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(71) Applicant: **Electronics and Telecommunications Research Institute**
Yuseong-gu
Daejeon 305-350 (KR)

(72) Inventors:
• **Lee, Bong-Ho**
305-250, Daejeon (KR)
• **Yang, Kyu-Tae**
305-390, Daejeon (KR)

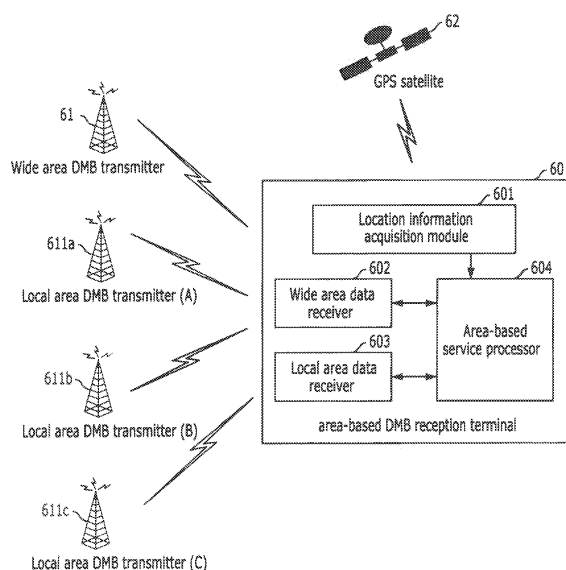
- **Lee, Hyun**
302-120, Daejeon (KR)
- **Lee, Gwang-Soon**
305-250, Daejeon (KR)
- **Yun, Kug-Jin**
305-358, Daejeon (KR)
- **Hur, Nam-Ho**
305-325, Daejeon (KR)
- **Lee, Yong-Hoon**
305-250, Daejeon (KR)
- **Kim, Jin-Woong**
305-761, Daejeon (KR)
- **Lee, Soo-In**
302-120, Daejeon (KR)

(74) Representative: **Betten & Resch**
Patentanwälte
Theatinerstrasse 8
80333 München (DE)

(54) **Method for providing region-based dmb service, and apparatus and method for receiving region-based broadcasting service**

(57) Provided are a method for providing a region-based Digital Multimedia Broadcasting (DMB) service, and an apparatus and method for receiving the region-based broadcasting service. The region-based DMB service providing method can quickly and easily provide a wide area service and/or a local area service simultaneously or selectively by transmitting local area common control information to be commonly applied to a plurality of local areas that belong to a specific wide area through wide area transmission frame, and efficiently receiving broadcasting signals at a receiving part. The method for providing an region-based DMB service includes: generating a wide area transmission frame including data related to a wide area service and local area common service information to be commonly applied to a plurality of local areas belonging to a wide area; and transforming the generated wide area transmission frame into a broadcasting signal and broadcasting the broadcasting signal over the wide area.

FIG. 6



Description

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] The present invention claims priority of Korean Patent Application Nos. 10-2008-0068316 and 10-2008-0130550, filed on July 14, 2008, and December 19, 2008, respectively, which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention relates to a method for providing an region-based broadcasting service; and, more particularly, to a method for providing an region-based Digital Multimedia Broadcasting (DMB) service where service area is divided into a wide area and a local area according to the coverage of broadcasting signals and data of a corresponding service are separately transmitted, and an apparatus and method for receiving the region-based broadcasting service. The region-based DMB service providing method can quickly and easily provide a wide area service and/or a local area service simultaneously or selectively by transmitting local area common service information to be commonly applied to a plurality of local areas that belong to a specific wide area through wide area transmission frames, and efficiently receiving broadcasting signals at a receiving part. Development of Next-Generation DTV Core Technology

Description of Related Art

[0003] A conventional broadcasting service providing method through a terrestrial digital multimedia broadcasting (T-DMB) network sets each broadcasting coverage as a single area and provides the same service to the area set as a single area.

[0004] For example, in the case of T-DMB, a T-DMB service is provided by dividing 6 MHz band allocated as a conventional analog TV band into about 2 MHz bands including a guard band interval. The frequency band of 2 MHz including a guard band is generally used to cover a wide area such as a metropolitan area in consideration of a basic purpose of broadcasting.

[0005] The conventional broadcasting service providing method commonly provides services of a frequency band over the entire wide area, regardless of the location within the wide area.

[0006] In other words, the conventional DMB service has a limitation in systematically classifying and providing a service specified to an area, especially to a local area, and has a disadvantage in view of transmission efficiency.

[0007] Therefore, it is required to develop a method for hierarchically dividing a service area into local areas

and providing a service according to an area.

SUMMARY OF THE INVENTION

[0008] As described above, the conventional technology does not systematically classify and provide a service dedicated to a specific area and has a problem in that it is inefficient in terms of transmission efficiency. The present invention is devised to resolve the problems of the conventional technology.

[0009] Other objects and advantages of the present invention can be understood by the following description, and become apparent with reference to the embodiments of the present invention. Also, it is obvious to those skilled in the art to which the present invention pertains that the objects and advantages of the present invention can be realized by the means as claimed and combinations thereof.

[0010] An embodiment of the present invention is directed to a method for providing a service based on a location/area by dividing a service area into wide areas and local areas according to coverage of broadcasting signals and separately providing service data according to a wide area and a local area.

[0011] An embodiment of the present invention is directed to a method for transmitting local area common control information to be commonly applied to a plurality of location areas that belong to a wide area through wide area transmission frame.

[0012] Also, an embodiment of the present invention is directed to a method for receiving service data related to a wide area and local area simultaneously or selectively at a receiving part and providing the received service data to users.

[0013] In accordance with an aspect of the present invention, there is provided a method for providing an region-based Digital Multimedia Broadcasting (DMB) service, which includes: generating a wide area transmission frame including data related to a wide area service and local area common service information to be commonly applied to a plurality of local areas belonging to a wide area; and transforming the generated wide area transmission frame into a broadcasting signal and broadcasting the broadcasting signal over the wide area.

[0014] In accordance with another aspect of the present invention, there is provided a broadcasting service receiving apparatus for receiving an region-based broadcasting service, including: a location information acquiring means for acquiring current location information of the broadcasting service receiving apparatus; a wide area data receiving means for extracting wide area service-related data and local area common service information from wide area broadcasting signals; a local area data receiving means for receiving local area broadcasting signals corresponding to the current location information and extracting local area service-related data from the local area broadcasting signals based on the acquired current location information and the extracted

local area common service information; and an region-based service processing means for receiving corresponding extracted information from at least one between the wide area data receiving means and the local area data receiving means according to a selection made by a user to provide an region-based service.

[0015] In accordance with another aspect of the present invention, there is provided a method for receiving an region-based broadcasting service, including: acquiring wide area service information and local area common service information by receiving wide area broadcasting signals; receiving a selection on the type of an region-based service from a user; and when the selected service type is a local area service, receiving local area broadcasting signals corresponding to a current location based on current location information and the local area common service information to provide the local area service.

BRIEF DBSCBITION OF THE DRAWINGS

[0016] Fig. 1 is a diagram showing how a broadcasting coverage is divided in a multiple frequency network (MFN) in accordance with an embodiment of the present invention.

[0017] Fig. 2 illustrates a system of control information for a region-based broadcasting service in accordance with an embodiment of the present invention.

[0018] Fig. 3 is a flowchart describing a method for providing a Digital Multimedia Broadcasting (DMB) service based on an area.

[0019] Figs. 4A to 4C illustrate a transmission frame of a wide area ensemble for a region-based broadcasting service in accordance with an embodiment of the present invention.

[0020] Fig. 5 illustrates a transmission frame of a local area ensemble in accordance with an embodiment of the present invention.

[0021] Fig. 6 is a block view of a region-based broadcasting service receiving apparatus in accordance with an embodiment of the present invention.

[0022] Fig. 7 is a flowchart describing a region-based broadcasting service receiving method of the region-based broadcasting service receiving apparatus in accordance with an embodiment of the present invention.

[0023] Fig. 8 is a flowchart describing an automatic alarm service providing method in accordance with an embodiment of the present invention.

DESCRIPTION OF SPECIFIC EMBODIMENTS

[0024] The present invention separates and provides diverse multimedia services including audio, video and data according to each service area through a terrestrial Digital Multimedia Broadcasting (T-DMB) network. In other words, the present invention divides a service area into small areas where DMB broadcasting signals are received according to coverage of broadcasting signals

and separately provide a service specified to the small area.

[0025] Particularly, the present invention provides typical T-DMB service through the T-DMB network as well as services specified for an area or location by dividing a service area into wide areas and local areas according to the coverage of broadcasting signals and separately transmitting data related to each area.

[0026] A region-based broadcasting service receiving apparatus of the present invention includes a wide area data receiving module and a local area data receiving module separately to thereby provide a region-based broadcasting service by receiving both or any one of wide region-based data and local region-based data.

[0027] To take an example, the method of the present invention divides a broadcasting services area into a wide area and local areas and provides a common service to the wide area and provides a limited service related to a specific local area to the local area. In this way, the method of the present invention can provide not only a DMB service in a mobile environment efficiently but also additionally provide diverse local region-based or location-based services related to a specific local area or the location of a user.

[0028] The advantages, features and aspects of the invention will become apparent from the following description of the embodiments with reference to the accompanying drawings, which is set forth hereinafter. Also, when it is considered that detailed description on a conventional technology may obscure a point of the present invention, the description will not be provided herein. Hereafter, specific embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0029] Fig. 1 is a diagram showing how a broadcasting coverage is divided in a multiple frequency network (MFN) in accordance with an embodiment of the present invention. The drawing illustrates a concept that a broadcasting coverage of a wide area is divided into local areas.

[0030] In accordance with an embodiment of the present invention, a broadcasting coverage, which means an area where a conventional terrestrial Digital Multimedia Broadcasting (DMB) service is provided, is divided into wide areas each covering a metropolis and then each wide area is divided again into local areas to hierarchically provide a mobile DMB service according to each local area.

[0031] Herein, a wide area 10, such as Daejeon metropolitan city, includes one or more local areas 101a to 101c, 102a to 102c, and 103a to 103c, such as Yuseong-gu and Jeonmin-dong. A common service is scheduled and provided to all of the local areas 101a to 101c, 102a to 102c, and 103a to 103c that belong to the wide area 10.

[0032] As for the local areas 101a to 101c, 102a to 102c, and 103a to 103c, a service limited to a local area is provided. The local areas 101a to 101c, 102a to 102c, and 103a to 103c use a frequency different from that of

the wide area 10, which thereby constitutes a Multiple Frequency Network (MFN).

[0033] According to specific embodiments of the region-based service providing method which is suggested in the present invention, when a user moves to a specific location of a local area while receiving a wide area service, a receiving apparatus of the user receives a service specifically provided to the local area automatically or upon a request from the user, asks the user of whether to receive the area-specific service or not, and provides the user with the service if the user selects using the local area service.

[0034] Such a region-based service can provide the mobile user with beneficial information related to the location of the user. For example, when the user is located near an amusement park along with his family, he does not have to deliberately make an access to a mobile communication network or a cable network to find out event or local information of the amusement park but he can simply acquire information related to the amusement park from local-area DMB signals broadcasted to the corresponding local area.

[0035] In order to provide the region-based service, the first thing to do is to provide one or more service information (SI) on local area DMB ensembles, which will be simply referred to as local area service information, and to efficiently form and provide service information and service data for a local area.

[0036] To satisfy the first conditions, the present invention includes local area service information in a wide area ensemble (see Fig. 2) and includes service information and service data of a corresponding local area in each local-area ensemble.

[0037] Fig. 2 illustrates a system of control information for a region-based broadcasting service in accordance with an embodiment of the present invention.

[0038] Service information to be included in a wide area terrestrial DMB, which will be referred to as a wide area ensemble, generally includes the frequency of each local area, location of a transmitter, and coverage information where broadcasting signals propagate. Hereafter, among service information included in a wide area ensemble, service information only dedicated to a wide area service will be referred to as 'wide area service information' while service information commonly applied to the entire or some local areas in connection with a local area service will be referred to as 'local area common service information.' In addition, service information limited to a specific local area, which is included in a local area ensemble and transmitted in connection with a specific local-area service will be referred to as 'local area-specific service information.'

[0039] Referring to Figs. 4A to 4C, a wide area ensemble includes general ensemble-related information on a T-DMB ensemble, which will be referred to as 'local area ensemble,' and related location information. Besides, the wide area ensemble includes additional related information to provide a local region-based occasional service,

which is automatically informed to a user.

[0040] Also, unlike ensemble-related information provided by a conventional Digital Audio Broadcasting (DAB), the wide area ensemble includes identification information, which is called an ensemble identifier, to identify a local area ensemble existing in a wide area. In other words, although conventional DAB/DMB service providing methods provide information on other ensembles, and service information or announcement information of the other ensembles, the present invention forms in group service information to be commonly/generally applied to local area ensembles that constitute a wide area and provides the grouped service information.

[0041] To be specific, the wide area ensemble (see Figs. 4A to 4C) includes local area common service information to be commonly applied to the local areas that belong to the wide area. In short, a wide area ensemble includes service information related to a wide area service, and service information to be commonly applied to the entire or some local areas of a wide area. Service information used in connection with the present invention not only includes control information of a narrow meaning but also includes diverse additional information except for substantial service data for a corresponding area service, such as service information (see Fig. 2).

[0042] A method for providing local area common service information, suggested in the present invention, includes a method of adding an additional field to an existing DAB FIG to form local area common service information or a method of allocating an additional sub-channel to a main service channel based on DAB exclusive Markup Language (XML) to thereby form and provide XML data, as illustrated in Figs. 4A and 4B. Also, the present invention can provide local area common service information in diverse data forms other than the above-mentioned methods.

[0043] As for the transmission of local area service information, local area common service information should be transmitted through a wide area ensemble, while local area-specific service information should be transmitted through each local area ensemble. Herein, the local area common service information and/or the local area-specific service information may include additional announcement information. The announcement information corresponds to information on a service or data, which should be necessarily received, when a user is located in the coverage of a local area. The announcement information is needed when a service provider compels users informed of the existence of a service or data to be provided to the users.

[0044] Referring to Fig. 2, service information available in connection with a region-based service is divided into service information 20 for a wide area, which is a group of local areas, and service information 201 to 204 for a plurality of local areas that belong to the wide area. Service information on each local area is again divided into local area common service information, which is in common among the entire or some local areas, and local

area-specific service information, which is related only to a specific local area.

[0045] A field of a service information 201 that is related to a wide area may include a group identifier, wide area location information, coverage information, the number of local area ensembles, whether there is an announcement service and the like. Herein, if there are a plurality of wide areas, the group identifier is a wide area identifier for identify each wide area. The group identifier may be the same as a transmitter identifier indicator (TII) or it may be a group identification code individually given. The location information and the coverage information stand for a specific location of a transmitter or a wide area service region and coverage information around the specific location. The number of local area ensembles means the number of local area ensembles existing in a wide area and it includes local area ensemble service information 201 to 204 as many as the number in the lower rank.

[0046] Also, the wide area service information may additionally include information on whether there is automatic announcement service. The information on whether there is automatic announcement service is a field informing that there is a local area service or a service like an occasional event which should be automatically informed to all users in the coverage of a certain local area constituting a wide area.

[0047] Using the automatic announcement service field is advantageous in that when a user is in the cover of a specific local area service, a region-based service provider can automatically inform the user of an advertisement, occasional event, or important announcement information. Also, the user does not have to be bothered by setting his terminal to a broadcasting channel for the local area to receive those informations specific to the local area.

[0048] To take an example of using the automatic announcement service field, if there is a special occasion at an amusement park of a certain local area, the local region-based service provider can provide all users in the coverage of the local area with the occasional event information automatically or compulsorily. The technology of the present invention can automatically provide information or similar services of diverse forms.

[0049] Fig. 3 is a flowchart describing a method for providing a Digital Multimedia Broadcasting (DMB) service based on an area.

[0050] In a region-based broadcasting service providing system of the present invention, wide area transmission frames including 'wide area service-related data,' which are wide area service information and wide area service data, and 'local area common service information to be commonly applied to a local area which belongs to the wide area' are generated at step S300. The generation of the wide area transmission frame will be described in detail with reference to Figs. 4A to 4C.

[0051] At step S302, the generated wide area transmission frames are transformed into broadcasting signals and broadcasted over the wide area.

[0052] Figs. 4A to 4C illustrate a transmission frame of a wide area ensemble for a region-based broadcasting service in accordance with an embodiment of the present invention.

[0053] Local area common service information, which is service information commonly applied to all or some local area bands (or local area ensembles) existing in a wide area, can be transmitted through any one of the following three methods.

[0054] First, as shown in Fig. 4A, local area common service information is transmitted by forming a separate Fast Information Group (FIG) 411 in a Fast Information Channel (FIC) 41. In other words, wide area service information and the local area common service information 411 are included in the FIC 41, and wide area service data are included in a Main Service Channel (MSC) 42 to be transmitted.

[0055] Second, as shown in Fig. 4B, a local area sub-channel 421 is formed in the main service channel 42 and data are transmitted in the form of XML or binary stream, text or another available data form. In short, wide area service information is included in the FIC 41 and the main service channel 42 is divided into sub-channels and. The local area common service information 421 and wide area service data are included in the different sub-channels to be transmitted.

[0056] Third, as shown in Fig. 4C, data are separately transmitted through a FIG 431 of the FIC 41 and sub-channels 432 of the FIG 431 and MSC 42. In other words, wide area service information is included in the FIC 41 and wide area service data are included in the main service channel 42 to be transmitted, while the local area common service information is separately included in the sub-channels 431 and local area sub-channel 421 of the FIC 41 and the main service channel 42 to be transmitted.

[0057] Fig. 5 illustrates a transmission frame of a local area ensemble in accordance with an embodiment of the present invention.

[0058] The local area transmission frame is the same as the existing T-DMB structure. If there is any difference, FIC 51 corresponds only to a local area FIC (L-FIC) and it includes service information limited only to a corresponding local area, which is referred to as local area-specific service information.

[0059] A main service channel 52 includes local area data (L-data).

[0060] Fig. 6 is a block view of a region-based broadcasting service receiving apparatus in accordance with an embodiment of the present invention. Hereafter, the region-based broadcasting service receiving apparatus of the present invention will be simply referred to as a 'region-based DMB reception terminal.'

[0061] The region-based DMB reception terminal 60 of the present invention simultaneously receives a wide area service and a local area service by forming one or more T-DMB baseband processing modules, which correspond to the elements 602 and 603 shown in Fig. 6). Also, the region-based DMB reception terminal 60 ac-

quires real-time location information of a user by separately forming a location information acquisition module 601, receive a service of the corresponding area where the user is located, and provides the location information periodically or upon a request of a user to provide the user with services and contents associated with the location.

[0062] Referring to Fig. 6, the region-based DMB reception terminal 60 of the present invention includes a location information acquiring unit 601, a wide area data receiver 602, a local area data receiver 603, and a region-based service processor 604. Hereafter, the constituent elements will be described in detail.

[0063] The location information acquiring unit 601 measures a location information of the region-based DMB reception terminal 60 based on location signals transmitted from a Global Positioning System (GPS) 62 or a DMB transmitter_ and the local area data receiver 603 receives DMB signals of the location based on the measured location information. The technology of the present invention can separately provide users with contents or services related to the location of the user or an area through the region-based service processor 604 based on the measured location information.

[0064] The wide area data receiver 602 receives DMB signals, which are wide area broadcasting signals, transmitted through a wide area channel to acquire wide area service information and local area common service information. In other words, the wide area data receiver 602 receives local area common service information transmitted through a wide area channel and transmits it to the region-based service processor 604. The transmitted local area common service information is used for providing a local area service.

[0065] The local area data receiver 603 receives local area-specific service information and service data of the local area from local area-specific broadcasting signal, which are broadcasting signals of the local area where a current region-based DMB reception terminal 60 is located, based on the local area common service information transmitted from the wide area data receiver 602 and the location information transmitted from the location information acquiring unit 601. Herein, since the wide area broadcasting signals use different frequency from that of the local area broadcasting signals, the region-based DMB reception terminal 60 can simultaneously receive and process the broadcasting signals of the two kinds.

[0066] The region-based service processor 604 provides the users with services, programs, and contents transmitted through the wide area data receiver 602 and the local area data receiver 603 according to the location of a user.

[0067] To be specific, the region-based service processor 604 receives service, program, or contents that are related to a specific area or location through the wide area data receiver 602 and the local area data receiver 603 to provide a service corresponding to the specific area or location based on the location information meas-

ured by the location information acquiring unit 601 or location information (which is TII and location information of the TII) transmitted through a T-DMB network, and provides the users with services according to an area or location.

[0068] For example, the region-based service processor 604 provides information related to a specific location or an area, such as district information of a specific district, an amusement park, a department store, a discount store, an education institute (e.g., school affairs information of university), a government or public office, a tourist attraction, a residential area (e.g. condominium complex), hospital, village information, diverse types of organizations (religious organization), an airport, transportation terminal, station and so forth.

[0069] Fig. 7 is a flowchart describing a region-based broadcasting service receiving method of the region-based broadcasting service receiving apparatus in accordance with an embodiment of the present invention.

[0070] When the region-based DMB reception terminal 60 operates to provide a region-based service, at step S700, it receives and processes wide area broadcasting signals to acquire wide area service information and local area common service information. Herein, the reception process includes receiving and managing the wide area service information and the local area common service information upon a request of a user. This signifies that the region-based DMB reception terminal 60 receives the wide area service information and the local area common service information automatically and periodically. The wide area service information and the local area common service information generally include the informations shown in Fig. 2, other than the wide area service information and local area service information provided by a conventional DMB system.

[0071] The region-based broadcasting service of the present invention provides any one of the following three types according to a mode selected by a user.

[0072] First, when a user selects a wide and local area service simultaneous reception mode at step S702, the region-based DMB reception terminal 60 acquires wide area service information and local area common service information from wide area broadcasting signals and acquires local area-specific service information and local area service data from local area broadcasting signals to thereby provide a user with both wide area service and local area service.

[0073] Herein, the local area service receiving process of steps S708 to S712 is as follows. At step S708, location information of the local area common service information is acquired. At step S710, the region-based DMB reception terminal 60 receives local area broadcasting signals corresponding to the acquired location information to thereby acquire local area-specific service information. At step S712, the region-based DMB reception terminal 60 receives service data of the corresponding local area from the local area broadcasting signals based on local area service information, which includes local area com-

mon service information and local area-specific service information to there by provide a corresponding service.

[0074] In other words, the location information is acquired by using a GPS or from DMB signals at the step S708. At the step S710, the local area-specific service information corresponding to the acquired location is received by receiving service information broadcasted over the corresponding local area. According to an embodiment, an electronic program guide (EPG) is formed using wide area service information, local area common service information, and local area-specific service information and provided to the user.

[0075] Subsequently, at step S712, local area service data are acquired from broadcasting signals of the corresponding local area automatically or upon a request from a user to thereby provide a service corresponding to the local area service data.

[0076] Second, when the user wants to receive only the local area service at steps S702 and 714, the region-based DMB reception terminal 60 receives the location information at the step S708, receives local area-specific service information of the corresponding local area, acquires the local area service data and provides the service at step S712. The processes are the same as the case when the region-based DMB reception terminal 60 is set in the wide/local area service simultaneous reception mode.

[0077] Third, when the user wants to receive only the wide area, the region-based DMB reception terminal 60 drives only the wide area data receiver 602 of Fig. 6 and acquire wide area service data from wide area broadcasting signals to thereby provide the user with a service corresponding to the wide area service data at the step S714.

[0078] Fig. 8 is a flowchart describing an automatic alarm service providing method in accordance with an embodiment of the present invention. The drawing shows an automatic announcement service when region-based broadcasting service information shown in Fig. 2 is used.

[0079] At step S800, the region-based DMB reception terminal 60 receives automatic announcement service information, such as information on whether there is an automatic announcement service, based on the local area common service information provided by wide area ensembles.

[0080] At step S802, the region-based DMB reception terminal 60 detects the location of a user, that is, the location of the region-based DMB reception terminal 60 in a corresponding local area.

[0081] At step S804, the region-based DMB reception terminal 60 checks if there is an automatic announcement service in a local area where the region-based DMB reception terminal 60 is located based on the automatic announcement service information obtained in the step S800 and the location information obtained in the step S802.

[0082] If there is an automatic announcement service in the local area, the region-based DMB reception terminal

60 receives automatic announcement service data from corresponding local area broadcasting signals and provides the user with the announcement service. Otherwise, if there is no automatic announcement service in the local area, the logic flow goes back to the initial stage, which is the step S800.

[0083] Meanwhile, the method of the present invention described above may be programmed for a computer. Codes and code segments constituting the computer program may be easily inferred by a computer programmer of ordinary skill in the art to which the present invention pertains. The computer program may be stored in a computer-readable recording medium, i.e., data storage, and it may be read and executed by a computer to realize the method of the present invention. The recording medium includes all types of computer-readable recording media.

[0084] As described above, the present invention provides mobile users with information, service, or contents specified for a specific area by providing a DMB service based on an area or location, or diverse information related to the location of the mobile user. Embodiments of the present invention can maximize the experience of the user and provide the users with diverse information and service by providing the service based on an area or location.

[0085] In short, the present invention provides area-specific service only to the area when it provides DMB service such as audio, video and data in a mobile environment.

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

Claims

1. A method for providing a region-based Digital Multimedia Broadcasting (DMB) service, comprising:

generating a wide area transmission frame including data related to a wide area service and local area common service information to be commonly applied to a plurality of local areas belonging to a wide area; and transforming the generated wide area transmission frame into a broadcasting signal and transmitting the broadcasting signal over the wide area.

2. The method of claim 1, wherein the data related to the wide area service includes wide area service information and wide area service data.

3. The method of claim 2, wherein in said generating a wide area transmission frame including data related

- to a wide area service and local area common service information,
the wide area service information and the local area common service information are included in a fast information channel (FIC) and the wide area service data is included in a main service channel (MSC).
4. The method of claim 2, wherein in said generating a wide area transmission frame including data related to a wide area service and local area common service information,
the wide area service information is included in a FIG, and the main service channel is divided into sub-channels and the local area common service information and the wide area service data are included in different sub-channels.
5. The method of claim 2, wherein in said generating a wide area transmission frame including data related to a wide area service and local area common service information,
the wide area service information is included in a FIC, and the wide area service data are included in the main service channel in such a manner that the local area common service information is separately included in the FIC or in sub-channels of the main service channel.
6. A broadcasting service receiving apparatus for receiving a region-based broadcasting service, comprising:
a location information acquiring means for acquiring current location information of the broadcasting service receiving apparatus;
a wide area data receiving means for extracting wide area service-related data and local area common service information from wide area broadcasting signals;
a local area data receiving means for receiving local area broadcasting signals corresponding to the current location information and extracting local area service-related data from the local area broadcasting signals based on the acquired current location information and the extracted local area common service information; and
a region-based service processing means for receiving corresponding extracted information from at least one between the wide area data receiving means and the local area data receiving means according to a selection made by a user to provide a region-based service.
7. The broadcasting service receiving apparatus of claim 6, wherein the wide area service-related data include wide area service information and wide area service data, and
the local area service-related data include local area-specific service information and local area service data.
8. The broadcasting service receiving apparatus of claim 6 or 7, wherein the region-based service processing means provides any one service among a local area service, a wide area service, and a wide and local area simultaneous service according to a selection made by a user.
9. The broadcasting service receiving apparatus of claim 6, 7 or 8, wherein the region-based service processing means checks whether there is an automatic announcement service based on the local area common service information and when there is an automatic announcement service provided, acquires automatic announcement service data from local area broadcasting signals to provide the announcement service.
10. The broadcasting service receiving apparatus of one of claims 6 to 9, wherein the wide area broadcasting signals and the local area broadcasting signals use different frequencies.
11. A method for receiving a region-based broadcasting service, comprising:
acquiring wide area service information and local area common service information by receiving wide area broadcasting signals;
receiving a selection on the type of an region-based service from a user; and
when the selected service type is a local area service, receiving local area broadcasting signals corresponding to a current location based on current location information and the local area common service information to provide the local area service.
12. The method of claim 11, wherein in said receiving local area broadcasting signals corresponding to a current location based on current location information and the local area common service information to provide the local area service,
local area-specific service information and local area service data are acquired from the received local area broadcasting signals and the local area service is provided.
13. The method of claim 11 or 12, wherein in said receiving a selection on the type of an region-based service from a user,
when the selected service type is the wide area service, wide area service data are acquired from the wide area broadcasting signals and the wide area service is provided based on the wide area service information and the wide area service data.

14. The method of claim 13, wherein in said receiving a selection on the type of an region-based service from a user, when the selected service type is the wide and local area simultaneous service, the local area service and the wide area service are provided together. 5

15. The method of claim 12, 13 or 14, further comprising:

checking whether there is an automatic announcement service based on the local area common service information; and 10
when there is an automatic announcement service provided, acquiring automatic announcement service data from broadcasting signals of a corresponding local area to provide the automatic announcement service. 15

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FIG. 1

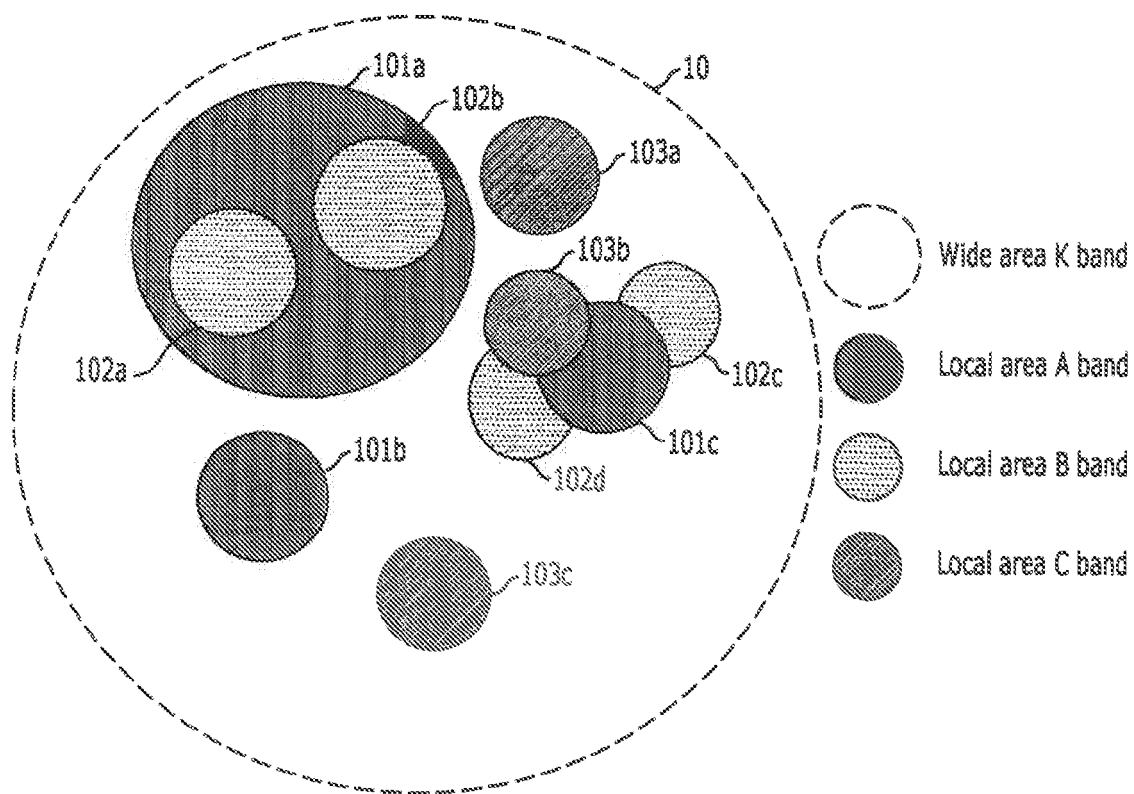


FIG. 2

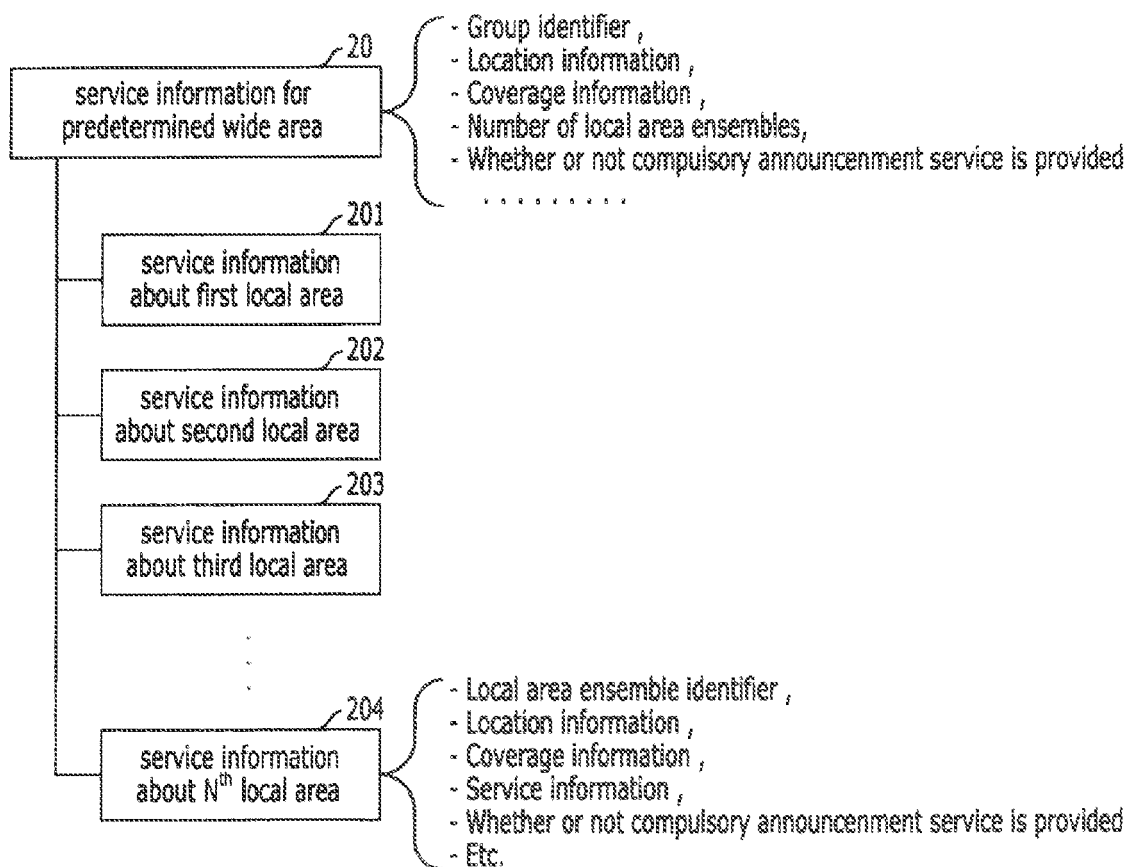


FIG. 3

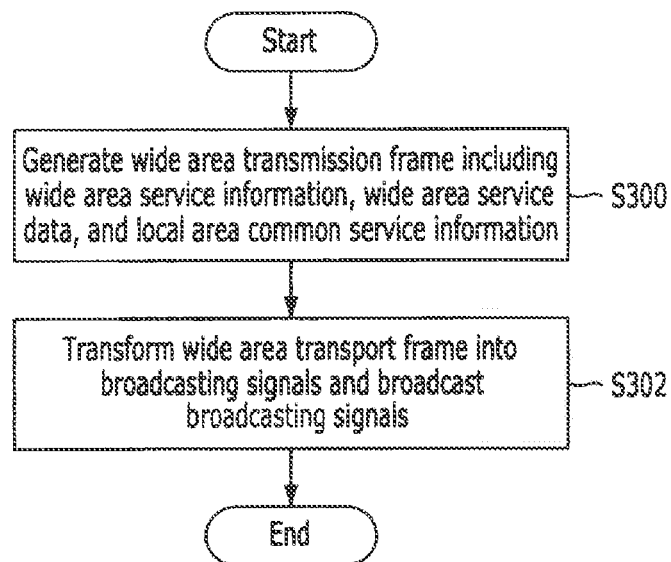


FIG. 4A

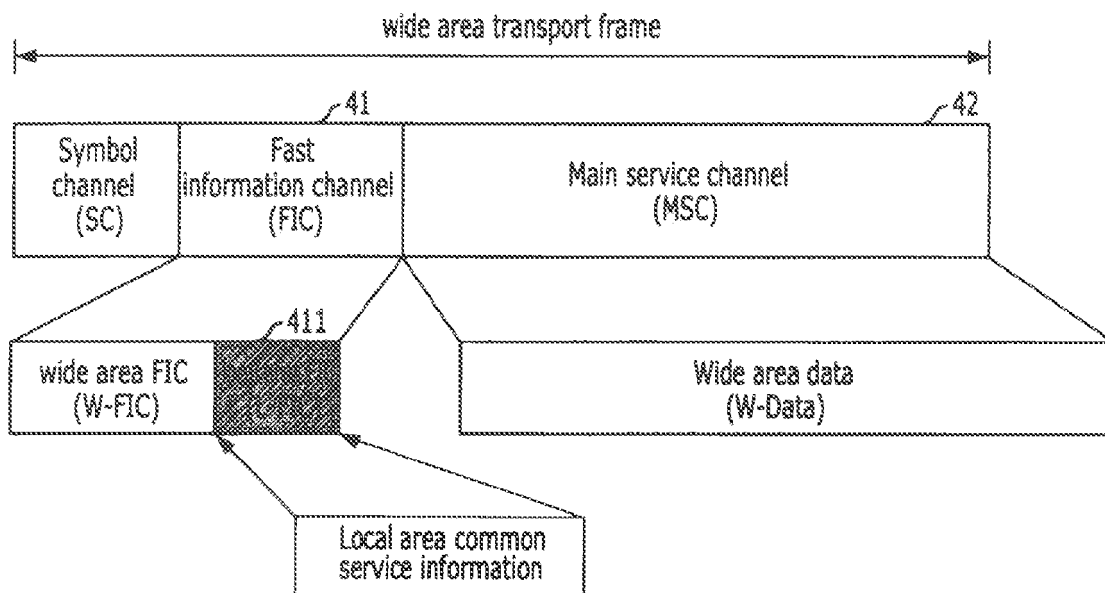


FIG. 4B

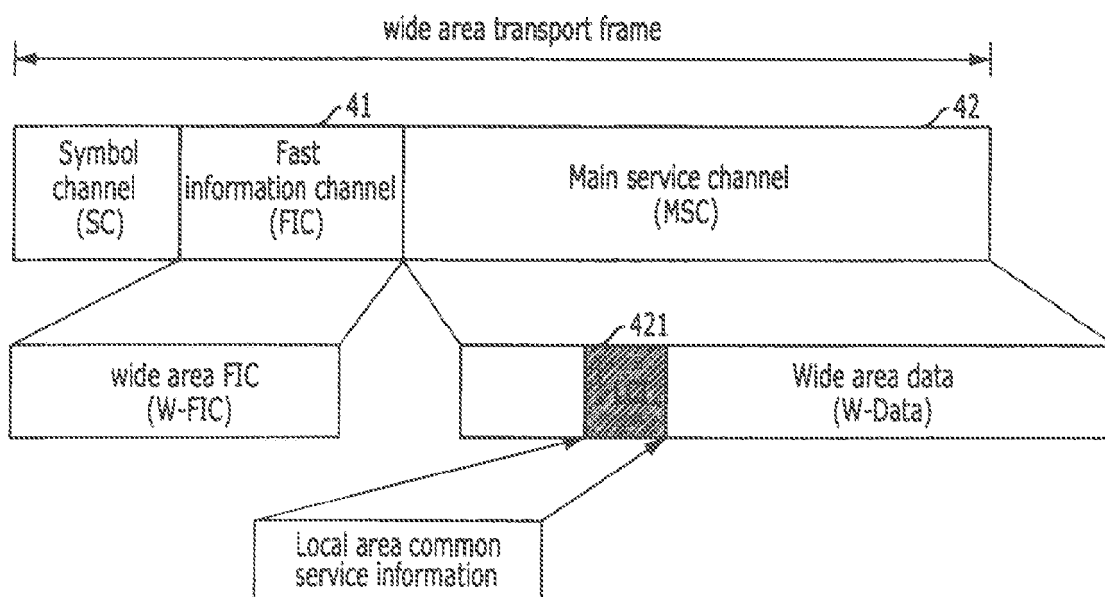


FIG. 4C

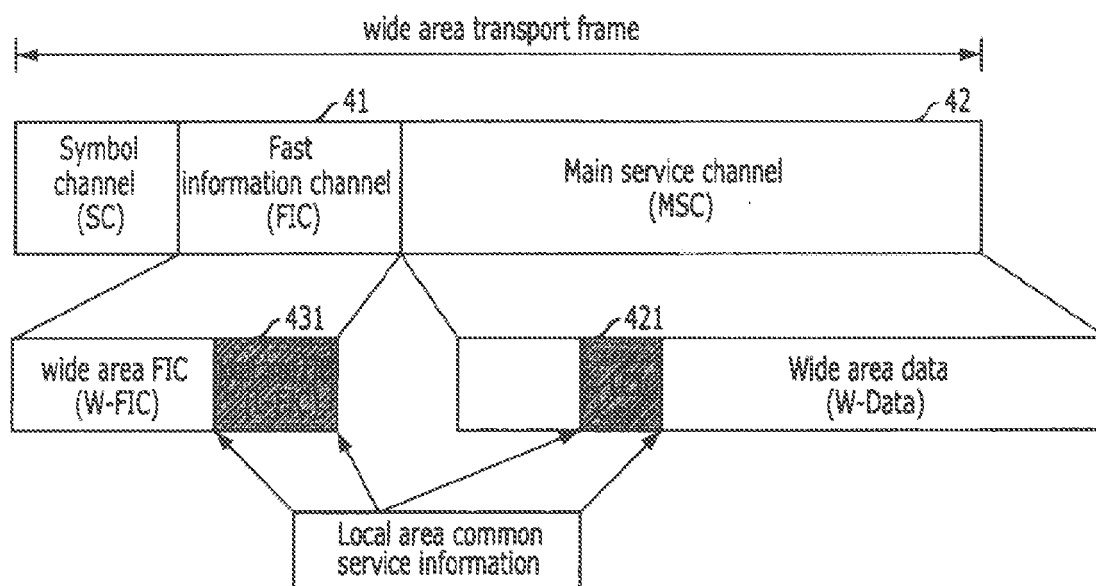


FIG. 5

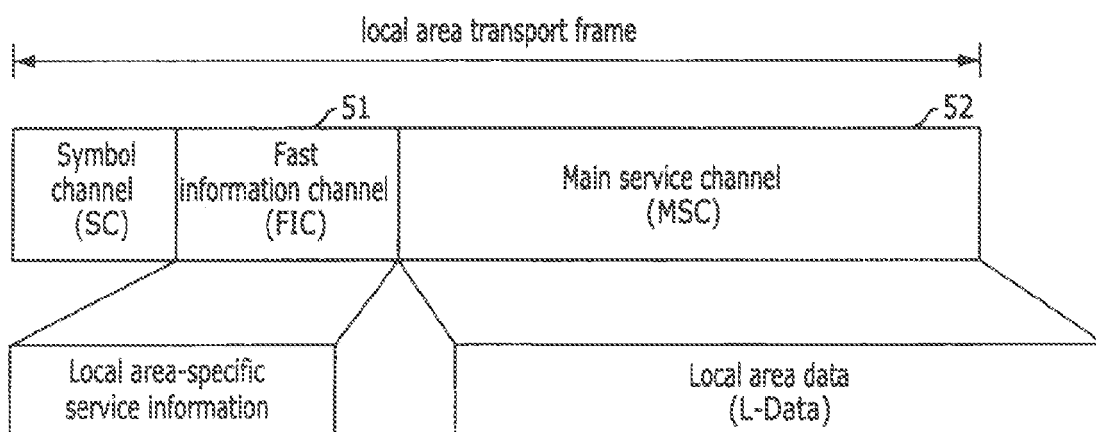


FIG. 6

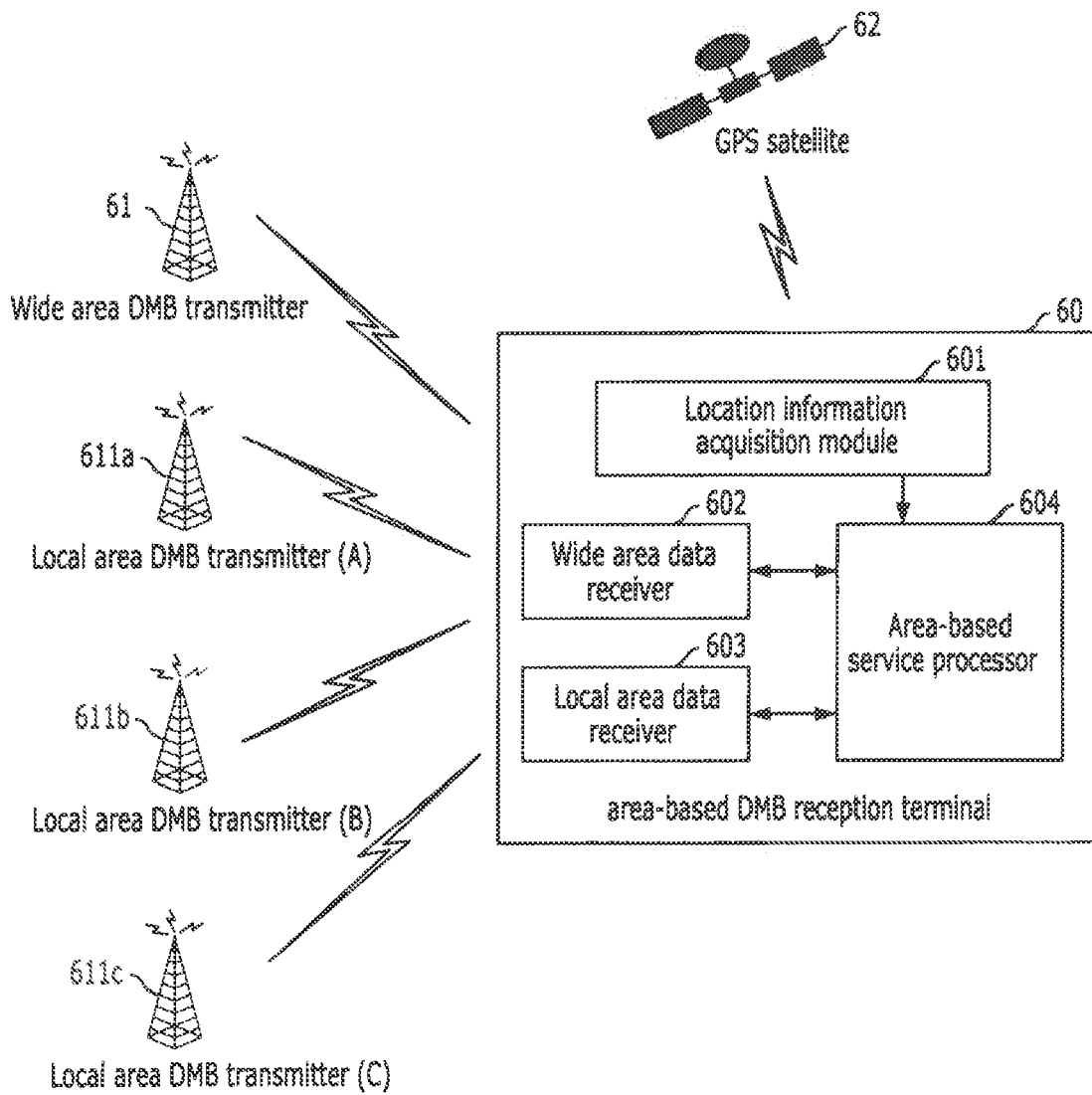


FIG. 7

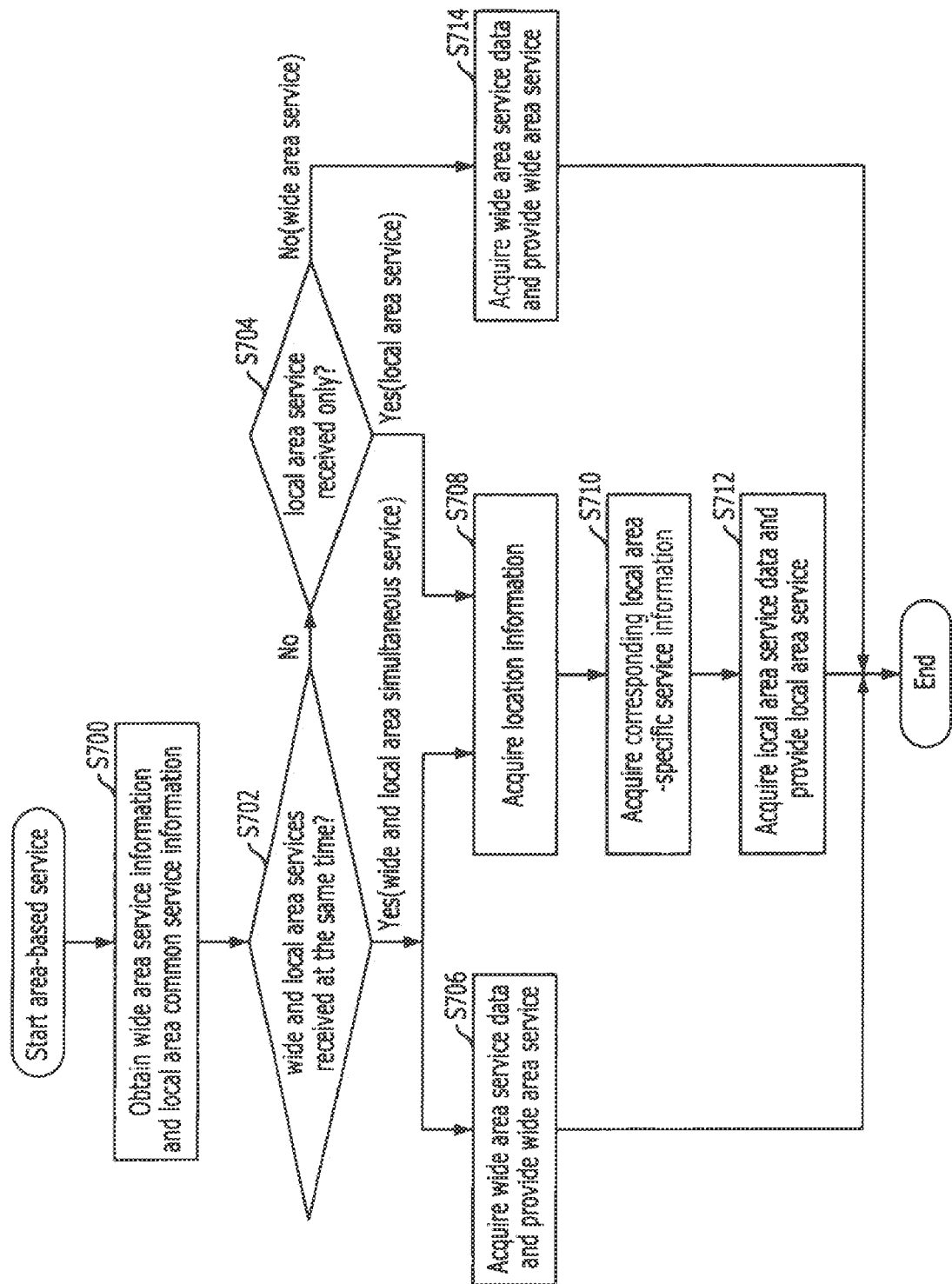
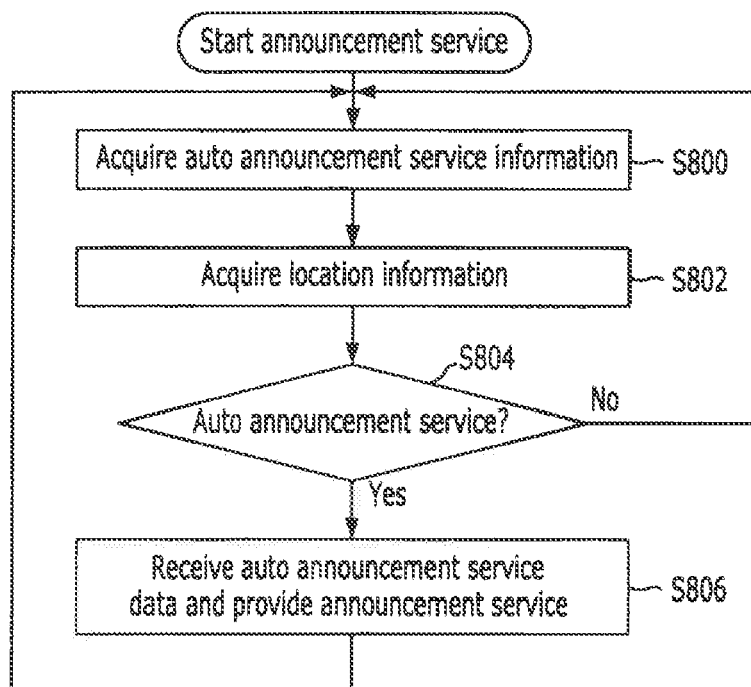


FIG. 8



REFERENCES CITED IN THE DESCRIPTION

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