애플리케이션을 수신기에게 전송 → S250

종료
# Patent Application Fee Determination Record

## 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 $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(e).

### Application as Amended – Part II

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## Amendment

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### Legal Instrument Examiner:

SHERRY A. DAVIS/

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

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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