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(54) **AUTOMOTIVE BROADCAST RECEIVING APPARATUS AND METHOD OF PROVIDING AT LEAST ONE CHANNEL LIST OF BROADCAST CHANNELS THEREIN**

(57) An apparatus (1) for receiving broadcast signals and configured to be installed in a vehicle comprises a broadcast signal receiving device (20), a position calculating terminal (32), a network access device (31) configured to be coupled to a server computer (40) remote from the vehicle (3) through a TCP/IP computer network (80) and a channel list generating section (30) configured to generate a broadcast channel list (10, 11, 12) from broadcast channel identification data (41) retrieved from

the server computer (40) in accordance with the calculated position and assign the channel list to a geographic broadcast area. The broadcast channels are included in the list according to user preferences (MG)/identification. A storing device (70) is configured to store channel lists (10, 11, 12) corresponding to different geographic broadcast areas, and an information providing device (60) is configured to provide the channel lists (10, 11, 12) to the user.

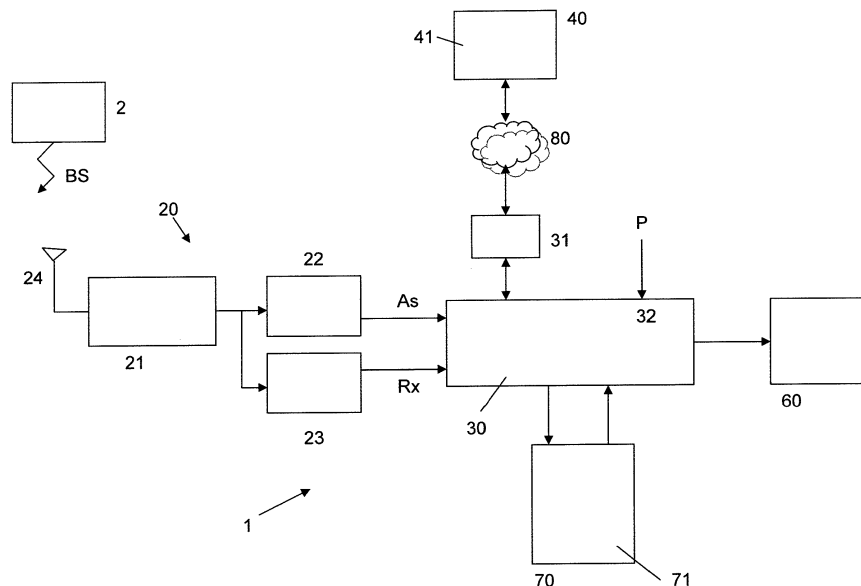


Fig. 1

## Description

**[0001]** The present invention is related to an automotive broadcast receiving apparatus for receiving broadcast signals and configured to be installed in a vehicle comprising a receiving device configured to receive broadcast signals, and to a method of receiving broadcast signals and providing at least one channel list of broadcast channels in an automotive broadcast receiving apparatus configured to be installed in a vehicle.

**[0002]** Broadcast signals transmitted by broadcast stations and which can be received by receivers, e.g. installed in a vehicle, often include several components multiplexed together upon transmission. For example, in analog broadcasting techniques it is relatively common for a broadcast signal to include both an audio signal (either stereo or monophonic) and a RDS signal, where the RDS signal contains information such as the broadcast station name, program type, music information, artist information, and traffic information. These multiplexed broadcast signals are often transmitted from a base or broadcast station to individual receivers via frequency modulation ("FM"), where information is conveyed through variations of the frequency of the transmitted signal, or via amplitude modulation ("AM"), where information is conveyed through variations of the amplitude of the transmitted signal. In digital broadcasting, e.g. DAB, similar and/or further information content is transmitted using common digital broadcasting techniques.

**[0003]** It is further common that broadcast receivers are configured to scan through the respective frequency band in order to recognize broadcast channels which are receivable. Such receivable broadcast channels are typically stored in a channel list and can be displayed to the user, so that the user may select among the channels displayed in the channel list the broadcast channel which he or she likes to hear.

**[0004]** Typically, it is difficult to retain a broadcast channel or station list which contains only services which the driver and/or passenger likes. If the vehicle travels to a new location, such as another city, it gets even more difficult. In such a case, normally, at first a new channel list has to be found and, secondly, the channel list has to fit to the taste of the user.

**[0005]** For generating the channel list, normally the receiver has to scan the complete band to get a new channel list. This is quite time consuming. In addition the receiver can store some broadcast stations or channels as favourites. However, when often driving between different locations, the driver may want to store favourites for different locations, and if there is no favourite channel list for a new location, the receiver should provide at least a channel list which could be interesting for the driver.

**[0006]** Currently, automotive broadcast receivers typically have multiple tuners. One is for tuning to the desired station or channel, a second one is typically only used as background tuner for scanning the frequency band for any available broadcast channels. Such background tuner

is always searching for other stations or current stations with better quality.

**[0007]** US 6 181 921 B1 provides a broadcasting station data detector and broadcast receiver for a moving body which enables a user to know a receivable broadcast station at the current position in real time and to select smoothly a desired broadcast station in a receiver even in an unfamiliar area. This system includes a broadcast station data memory that stores the channel data of a receivable broadcast station for each area, and a main processing circuit which is responsive to the vehicle's current position sensed by a coordinate computing unit for referring to the channel data and for showing the channel data of a receivable broadcast station at the current position on a display.

**[0008]** US 2007/0263124 A1 discloses a broadcast receiving apparatus capable of automatically switching channel lists without increasing the apparatus scale nor increasing the power consumption. In this apparatus, a received channel list storing part stores a plurality of channel lists corresponding to a plurality of different broadcast areas, and a switched station selection control part uses a currently set first channel list of the plurality of channel lists to select a station. If this station selection is failed, then the switched station selection control part switches the currently set channel list to a second channel list and uses the second channel list channels to perform a station selection.

**[0009]** JP 2011-114830 A discloses a receiver which is equipped with: a display unit for displaying a user registration station display area indicating a user registration station and a preset station display area indicating a preset station; a current position acquiring unit for acquiring positional information of a current site; and a control unit for switching the preset station to be displayed in the preset station display area, based on the positional information acquired by the current position acquiring unit. The control unit switches the user registration station to be displayed in the user registration station display area based on the positional information acquired by the current position acquiring unit.

**[0010]** It is an object of the present invention to provide an automotive broadcast receiving apparatus for receiving broadcast signals, and a method of receiving broadcast signals and providing at least one channel list of broadcast channels in an automotive broadcast receiving apparatus, which are capable of generating a channel list of broadcast channels according to user preferences or user identification at new locations in a relatively short time period without decreasing driving safety.

**[0011]** The present invention is related to an automotive broadcast receiving apparatus, and to a method of receiving broadcast signals and providing at least one channel list of broadcast channels in an automotive broadcast receiving apparatus according to the independent claims.

**[0012]** According to an aspect, there is disclosed an automotive broadcast receiving apparatus for receiving

broadcast signals and configured to be installed in a vehicle, comprising: a receiving device configured to receive broadcast signals, a terminal for receiving a position signal which is indicative of a geographic position of the vehicle, a network access device configured to be coupled to a server computer remote from the vehicle through a computer network which employs a TCP/IP communication protocol, and a channel list generating section configured to generate a channel list of broadcast channels, wherein the channel list generating section is configured to retrieve broadcast channel identification data from the server computer through the network access device and the computer network in accordance with the received position signal, and to generate the channel list from the retrieved broadcast channel identification data and to assign the channel list to a geographic broadcast area. The channel list generating section is further configured to parse the broadcast channel identification data retrieved from the server computer with respect to at least one parameter which is indicative of a user preference or user identification, and to select and/or sort at least one of the broadcast channels for inclusion in the channel list based on the parsing result. It further comprises a storing device configured to store therein a plurality of channel lists corresponding to a plurality of different geographic broadcast areas, and an information providing device which is configured to provide at least one of the plurality of channel lists for perception by a user based on the received position signal.

**[0013]** According to aspects of the invention, a second tuner (or background tuner), which is scanning for new services or channels with a better signal strength, can be omitted. According to the invention, since a plurality of channel lists corresponding to a plurality of different geographic broadcast areas are generated and stored by the channel list generating section, the system knows which services or channels are strong in which area, or if it is within an unknown area, it will retrieve information from the remote server computer, such as via the Internet, for dedicated stations or channels in a particular area. Therefore, costs for a second tuner may be saved, and the process of generating a channel list in an unknown area is faster and saves time, as retrieving the content from, e.g., a website is in most cases faster than performing a complete bandscan. In combination therewith it further increases driving safety, since any channel lists are preselected and/or sorted according to user preferences and/or user identification. The user is not distracted by searching for and selecting favourite stations or channels from a huge list retrieved from the Internet in an unknown area. Thus, according to the invention, it is possible to gain a compact channel list with well receivable channels in a particular area of interest, wherein the presented channels are corresponding to a user preference.

**[0014]** According to an embodiment, the network access device is an Internet access device configured to be coupled to a server computer remote from the vehicle

through an Internet computer network. For example, the network access device may be configured to access a website on the server computer via the Internet.

**[0015]** According to an embodiment, the terminal is configured for receiving a satellite position signal, in particular a GPS signal.

**[0016]** According to an embodiment, the channel list generating section is configured to retrieve the broadcast channel identification data from a website containing information regarding at least one broadcast channel for a particular geographic area stored on the server computer.

**[0017]** According to an embodiment, the channel list generating section is configured to store in the storing device a plurality of channel lists which are geographically coded.

**[0018]** Preferably, the at least one parameter is indicative of at least one or more of: music genre (MG), news, podcast, past user input actions, broadcast station name, program type, artist information, transmission frequency of the broadcast signals, broadcast station name, program name, content type, user profile, identification of a user.

**[0019]** According to an embodiment, the information providing device is configured to provide at least two of the plurality of channel lists, and to provide at least one input receiving function for selecting at least one of the channel lists by the user.

**[0020]** According to an embodiment, the channel list generating section is configured to generate a channel list assigned to a particular geographic broadcast area and to store the channel list in the storing device if there is no channel list stored in the storing device assigned to that particular geographic broadcast area.

**[0021]** According to a further embodiment, the channel list generating section is configured to generate a channel list assigned to a particular geographic broadcast area and to store the channel list in the storing device in addition to any channel list stored in the storing device assigned to that particular geographic broadcast area.

**[0022]** According to an embodiment, the channel list generating section is configured to sort a plurality of channels in at least one of the channel lists according to the at least one parameter.

**[0023]** According to another aspect, the invention is related to a vehicle comprising an automotive broadcast receiving apparatus as described herein.

**[0024]** According to another aspect of the invention, there is disclosed a method of receiving broadcast signals and providing at least one channel list of broadcast channels in an automotive broadcast receiving apparatus configured to be installed in a vehicle, the method comprising the steps of: receiving broadcast signals with a receiving device, receiving a position signal which is indicative of a geographic position of the vehicle, retrieving broadcast channel identification data from a server computer remote from the vehicle through a computer network which employs a TCP/IP communication proto-

col in accordance with the received position signal and generating a channel list of broadcast channels from the retrieved broadcast channel identification data and assigning the channel list to a geographic broadcast area, thereby parsing the broadcast channel identification data retrieved from the server computer with respect to at least one parameter which is indicative of a user preference or user identification, and selecting and/or sorting at least one of the broadcast channels for inclusion in the channel list based on the parsing result, storing a plurality of channel lists corresponding to a plurality of different geographic broadcast areas, and providing at least one of the plurality of channel lists based on the received position signal for perception by a user.

**[0025]** The embodiments as described above with respect to the broadcast receiving apparatus can equally and analogously be applied in connection with the method according to the invention.

**[0026]** Aspects and embodiments of the invention will now be described with reference to the drawings, in which:

Fig. 1 shows an automotive broadcast receiving apparatus for receiving broadcast signals according to an exemplary embodiment of the invention,

Fig. 2 shows a flow diagram of a method of providing at least one channel list of broadcast channels according to an embodiment of the invention,

Fig. 3 shows an exemplary display of information and channel lists assigned to different broadcast areas, e.g. on a display screen, in the form of a broadcast station list and depending on the geographic location of the vehicle.

**[0027]** Fig. 1 shows an automotive broadcast receiving apparatus for receiving broadcast signals according to an exemplary embodiment of the invention in a schematic block diagram. The broadcast receiving apparatus 1 is an automotive broadcast receiving apparatus, which may be installed in a vehicle, e.g., in a head unit thereof (not shown), and receives broadcast signals BS which are broadcast from an exemplary broadcast station 2. The broadcast receiving apparatus 1 comprises a receiving device 20 which may be a conventional receiving device as known in the art. The exemplary receiving device 20 (another type thereof can also be used, e.g. when applied to another broadcasting technology) comprises an antenna 24 for receiving the broadcast signals BS, a tuner and demodulator 21, an audio circuitry 22 which can extract an audio portion As of the received signal (i.e., music or speech) and prepare it for playback through a speaker or other output device (not shown), and an additional data receiver circuitry 23 which can extract, e.g., an additional data portion Rx of the received signal and prepare it for processing by appropriate data processing circuitry (not

shown). It will be understood that, as used herein, the expression "coupled to" can be used to define either a direct or an indirect connection between elements. When it is referred herein to an installation of any part of the receiving apparatus in a vehicle, it should be understood that the receiving apparatus or any part thereof may also be installed in other installation locations where the receiving apparatus may be used.

**[0028]** Particularly, the tuner and demodulator 21 can tune and demodulate the received broadcast signal BS by a frequency determined by the station or frequency that is being tuned to. The tuner and demodulator 21 can be in part analog, digital, or a combination of the two. The output signal of tuner and demodulator 21 can be received by audio circuitry 22, which can extract and decode the audio portion As of the received signal and send it to a speaker circuitry. The output signal of tuner and demodulator 21 can also be received by additional data receiver circuitry 23 which can extract and decode the additional data portion Rx of the received signal and send it to any appropriate output circuitry. For instance, the extracted additional data may be displayed to a user via any suitable display circuitry, for example indicating music genre or type of channel.

**[0029]** The apparatus 1 further comprises a terminal 32 for receiving a position signal P which is indicative of a geographic position of the vehicle. For example, the position signal P is a satellite position signal, such as a GPS signal. It may be supplied by an appropriate position acquiring unit (not shown), such as a GPS unit, installed in the vehicle for, e.g., navigation purposes. The apparatus 1 further comprises a network access device 31 which is configured to be coupled to a server computer 40, which is remote from the vehicle, through a computer network 80 which employs a TCP/IP communication protocol. For example, the network 80 is an Internet computer network and the server computer 40 is communicating over the Internet computer network 80. For instance, the network access device 31 includes one or more of a wireless LAN connection device and a circuitry for connecting to a mobile communications network which are capable of processing a TCP/IP communication protocol. Particularly, the Transmission Control Protocol (TCP) and the Internet Protocol (IP) is the accepted and most widely used protocol in the Internet. TCP/IP provides end-to-end connectivity specifying how data should be packetized, addressed, transmitted, routed and received at the destination. It represents a communication protocol standard which is well known in the art.

**[0030]** The apparatus 1 further comprises a channel list generating section 30 which is coupled with the receiving device 20 and, in this embodiment, receives the audio portions As output by the receiving device 20 (particularly output by the audio circuitry 22). Further, in this embodiment, it receives the additional data portions Rx output by the receiving device 20 (particularly output by the additional data receiver circuitry 23). According to this information, the channel list generating section 30

can generate a channel list of broadcast channels, such as a channel list 11 or 12 shown in Fig. 3.

**[0031]** The channel list generating section 30 is configured to retrieve broadcast channel identification data from a server computer, such as server computer 40 retaining broadcast channel identification data 41, through the network access device 31 and the computer network 80 which employs a TCP/IP communication protocol in accordance with the received position signal P. That is, broadcast channel identification data may be retrieved for a particular broadcast area in accordance with the received position signal P. The channel list generating section 30 generates the channel list from the retrieved broadcast channel identification data and assigns the channel list to a geographic broadcast area, such as a broadcast area of a city or region. For identifying such broadcast area, e.g., the position signal P may be used as an indicator.

**[0032]** The channel list generating section 30 is coupled with the server computer 40 via a computer network 80, such as the Internet and/or any other computer network which employs a TCP/IP communication protocol. To this end, the broadcast receiving apparatus 1, which may be installed in a vehicle and may be part of a so-called head unit (HU) of the vehicle, may use any known wired or wireless technology for communication with the server computer 40 over the computer network 80. According to an embodiment, the server computer 40 may be a discrete or a distributed computer system with parts thereof installed at different instances.

**[0033]** In principle, the broadcast channel identification data 41 retained on the server computer 40 may be any kind of data which are indicative of a broadcast channel and/or its type or contents. For example, the channel list generating section 30 retrieves the broadcast channel identification data 41 from a website 42 (an example of which is shown in Fig. 2) retained on the server computer 40 and containing information regarding at least one broadcast channel for a particular geographic area.

**[0034]** According to an embodiment, the channel list generating section 30 may be implemented in the vehicle, e.g., by comprising one or more microprocessors, for example installed in the head unit (not shown), wherein the one or more microprocessors have access to a database stored in a memory (e.g., located in the vehicle or on a remote server computer).

**[0035]** The channel list generating section 30 is further configured to parse or analyze the broadcast channel identification data 41 retrieved from the server computer 40 with respect to at least one parameter which is indicative of a user preference, and to select or sort at least one of the broadcast channels for inclusion in the channel list based on the parsing result.

**[0036]** For example, the channel list generating section 30 extracts multiple items of data from the broadcast channel identification data 41, which were received from the server computer 40. For example, the channel list generating section 30 extracts one or more of the follow-

ing items of data from the broadcast channel identification data 41: transmission frequency of the broadcast signals, broadcast station name, program name, content type, music artist name, music genre, news, and/or podcasts.

**[0037]** The apparatus 1 further comprises a storing device 70 adapted to store therein, e.g., a database 71. This database 71 contains a plurality of channel lists corresponding to a plurality of different geographic broadcast areas. For example, the channel lists stored in the database 71 each include one or more of a transmission frequency of broadcast signals, a broadcast station name, a program name, a content type, and/or a music genre (such as "Pop", "Rock" designated in Fig. 2 with "MG")

**[0038]** An information providing device 60, such as a display device and/or a loudspeaker or other information providing device, provides information to a user regarding at least one of the plurality of channel lists for perception by a user. For example, depending on the received position signal P, one or more channel lists for the particular area in which the vehicle is travelling is displayed to the user. Advantageously, content information for each broadcast station or channel may be communicated to the user. Then the user can easily select which broadcast channel is matching his taste or mood for listening.

**[0039]** Fig. 2 shows a flow diagram of a method of providing at least one channel list of broadcast channels according to an embodiment of the invention. In step 1, there may be a situation in which a car 3 is in a geographic area for which no channel list is available in the storing device 70, for example because the car 3 is in this area for the first time. In such case, the broadcast receiving apparatus 1 and the channel list generating section 30, respectively, receives and evaluates a position signal P. For example, a GPS signal having the coordinates as shown in Fig. 2 may be received by car 3. According to steps 2 and 3, according to an embodiment a navigation system of the car 3 accesses a database DB and determines according to the GPS signal that the car 3 is in Karlsruhe. This information may be provided as position signal P to the channel list generating section 30. According to another embodiment, the channel list generating section 30 may receive as position signal P the GPS signal and itself accesses the database DB for determining a geographic position of the car 3.

**[0040]** In step 4, the channel list generating section 30 accesses through the network access device 31 a website 42 through the Internet computer network 80 in order to retrieve broadcast channel identification data 41 from the server computer which holds the website 42. For example, the website 42 is a website with channels or services in a broadcasting area of Karlsruhe. The city of Karlsruhe, and any region of a particular size around it, may be set as a geographic broadcast area for which a channel list should be generated. Particularly, the channel list generating section 30 retrieves the broadcast channel

identification data 41 from the website 42 in accordance with the received position signal P, for example determines to access the website 42 according to the position signal P. According to an embodiment, if the position signal P indicates a location of city of Karlsruhe, the channel list generating section 30 may access a dedicated website 42 for channel lists for this region.

**[0041]** In step 5, the channel list generating section 30 further parses the contents of the website 42 (i.e. the broadcast channel identification data 41 thereof) with respect to at least one parameter which is indicative of a user preference or user identification. For example, preferences of the user may be music genre (such as Pop, Rock, indicated with MG), news, podcast, past user input actions, broadcast station name, program type, artist information, transmission frequency of the broadcast signals, program name, content type. For identification of the user, a user profile or identification data of a user may be taken as a basis thereof. For example, if a user A is identified by reading his/her user profile previously entered when starting the car, or by recognition from data on the ignition key, his/her preferences may be taken as a basis for the channel list generation. If a user B is identified having different preferences, then a different channel list may be generated.

**[0042]** According to an embodiment, preferences and/or user profile may be stored on the ignition key each time there is a new entry by the user or user input action indicative of one of the preferences as listed above. For instance, if the user switches mainly to rock playing channels, or channels with mainly news, such information may be retained as one or more parameters on the ignition key and read in every time the car is started. Then, based on the user preferences or user identification and the corresponding parsing result, at least one of the broadcast channels available in the geographic broadcast area is included or sorted in the channel list.

**[0043]** In step 6, any channels will be selected and/or sorted according to the parsing result. For example, services or channels are added to a channel list which will be assigned to the broadcasting area Karlsruhe and may be sorted according to the preferences of the user (e.g. driver). For example, if the user hears rock channels with greatest time fraction, there may be a calculation that gives a highest number of points to "Rock" (e.g. 5 points). If the user hears news with second greatest time fraction, a lower number of points (e.g. 4 points) may be given to "News", etc. As a parsing result, it may be determined that rock and news channels available in the particular geographic broadcast area should be included, and that rock channels should appear first in the channels list. Any channels, e.g. below 2 points, should not be listed in the channel list. The generated channel list 10, an example thereof is shown in Fig. 2 (with "Karlsruhe 3" etc. designating a broadcasting channel), will then be assigned to the geographic broadcast area, and stored in storing device 70. It can be retrieved every time the car enters this assigned geographic broadcast area. In a fur-

ther embodiment, multiple channel lists for that broadcast area can be stored in storing device 70.

**[0044]** As a result, the channel list generating section is capable of generating a compact channel list with channels which are well receivable in the respective broadcast area the list is assigned to, and which are corresponding to the preferences of the user. This further increases driving safety, since any channel lists are preselected and/or sorted according to user preferences and/or user identification. The user is not distracted by searching for and selecting favourite stations or channels retrieved from the Internet and somewhere displayed in a huge list in an unknown broadcast area.

**[0045]** Fig. 3 shows an exemplary display of information and channel lists assigned to different broadcast areas, e.g. on a display screen, in the form of a broadcast station list and depending on the geographic location of the vehicle. According to an embodiment, the user can store his/her favourites as channels lists for different locations. For example, according to Fig. 3, a channel list 11 for the city of Stuttgart and a channel list 12 for the city of Berlin can be stored (with "Stuttgart 1" and "Berlin 1" etc. designating respective broadcast channels by station name). The user can then select which list of favourites he/she wants to display. For example, when the car is in Stuttgart the user may display the channel list 11 for Stuttgart, and when the car is in Berlin the channel list 12 for Berlin. This provides the benefit that the user can use the full range of favourites and also does not have stations in the channel list which are not receivable in the current broadcast area.

**[0046]** In principle, the channel list can have any number of channels, but it is preferable that the list is quite compact and/or sorted such that the user can easily find his/her favourite channel when driving the car. Further, the channel list or channel lists can be geocoded, i.e. geographically coded, so that the broadcast receiving apparatus may switch automatically to that channel list of favourites which is associated with the broadcasting area the car is currently in (e.g. indicated via GPS signal).

## Claims

1. An automotive broadcast receiving apparatus (1) for receiving broadcast signals and configured to be installed in a vehicle, comprising:
  - a receiving device (20) configured to receive broadcast signals (BS),
  - a terminal (32) for receiving a position signal (P) which is indicative of a geographic position of the vehicle (3),
  - a network access device (31) configured to be coupled to a server computer (40) remote from the vehicle (3) through a computer network (80) which employs a TCP/IP communication protocol,

- a channel list generating section (30) configured to generate a channel list (10, 11, 12) of broadcast channels, wherein the channel list generating section (30) is configured to retrieve broadcast channel identification data (41) from the server computer (40) through the network access device (31) and the computer network (80) in accordance with the received position signal (P), and to generate the channel list (10, 11, 12) from the retrieved broadcast channel identification data and to assign the channel list to a geographic broadcast area,
- wherein the channel list generating section (30) is further configured to parse the broadcast channel identification data (41) retrieved from the server computer (40) with respect to at least one parameter which is indicative of a user preference (MG) or user identification, and to select and/or sort at least one of the broadcast channels for inclusion in the channel list (10, 11, 12) based on the parsing result,
- a storing device (70) configured to store therein a plurality of channel lists (10, 11, 12) corresponding to a plurality of different geographic broadcast areas, and
- an information providing device (60) which is configured to provide at least one of the plurality of channel lists (10, 11, 12) for perception by a user based on the received position signal (P).
2. The automotive broadcast receiving apparatus according to claim 1, wherein the network access device (31) is an Internet access device configured to be coupled to a server computer (40) remote from the vehicle through an Internet computer network (80).
  3. The automotive broadcast receiving apparatus according to claim 1 or 2, wherein the terminal (32) is configured for receiving a satellite position signal (P), in particular a GPS signal.
  4. The automotive broadcast receiving apparatus according to one of claims 1 to 3, wherein the channel list generating section (30) is configured to retrieve the broadcast channel identification data (41) from a website (42) stored on the server computer (40) and containing information regarding at least one broadcast channel for a particular geographic area.
  5. The automotive broadcast receiving apparatus according to one of claims 1 to 4, wherein the channel list generating section (30) is configured to store in the storing device (70) a plurality of channel lists (10, 11, 12) which are geographically coded.
  6. The automotive broadcast receiving apparatus according to one of claims 1 to 5, wherein the at least one parameter is indicative of at least one or more of: music genre (MG), news, podcast, past user input actions, broadcast station name, program type, artist information, transmission frequency of the broadcast signals, program name, content type, user profile, identification of a user.
  7. The automotive broadcast receiving apparatus according to one of claims 1 to 6, wherein the information providing device (60) is configured to provide at least two of the plurality of channel lists (10, 11, 12), and to provide at least one input receiving function for selecting at least one of the channel lists by the user.
  8. The automotive broadcast receiving apparatus according to one of claims 1 to 7, wherein the channel list generating section (30) is configured to generate a channel list (10, 11, 12) assigned to a particular geographic broadcast area and to store the channel list in the storing device (70) if there is no channel list stored in the storing device assigned to that particular geographic broadcast area.
  9. The automotive broadcast receiving apparatus according to one of claims 1 to 8, wherein the channel list generating section (30) is configured to generate a channel list (10, 11, 12) assigned to a particular geographic broadcast area and to store the channel list in the storing device (70) in addition to any channel list stored in the storing device (70) assigned to that particular geographic broadcast area.
  10. The automotive broadcast receiving apparatus according to one of claims 1 to 9, wherein the channel list generating section (30) is configured to sort a plurality of channels in at least one of the channel lists (10, 11, 12) according to the at least one parameter.
  11. A vehicle (3) comprising an automotive broadcast receiving apparatus (1) according to one of claims 1 to 10.
  12. A method of receiving broadcast signals and providing at least one channel list of broadcast channels in an automotive broadcast receiving apparatus (1) configured to be installed in a vehicle, the method comprising:
    - receiving broadcast signals (BS) with a receiving device (20),
    - receiving a position signal (P) which is indicative of a geographic position of the vehicle (3),
    - retrieving broadcast channel identification data (41) from a server computer (40) remote from the vehicle (3) through a computer network (80) which employs a TCP/IP communication proto-

col in accordance with the received position signal (P) and generating a channel list (10, 11, 12) of broadcast channels from the retrieved broadcast channel identification data and assigning the channel list to a geographic broadcast area, thereby parsing the broadcast channel identification data (41) retrieved from the server computer (40) with respect to at least one parameter which is indicative of a user preference (MG) or user identification, and selecting and/or sorting at least one of the broadcast channels for inclusion in the channel list (10, 11, 12) based on the parsing result,

- storing a plurality of channel lists (10, 11, 12) corresponding to a plurality of different geographic broadcast areas, and
- providing at least one of the plurality of channel lists (10, 11, 12) based on the received position signal (P) for perception by a user.

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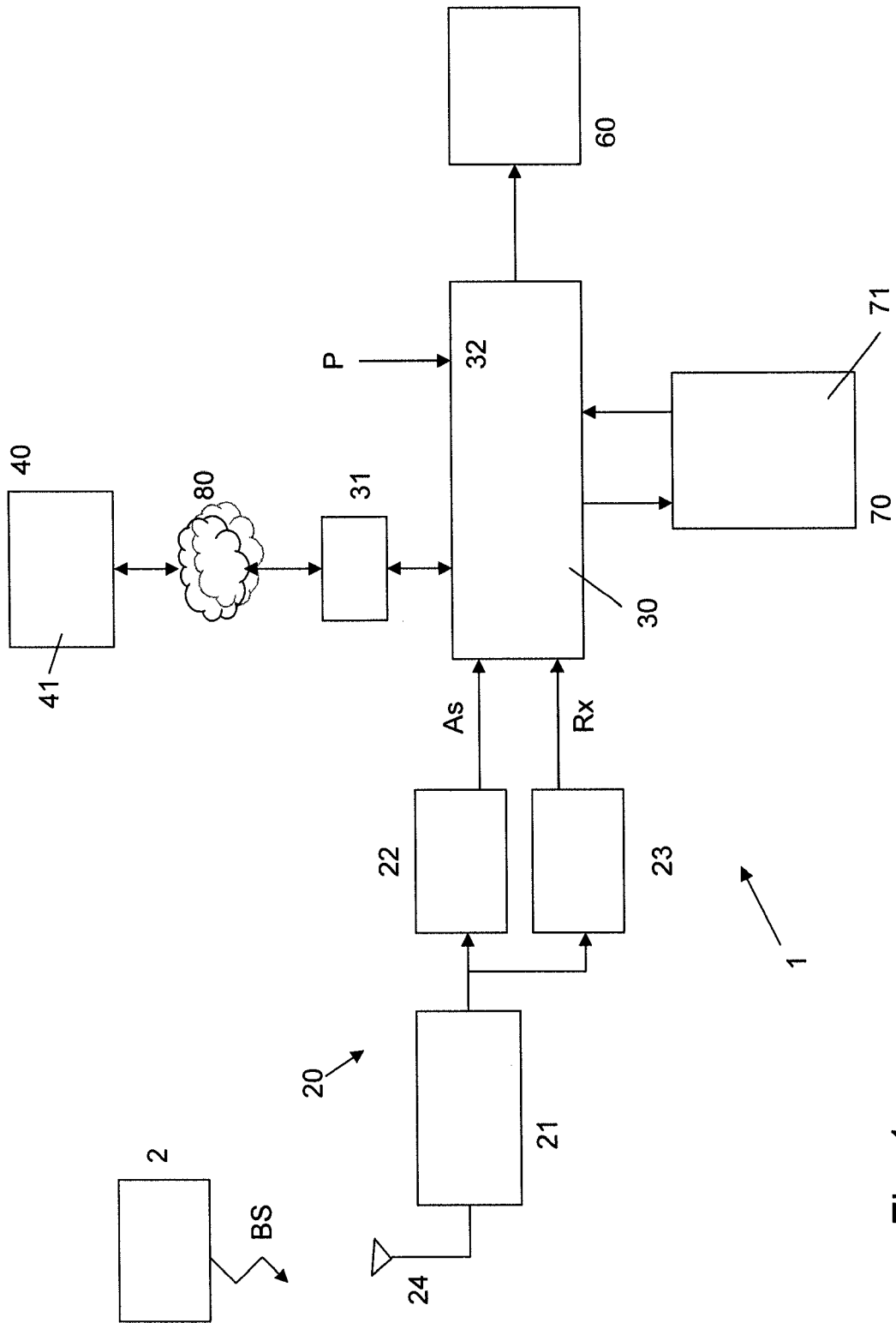


Fig. 1

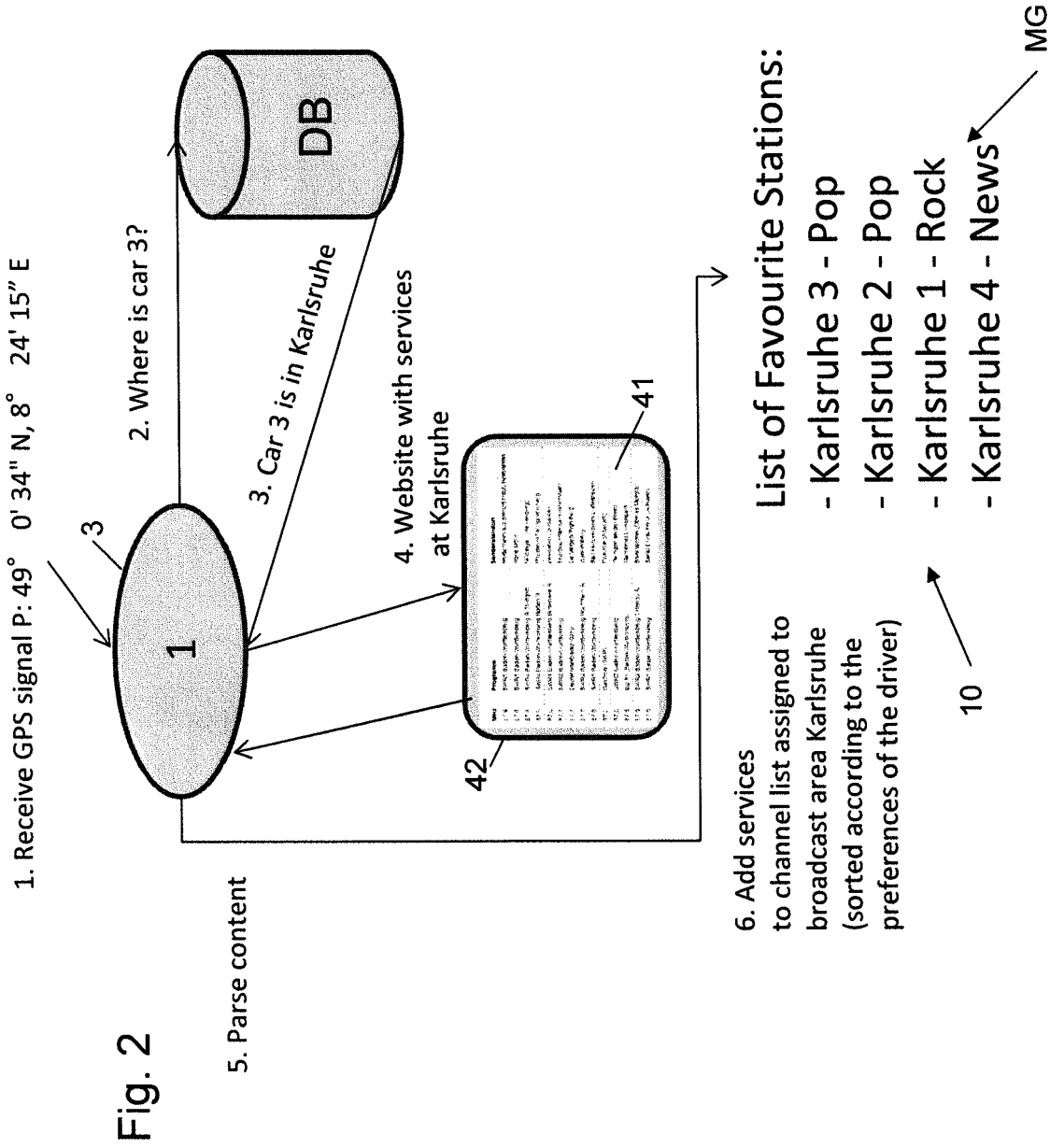
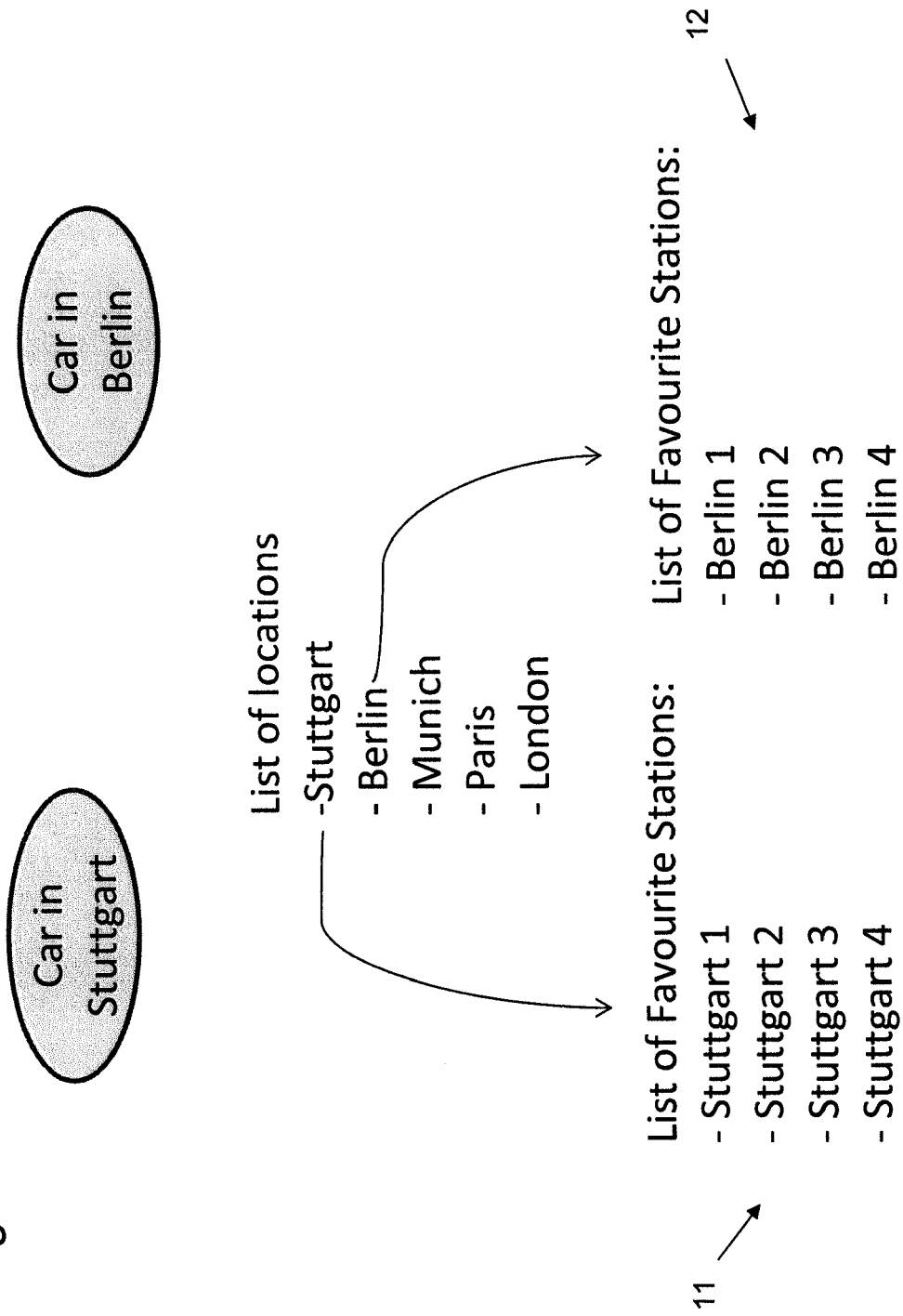


Fig. 3





EUROPEAN SEARCH REPORT

Application Number  
EP 15 19 0604

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