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(54) **A HEARING SYSTEM COMPRISING A REMOTE CONTROL DEVICE**

(57) The application relates to a hearing system comprising at least one hearing device, a number N_{ad} of audio devices connectable to the at least one hearing device, and a remote control device for controlling connectivity between the at least one hearing device and the number of audio devices. The application further relates to a method of operating a hearing system. The object of the present application is to provide a relatively simple way to control a relatively complex hearing system. The problem is solved in that current audio connections of the hearing system are controlled via a simple remote control

device in that: 1) The user points the remote control device towards a connectable audio device (e.g. a TV adapter or a microphone); and 2) By simply pointing the remote control device at the relevant device, the user has selected the device and can now simply press a *connect* button to start/stop audio from the selected device. This has the advantages of providing a simple intuitive scheme for controlling a relatively complex hearing system. The invention may e.g. be used for hearing systems comprising hearing aids, headsets, ear phones, active ear protection systems or combinations thereof.

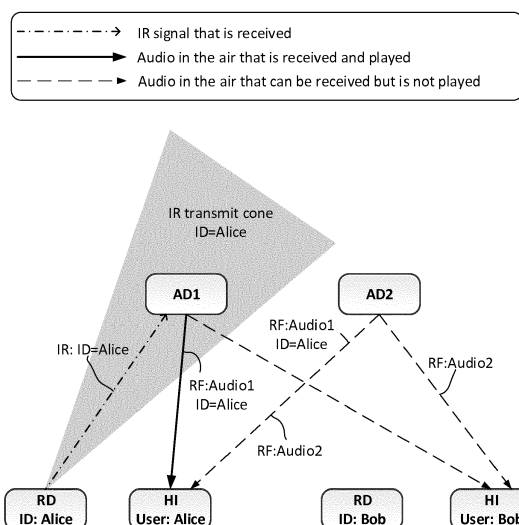


FIG. 3

Description

TECHNICAL FIELD

[0001] The present application relates to the field of hearing devices, e.g. hearing aids, especially to a hearing system comprising one or more hearing aid systems (each comprising one or a pair of hearing devices) and a number of audio devices in communication with the hearing devices, and in particular to the control of such devices. The disclosure relates specifically to a (first) hearing system comprising at least one hearing aid system, a number N_{ad} of audio devices connectable to the at least one hearing aid system, and a (first) remote control device for controlling connectivity between the at least one hearing aid system and the number of audio devices.

[0002] The application furthermore relates to a method of controlling a hearing system comprising one or more hearing aid systems and a number of audio devices.

[0003] Embodiments of the disclosure may e.g. be useful in applications comprising hearing aids, headsets, ear phones, active ear protection systems or combinations thereof.

BACKGROUND

[0004] Wireless communication between electronic devices in a user's environment is commonplace, e.g. using Bluetooth or other, short range (low power) standard or proprietary technologies, e.g. inductive communication. In the field of hearing aids, a number of auxiliary devices aiming at improving a hearing impaired user's sound experience (e.g. speech intelligibility and sound perception) are now available via wireless communication links, e.g. telephones, music players, TV-sets, microphones, etc.

[0005] It is well known that external audio streaming devices such as microphones and TV sound adapters can vastly improve the signal-to-noise ratio for a hearing aid user. Exemplary scenarios could be:

- The hearing aid user has one or more TV adapters installed that stream audio from the TV to the user's hearing aid(s). E.g. in the living room, bedroom, kitchen, etc.
- The hearing aid user has one or more portable wireless microphones that can stream audio from a person to the user's hearing aid(s).
- The hearing aid user has one or more stationary wireless microphones that can stream audio from a talker to the user's hearing aid(s).
- The hearing aid user can mix several audio streams. E.g. a TV adapter and a microphone can be mixed or 4 microphones can be mixed and the combined sound presented via the user's hearing aid(s).

[0006] While the multitude of external audio sources

promises to improve the signal-to-noise ratio for the hearing aid user it poses a huge challenge regarding usability. Controlling multiple wireless audio sources that can be mixed will put a mental burden on the hearing aid user. Unless carefully implemented, it is a burden that only a minority of the hearing aid users are able to master. To decrease complexity, the options could be reduced for the user; essentially reducing system complexity to a level that most users can figure out, but thereby also eliminating many of the benefits.

[0007] These are some of the things the user wants to do:

- The hearing aid user wants to control volume of a specific audio source (e.g. TV adapter or microphone).
- The hearing aid user wants to start/stop audio from a specific audio source (e.g. TV adapter or microphone).
- The hearing aid user wants to start audio from a specific audio source (e.g. TV adapter or microphone) and have the streamed audio MIXED with currently playing audio sources (e.g. TV adapter or microphone).

[0008] The problem is to present a user interface that gives the hearing aid user the power to achieve what she/he wants with the hearing system.

[0009] Problems with current solutions include:

- A hearing instrument with only a few buttons (or none) is unsuited to control the system.
- A remote control with a multitude of buttons will be overly complex to most users.
- A Smartphone APP will provide a better visual interface, but it may still be difficult for the user to correlate what happens on the APP with what happens in reality; i.e.

for example, which microphones are being controlled by the app?

[0010] None of the prior art approaches really solves the user interaction problem.

SUMMARY

[0011] An object of the present application is to provide a relatively simple way to control a relatively complex hearing system.

[0012] Objects of the application are achieved by the invention described in the accompanying claims and as described in the following.

A hearing system:

[0013] In an aspect of the present application, an object of the application is achieved by a hearing system comprising

- a first hearing aid system adapted to be worn by a first user,
- a number of audio devices connectable to the first hearing aid system, and
- a first remote control device for controlling connectivity between the first hearing aid system and the number of audio devices.

[0014] The first remote control device comprises

- o an audio ON/OFF activation element,
- o a control unit for generating an audio device control signal for controlling at least one of said number of audio devices in response to an activation of said audio ON/OFF activation element, and
- o a wireless transmitter for transmitting said audio device control signal to at least one of said number of audio devices.

[0015] Each of the number of audio devices comprises

- o a wireless receiver for receiving said audio device control signal from said first remote control device,
- o an audio device control unit for generating an audio transmission control signal for the audio device in question in response to the reception of said audio device control signal from said first remote control device,
- o a wireless transmitter for transmitting said audio transmission control signal to said first remote control device and/or to said first hearing aid system,
- o a wireless audio transmitter for transmitting an audio stream to the first hearing aid system,

[0016] The first hearing aid system comprises

- o a wireless audio receiver for receiving an audio stream from said number of audio devices.

[0017] The first remote control device and/or the first hearing aid system comprises

- o a wireless receiver for receiving said audio transmission control signal from at least one of said number of audio devices, and
- o an audio reception control unit for controlling audio reception in said first hearing aid system based on said audio transmission control signal from said at least one of said number of audio devices.

[0018] This has the advantages of providing a simple intuitive scheme for controlling a relatively complex hearing system.

[0019] The term 'audio device' is intended to include devices that at least transmit and/or receive sound (audio) signals. In an embodiment, an audio device is or comprises an audio delivery device (configured to at least transmit audio). In an embodiment, an audio device is or

comprises an audio and video delivery device (e.g. a TV-set or a video player or a computer, e.g. a PC, e.g. a laptop or tablet, etc., or a smartphone or the like).

[0020] The term 'controlling connectivity' is in the present context taken to mean allowing the user to selectively control from which of the number of audio devices (each providing an audio stream) that the first hearing aid system currently receives an audio stream (i.e. to selectively enable or disable such reception). In an embodiment, the term 'controlling connectivity' is intended to mean that the user is allowed to control audio reception in the hearing aid system (e.g. comprising one or two hearing devices) that he or she wears.

[0021] In an embodiment, the first hearing aid system adapted to be worn by the first user comprises a hearing device or a pair of hearing devices. In an embodiment, the first hearing aid system comprises a binaural hearing aid system comprising a pair of hearing devices comprising antenna and transceiver circuitry allowing an inter-aural link for the exchange of data (e.g. control, status, and/or audio data) between them to be established. In an embodiment, the hearing aid system is configured to relay an audio signal received at one hearing device to be relayed to the other hearing device of the binaural hearing aid system via the inter-aural link.

[0022] In an embodiment, the wireless transmitter of the first remote control device and the wireless receiver of at least one of the number of audio device are configured to implement an upstream control data channel for transferring the audio device control signal from the first remote control device to the audio device(s) in question.

[0023] In an embodiment, the wireless transmitter of at least one of the number of audio devices and the wireless receiver of the first remote control device and/or of the first hearing aid system are configured to implement a downstream control data channel for transferring the audio transmission control signal from the audio device(s) in question to the first remote control device and/or to the first hearing aid system.

[0024] In an embodiment, the wireless audio transmitter of an audio device and the wireless audio receiver of a hearing aid system are configured to implement a wireless audio channel for transferring an audio stream from the audio device in question to the hearing aid system in question *in dependence of* the audio transmission control signal received in the first remote control device and/or in the hearing aid system in question. In other words, the audio reception control unit (of the first remote control and/or of the hearing aid system) is configured to control the wireless audio receiver of the hearing device as to whether or not an audio stream received from the audio device is extracted and forwarded to the user of the hearing aid system (e.g. via an output unit) dependent of the audio transmission control signal.

[0025] In an embodiment, the first hearing aid system is associated with the first remote control device. The term 'a hearing aid system is associated with a first remote control device' is in the present context taken to

mean the hearing aid system and the first remote control device have a unique common identity (e.g. adapted to each other during manufacture or at a specific fitting session) or are mutually aware of each other's identity. In an embodiment, the hearing system is configured to provide that the common identity or awareness of each other's identity is established during a predefined bonding or pairing or authentication procedure where identity keys are exchanged between the hearing aid system (e.g. a hearing device of the hearing aid system) and the associated remote control device. In an embodiment, such procedure form part of a standardized transmission protocol, e.g. Bluetooth or Bluetooth Low Energy. In an embodiment, the hearing system comprises a multitude of hearing aid systems, each comprising a hearing device or a pair of hearing devices, adapted to a corresponding number of different users (e.g. more than 1, such as more than 2, such as more than 5). In an embodiment, the hearing system comprises a separate remote control device associated with each user (each hearing aid system). In an embodiment, a hearing aid system (comprising a hearing device or a pair of hearing devices) and a remote control associated with a specific user (and thus each other) are configured to have a unique (common) identification code, e.g. a unique name for that specific user, or a configured to know each other's identity, e.g. a Bluetooth identity, a MAC-address, etc.

[0026] In an embodiment, the number of audio devices is 1. In an embodiment, the wireless transmitter of the first remote control device is configured to transmit said audio device control signal to *one* of said number of audio devices at a given point in time. In an embodiment, the hearing system (in particular the upstream control data link) is adapted to ensure that the user can point at an audio device of the system without erroneously selecting a neighboring device.

[0027] In an embodiment, the hearing system is configured to provide that the wireless transmitter of the first remote control device provides a focused or collimated beam of acoustic or electromagnetic waves with a field of view allowing a transmission of said audio device control signal to one particular of the number of audio devices. In an embodiment, the number of audio devices is larger than 1, such as larger than 2 such as larger than 3.

[0028] In an embodiment, the hearing system is configured to provide that the wireless transmitter of the number of audio devices provides a spatially scattered wireless signal. In an embodiment, the spatially scattered signal covers a solid angle larger than 60 degrees around the audio device in question, such as larger than 90 degrees, such as larger than 120 degrees. In an embodiment, the wireless transmitter of the number of audio devices is (substantially) omni-directional or semi-omni-directional (e.g. covering a half plane of the space around (e.g. in front of) the audio device in question).

[0029] In an embodiment, the wireless transmitter of the first remote control device is based on light. In an embodiment, the upstream control data channel between

the first remote control device and the number of audio devices is based on light, e.g. infrared (IR) light. In an embodiment, the wireless transmitter of the first remote control device comprises a light emitting diode or a laser for transmitting light, e.g. infrared light. In an embodiment, the wireless receiver of the number of audio devices comprises a photo diode for receiving light, e.g. infrared light. In an embodiment, a beam of light of the wireless transmitter of the first remote control device is a collimated beam. In an embodiment, the beam of light of the wireless transmitter of the remote control device is focused to a restricted spatial angle, e.g. to a cone of less than 5 to 10 degrees.

[0030] In an embodiment, the field of view of the wireless receiver of the first remote control device is limited. In an embodiment, the field of view of the wireless receiver (e.g. an IR receiver) of the first remote control device is limited to a cone of less than 10 to 20 degrees. This can e.g. be achieved by placing the IR Rx diode in a cone shaped light guide. In an embodiment, a corresponding wireless transmitter of the number of audio devices (e.g. an IR transmitter) is omni-transmitting. This can e.g. be achieved with a simple light-guide (e.g. an optical fiber) that spreads the IR light in all directions, or by adding an IR Tx-diode on multiple sides of the audio source.

[0031] In an embodiment, the hearing system is configured to provide that a single operation of the audio ON/OFF activation element on a specific remote control device, while pointing it towards a particular audio device, results in the audio transmitter of the audio device in question to issue an audio transmission control signal in response to the reception of an audio device control signal from the specific remote control device. The audio transmission control signal - when received in a hearing aid system associated with the specific remote control device - allows the hearing aid system to start or stop receiving (extracting) the audio signal from the particular audio device.

[0032] In a preferred embodiment, the hearing system is configured to provide that the change of reception in a specific hearing aid system of an audio signal from a particular audio transmitter of a particular audio device requires two steps (two operations of the audio ON/OFF activation element): A first step, where the particular audio device is selected upon the reception of an audio device control signal from the remote control device (after a first operation of the audio ON/OFF activation element). In an embodiment, the change of reception is only accepted by the system upon a reception in the specific hearing aid system (possible directly from the particular audio device or via the remote control device associated with the specific hearing aid system) of a transmission control signal (e.g. comprising an identification (ID) code) from the particular audio device whose audio signal is to be either received or terminated. This (second) additional authorization step requires a 'backlink' from the audio devices to the remote control device(s) and/or to the hear-

ing aid system(s) associated with the specific remote control device(s). The second step, where start or termination of reception of audio from a particular audio source may be performed automatically or initiated only after a second operation of the audio ON/OFF activation element.

[0033] In an embodiment, the hearing system is configured to provide visual feedback to the user regarding a status of the system. In an embodiment, the hearing system is configured to provide that a successful selection of a particular audio device (e.g. TV adapter or a microphone) is indicated on the audio device in question (e.g. by an LED, e.g. by a blinking diode, when the user successfully operates the device). In an embodiment, the hearing system is configured to provide that a successful reception of an audio signal from a particular audio device is indicated on the specific remote control (e.g. on a user interface (e.g. a diode or a display) of the remote control, e.g. a smartphone or the like, or of the specific hearing aid system).

[0034] In an embodiment the exchange of control signals between the first remote control device and the number of audio devices is uni-directional from the remote control to the number of audio devices. In the present context, the term 'exchange of control signals between the first remote control device and the number of audio devices' is taken to refer to the transmission of the audio device control signal from the first remote control device to the number of audio devices and the transmission of the audio transmission control signal from the number of audio devices to the first remote control device and/or to the first hearing aid system.

[0035] In an embodiment, the hearing system is configured to provide that the exchange of control signals between the remote control device and the number of audio devices is bi-directional. In an embodiment, the remote control device and each of the number of audio devices additionally comprises receiver and transmitter circuitry, respectively, allowing data to be transmitted from each of the number of audio devices (back) to the remote control device(s) (and/or to the hearing device(s)). In an embodiment, the wireless data link is a bidirectional link based on infrared light. In an embodiment, the *upstream* control data channel for transferring the audio device control signals from the remote control device to the respective audio devices is based electromagnetic waves, e.g. on light, e.g. infrared light, or on electromagnetic waves in the frequency range from 100 MHz to 100 GHz, e.g. in an ISM range, e.g. around 2.4 GHz or 5.8 GHz. In an embodiment, the *downstream* control data channel for transferring the audio transmission control signal from the audio device to the remote control device and/or to the hearing device in question is based electromagnetic waves, e.g. on light, e.g. infrared light, or on electromagnetic waves in the frequency range from 100 MHz to 100 GHz, e.g. in an ISM range, e.g. around 2.4 GHz or 5.8 GHz. In an embodiment, the *downstream* control data channel for transferring the au-

dio transmission control signal from the audio device to the remote control device and/or to the hearing device in question is integrated with (e.g. embedded in) the audio stream transmitted from the audio device to the at least one hearing device in question, e.g. using Bluetooth/Bluetooth Low Energy or similar technology.

[0036] In an embodiment, the hearing system is configured to provide that a particular audio device intended to be selected by a specific remote control device includes an identification code identifying the particular audio device to the remote control device and/or to the hearing aid system in the audio transmission control signal in response to the audio device control signal from the specific remote control (cf. e.g. FIG. 2).

[0037] In an embodiment, the hearing system is configured to provide that the audio device control signal issued by a specific remote control device in response to an activation of the ON/OFF activation element includes an identification code identifying the specific remote control device to the particular audio device intended to be selected by the specific remote control device.

[0038] In an embodiment, the hearing system is configured to provide that the particular audio device includes the identification code identifying the specific remote control from which the audio device control signal has been received in the audio transmission control signal transmitted to the remote control device and/or to the hearing aid system (cf. e.g. FIG. 3).

[0039] In an embodiment, the wireless audio transmitter of a particular audio device for transmitting an audio stream to the at least one hearing aid system and the wireless audio receiver of a specific hearing aid system for receiving said audio stream from said particular audio device implements a wireless audio link based on a standardized or proprietary radio technology in the GHz range. In an embodiment, the standardized or proprietary radio technology in the GHz range comprises Bluetooth (e.g. classic Bluetooth, possibly including Bluetooth Low Energy (BLE), or similar proprietary technology). In an embodiment, audio devices (e.g. a TV adapter or a wireless microphone) comprises Bluetooth Low Energy or equivalent 2.4 GHz radio technology to transmit/receive audio and send/receive control commands.

[0040] In an embodiment, the number of audio devices comprises one or more of a TV adapter and a microphone.

[0041] In an embodiment, an audio device is or comprises

- A microphone for picking up a sound from the environment, e.g. speech from a person.
- A TV- or video-adapter for transmitting an audio signal accompanying images presented by the TV-set or video-player.
- An audio gateway device adapted for receiving a multitude of audio signals (e.g. from an entertainment device, e.g. a TV or a music player, a telephone apparatus, e.g. a mobile telephone or a computer,

e.g. a PC) and adapted for allowing a selection of an appropriate one of the received audio signals (or a combination of signals) for transmission to the hearing aid system(s) (hearing device(s)).

- An audio delivery device (e.g. a stationary or portable audio device for providing broadcast (e.g. a radio or PC), recorded (e.g. a music player) or streamed audio), or an audio adapter for transmitting an audio signal from the audio delivery device to the hearing aid system(s) (hearing device(s)).
- a telephone (e.g. stationary or portable telephone, e.g. a cellular telephone, such as a smartphone, or similar device), or a phone adapter for transmitting an audio signal from the telephone to the hearing aid system(s) (hearing device(s)).

[0042] The hearing aid system(s) (hearing device(s)) is/are adapted to comprise an appropriate wireless interface to the audio device(s), e.g. based on Bluetooth (e.g. classic Bluetooth with or without Bluetooth Low Energy) or some other standardized or proprietary scheme.

[0043] In an embodiment, the (first) hearing aid system comprises a headset and/or an active ear protection device. In an embodiment, the hearing aid comprises an air conduction hearing aid or a bone conduction hearing aid or a cochlear implant hearing device or combinations thereof.

[0044] The hearing system is adapted to establish a communication link between the at least one hearing aid system and the number of audio devices to provide that information (e.g. control and/or status signals, and possibly audio signals) can be exchanged or forwarded from one to the other, in particular between the (first) hearing aid system and the respective audio devices.

[0045] In an embodiment, the (first) hearing aid system comprises two hearing devices configured for one specific user. In an embodiment, the (first) hearing aid system comprises two hearing devices adapted to implement a binaural hearing system, e.g. a binaural hearing aid system.

[0046] In an embodiment, the hearing system comprises a number (larger than 1) of hearing aid systems (each comprising one device or a device pair), each being configured to a different user. In an embodiment, the hearing system comprises a number (larger than 1) of remote control devices, each being associated with a specific user (and/or a specific hearing aid system).

[0047] In the present context, a 'hearing device' refers to a device, such as e.g. a hearing instrument or an active ear-protection device or other audio processing device, which is adapted to improve, augment and/or protect the hearing capability of a user by receiving acoustic signals from the user's surroundings, generating corresponding audio signals, possibly modifying the audio signals and providing the possibly modified audio signals as audible signals to at least one of the user's ears. A 'hearing device' further refers to a device such as an earphone or a headset adapted to receive audio signals electronically,

possibly modifying the audio signals and providing the possibly modified audio signals as audible signals to at least one of the user's ears. Such audible signals may e.g. be provided in the form of acoustic signals radiated into the user's outer ears, acoustic signals transferred as mechanical vibrations to the user's inner ears through the bone structure of the user's head and/or through parts of the middle ear as well as electric signals transferred directly or indirectly to the cochlear nerve of the user.

[0048] The hearing device may be configured to be worn in any known way, e.g. as a unit arranged behind the ear with a tube leading radiated acoustic signals into the ear canal or with a loudspeaker arranged close to or in the ear canal, as a unit entirely or partly arranged in the pinna and/or in the ear canal, as a unit attached to a fixture implanted into the skull bone, as an entirely or partly implanted unit, etc. The hearing device may comprise a single unit or several units communicating electronically with each other.

[0049] More generally, a hearing device comprises an input transducer for receiving an acoustic signal from a user's surroundings and providing a corresponding input audio signal and/or a receiver for electronically (i.e. wired or wirelessly) receiving an input audio signal, a signal processing circuit for processing the input audio signal and an output means for providing an audible signal to the user in dependence on the processed audio signal. In some hearing devices, an amplifier may constitute the signal processing circuit. In some hearing devices, the output means may comprise an output transducer, such as e.g. a loudspeaker for providing an airborne acoustic signal or a vibrator for providing a structure-borne or liquid-borne acoustic signal. In some hearing devices, the output means may comprise one or more output electrodes for providing electric signals.

[0050] In some hearing devices, the vibrator may be adapted to provide a structure-borne acoustic signal transcutaneously or percutaneously to the skull bone. In some hearing devices, the vibrator may be implanted in the middle ear and/or in the inner ear. In some hearing devices, the vibrator may be adapted to provide a structure-borne acoustic signal to a middle-ear bone and/or to the cochlea. In some hearing devices, the vibrator may be adapted to provide a liquid-borne acoustic signal to the cochlear liquid, e.g. through the oval window. In some hearing devices, the output electrodes may be implanted in the cochlea or on the inside of the skull bone and may be adapted to provide the electric signals to the hair cells of the cochlea, to one or more hearing nerves, to the auditory cortex and/or to other parts of the cerebral cortex.

[0051] A 'hearing aid system' refers to a system comprising one or two hearing devices, and a 'binaural hearing aid system' refers to a system comprising one or two hearing devices and being adapted to cooperatively provide audible signals to both of the user's ears. Hearing aid systems or binaural hearing aid systems may further comprise 'auxiliary devices', which communicate with the

hearing devices and affect and/or benefit from the function of the hearing devices. Auxiliary devices may be e.g. remote controls, or audio devices, such as audio gateway devices, mobile phones, public-address systems, car audio systems or music players. Hearing devices, hearing aid systems or binaural hearing aid systems may e.g. be used for compensating for a hearing-impaired person's loss of hearing capability, augmenting or protecting a normal-hearing person's hearing capability and/or conveying electronic audio signals to a person.

[0052] In an embodiment, the hearing device has a maximum outer dimension of the order of 0.15 m (e.g. a handheld mobile telephone). In an embodiment, the hearing device has a maximum outer dimension of the order of 0.08 m (e.g. a head set). In an embodiment, the hearing device has a maximum outer dimension of the order of 0.04 m (e.g. a hearing instrument).

[0053] In an embodiment, the hearing device is portable device, e.g. a device comprising a local energy source, e.g. a battery, e.g. a rechargeable battery.

[0054] In an embodiment, the number of audio devices (or at least some of them, e.g. the ones that are of current interest to the user) are within eye sight of the user (e.g. in that there is a direct line of sight from the remote control device of the user to the number of audio devices).

[0055] In an embodiment, the hearing device comprises a listening device, e.g. a hearing aid, e.g. a hearing instrument, e.g. a hearing instrument adapted for being located at the ear or fully or partially in the ear canal of a user, e.g. a headset, an earphone, an ear protection device or a combination thereof.

Use:

[0056] In an aspect, use of a hearing device as described above, in the 'detailed description of embodiments' and in the claims, is moreover provided. In an embodiment, use is provided in a system comprising audio distribution. In an embodiment, use is provided in a system comprising one or more hearing instruments, headsets, ear phones, active ear protection systems, etc., e.g. in handsfree telephone systems, teleconferencing systems, public address systems, karaoke systems, classroom amplification systems, etc.

A method:

[0057] In an aspect, a method of controlling a hearing system comprising a first hearing aid system adapted to be worn by a first user, a number of audio devices connectable to the first hearing aid system, and a first remote control device for controlling connectivity between the first hearing aid system and the number of audio devices is furthermore provided by the present application. The method comprises that

- In the first remote control device

- o Providing an audio ON/OFF activation,
- o Generating an audio device control signal for controlling at least one of said number of audio devices in response to said ON/OFF activation, and
- o Transmitting said audio device control signal to at least one of said number of audio devices,

- In at least one of the number of audio devices

- o receiving said audio device control signal from said first remote control device,
- o generating an audio transmission control signal in response to the reception of said audio device control signal from said first remote control device,
- o transmitting said audio transmission control signal to said first remote control device and/or to said at first hearing aid system,
- o transmitting an audio stream to said at first hearing aid system,

- In the first remote control device and/or the first hearing device

- o receiving said audio transmission control signal from said at least one of said number of audio devices, and
- o controlling audio reception in said first hearing aid system based on said audio transmission control signal from said at least one of said number of audio devices

- In the first hearing aid system

- o Enabling or disabling reception of an audio stream from said at least one of said number of audio devices.

[0058] It is intended that some or all of the structural features of the system described above, in the 'detailed description of embodiments' or in the claims can be combined with embodiments of the method, when appropriately substituted by a corresponding process and vice versa. Embodiments of the method have the same advantages as the corresponding system.

BRIEF DESCRIPTION OF DRAWINGS

[0059] The aspects of the disclosure may be best understood from the following detailed description taken in conjunction with the accompanying figures. The figures are schematic and simplified for clarity, and they just show details to improve the understanding of the claims, while other details are left out. Throughout, the same reference numerals are used for identical or corresponding parts. The individual features of each aspect may each be combined with any or all features of the other

aspects. These and other aspects, features and/or technical effect will be apparent from and elucidated with reference to the illustrations described hereinafter in which:

FIG. 1 shows a uses case comprising a hearing system according to the present disclosure,

FIG. 2 shows an embodiment of a hearing system according to the present disclosure wherein the audio device comprises an IR-transmission unit, and

FIG. 3 shows an embodiment of a hearing system according to the present disclosure wherein the remote control unit comprises an IR-transmission unit.

[0060] The figures are schematic and simplified for clarity, and they just show details which are essential to the understanding of the disclosure, while other details are left out. Throughout, the same reference signs are used for identical or corresponding parts.

[0061] Further scope of applicability of the present disclosure will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the disclosure, are given by way of illustration only. Other embodiments may become apparent to those skilled in the art from the following detailed description.

DETAILED DESCRIPTION OF EMBODIMENTS

[0062] The detailed description set forth below in connection with the appended drawings is intended as a description of various configurations. The detailed description includes specific details for the purpose of providing a thorough understanding of various concepts. However, it will be apparent to those skilled in the art that these concepts may be practised without these specific details. Several aspects of the apparatus and methods are described by various blocks, functional units, modules, components, circuits, steps, processes, algorithms, etc. (collectively referred to as "elements"). Depending upon particular application, design constraints or other reasons, these elements may be implemented using electronic hardware, computer program, or any combination thereof.

[0063] The electronic hardware may include microprocessors, microcontrollers, digital signal processors (DSPs), field programmable gate arrays (FPGAs), programmable logic devices (PLDs), gated logic, discrete hardware circuits, and other suitable hardware configured to perform the various functionality described throughout this disclosure. Computer program shall be construed broadly to mean instructions, instruction sets, code, code segments, program code, programs, subprograms, software modules, applications, software applications, software packages, routines, subroutines, objects, executables, threads of execution, procedures,

functions, etc., whether referred to as software, firmware, middleware, microcode, hardware description language, or otherwise.

[0064] FIG. 1 shows a uses case comprising a hearing system according to the present disclosure. FIG. 1 shows a user (U) wearing a hearing aid system comprising a pair of hearing devices (here left HI_L and right HI_R , hearing instruments) adapted to be located at a left and right ear, respectively, of the user. A number N_{ad} of audio devices ($AD1, AD2, \dots, ADN_{ad}$) are shown in eye sight of the user, e.g. located within a distance of less than 10 m of the user, e.g. in the same room as the user. Each of the audio devices comprises an audio transmitter (TxAC) for establishing a wireless (audio) communication link (WLAC) and transmitting an audio stream to the left and/or right hearing instruments (HI_L, HI_R). Reception of the audio stream in the hearing instrument(s) from a given audio device (here $AD2$) is controlled by a remote control device (RC) associated with the left and right hearing instruments (HI_L, HI_R). In an embodiment, the remote control device (RC) and the left and right hearing instruments (HI_L, HI_R) are adapted to each other in advance of their use, e.g. have been configured to have a common identity, e.g. unique for the user (U). In an embodiment, the remote control device (RC) and the left and right hearing instruments (HI_L, HI_R) are subject to a 'pairing procedure' allowing them to share a common identity (or to be aware of each other's identity (e.g. a Bluetooth or MAC address), or at least allowing the remote control device to be aware of the hearing device's identity) before use in the hearing system according to the present disclosure.

[0065] The remote control device (RC) comprises a user interface (UI) for controlling functionality of the hearing system (e.g. implemented as a dedicated remote control or as an APP of a more general device, e.g. a smartphone or the like). The user interface comprises an audio ON/OFF (or CONNECT) activation element for initiating enablement or disablement of reception of an audio stream in the hearing device(s) associated with the remote control. The remote control device (RC) further comprises a control unit (ARC) for generating an audio device control signal $ADCS$ for controlling at least one of the audio devices in response to an activation of the audio ON/OFF activation element. The remote control device (RC) further comprises a wireless transmitter (TxC) for transmitting the audio device control signal $ADCS$ to at least one of the audio devices. Each of the number of audio devices ($AD1, AD2, \dots, ADN_{ad}$) comprises a wireless receiver (RxC) for receiving the audio device control signal $ADCS$ from the remote control device (RC) and an audio device control unit (ACU) for generating an audio transmission control signal $ATCS$ for the audio device in question (here $AD2$) in response to the reception of the audio device control signal $ADCS$ from the remote control device (RC). Each of the number of audio devices ($AD1, AD2, \dots, ADN_{ad}$) further comprises a wireless transmitter (TxAC) for transmitting the audio transmission control signal $ATCS$ to the left and/or right hearing

instruments (HI_l, HI_r). Each of the number of audio devices further comprises a wireless audio transmitter (Tx-AC) for transmitting an audio stream AS to the left and/or right hearing instruments (HI_l, HI_r). In the embodiment of FIG. 1, the audio transmission control signal ATCS is transmitted directly to the left and right hearing instruments (HI_l, HI_r) *together* with the audio stream (AS, cf. wireless audio link WLAC). In the embodiment of FIG. 3, this is also the case, whereas in the embodiment of FIG. 2, the audio transmission control signal ATCS is transmitted to the remote control device (RC) and then forwarded from the remote control device to the hearing device or to at least one (e.g. both) of a left and right hearing devices (in the latter case, the audio transmission control signal ATCS may preferably be forwarded from one hearing device to the other, e.g. via an inter-aural wireless link, e.g. an inductive link, cf. WLIA in FIG. 1).

[0066] At least one of, such as each of, the left and right hearing instruments (HI_l, HI_r), comprise(s) a wireless audio receiver (RxAC) for receiving the audio stream AS from at least one of the of audio devices (here from AD2). At least one (e.g. both) of the left and right hearing instruments (HI_l, HI_r) comprise(s) a wireless receiver (Rx-AC) for receiving the audio transmission control signal ATCS from at least one of the audio devices (here from AD2), and an audio reception control unit (ARC) for controlling audio reception in left and right hearing instruments (HI_l, HI_r) based on the audio transmission control signal ATCS from at least one of the audio devices (here from AD2). In the embodiment of FIG. 1, the left and right hearing instruments (HI_l, HI_r) each comprise appropriate antenna and transceiver circuitry for establishing an interaural wireless link IAWL between them (allowing control and/or audio signals to be exchanged or forwarded from one to the other).

[0067] In an embodiment, left and right hearing instruments (HI_l, HI_r) may be configured to receive respective audio streams from more than one of the audio devices number of audio devices (AD1, AD2, ..., ADN_{ad}), e.g. by selectively selecting (via the remote control device) and allowing the audio stream(s) from the more than one audio devices to be received. In such case, the hearing instruments comprise a mixer for mixing (possibly weighting) the individual audio streams. The hearing system is preferably configured to allow such weighting to be controlled via the remote control device (RC) associated with the hearing instrument(s) in question.

[0068] The left and right hearing instruments (HI_l, HI_r) may each comprise a forward path for processing an audio signal. The forward path comprises an input transducer (here a microphone M) for picking up a sound signal from the environment of the user (U) wearing the hearing instruments and converting it to an electric input signal. The forward path further comprises a signal processing unit (SPU) for processing the electric input signal providing a processed signal. The forward path further comprises an output transducer (here a loudspeaker SP) for generating stimuli perceivable by the user of the hearing

instruments as sound based on the processed signal from the signal processing unit (SPU).

[0069] The user interface (UI) of the remote control device (RC) in addition to the ON/OFF activation element further comprises (optional) activation elements (VOL+, VOL-) for increasing and decreasing, respectively, volume of the selected and transmitted audio signal in the left and/or right hearing instruments (HI_l, HI_r). Other remote control functions may be implemented in the remote control device.

[0070] The remote control and each of the audio devices each comprise transmitter and receiver circuitry, respectively, to allow wireless link WLC to be established for transferring control signals between them. In an embodiment, the wireless link WLC is based on a (preferably focused, e.g. collimated) beam of acoustic or electromagnetic waves. In a preferred embodiment, the wireless link is based on a focused beam of light, e.g. infrared light. In an embodiment, the beam focus and the distance between remote control device (RC) and the audio device (ADi) to be selected are adapted to allow the focused beam to only cover the audio device (here AD2) that is intended to be selected. By pointing the (beam of the) remote control device towards the audio device that is intended to be selected for audio reception (or termination of audio reception), and simultaneously activating the ON/OFF activation element, an identification procedure can be initiated for enabling or disabling audio reception in the hearing instruments (HI_l, HI_r) associated with the remote control device (RC). Similarly, the volume (level) of the audio signal presented in the hearing instruments from *that* audio device can be modified by activating the VOL+/VOL- activation elements. Preferably, the audio devices comprise an indicator (IND in FIG. 1, e.g. an LED) to indicate a mode of operation of the audio device (e.g. that a selection has been made and/or that a reception of the audio stream has been successfully entered in the hearing instrument(s). In the embodiment of FIG. 1 the indicator (IND) of the selected audio device (AD2) is provided with hatching to differentiate from the non-selected audio devices (AD1 and ADN_{ad}).

[0071] The proposed solution implements a 'Point and Play' remote control device. The remote control device (RC) of the embodiment of FIG. 1 comprises three buttons:

- Volume Up (VOL+ to increase volume of the selected audio stream received in the hearing instrument)
- Volume Down (VOL- to decrease volume of the selected audio stream received in the hearing instrument)
- Connect (ON/OFF, start/stop of reception of external source)

[0072] In an embodiment, the remote control device (RC) works like this:

- 1) The user (U) points the remote control device (RC)

towards a connectable audio device (ADi, e.g. a TV adapter or a microphone).

2) By simply pointing (and possibly pressing an activation element, e.g. the ON/OFF button) the remote control device (RC) at the relevant device (e.g. AD2), the user (U) has selected the device and can now simply press the *connect* button (ON/OFF) to start/stop transmission of an audio stream from the selected device or to start/stop reception of an audio stream from the selected device in the hearing instruments (HI₁, HI₂) in question.

[0073] In an embodiment, the *selection* of an audio device is performed *without* manipulation of activation elements of the remote control device, e.g. solely based on an 'always on' beam from the remote control device being received by a particular audio device. An indication element (IND in FIG. 1) preferably indicates whether or not a selection has been successfully achieved.

[0074] The embodiment of the hearing system described above allows a user to control multiple devices. The user can even add streaming devices that are then mixed in the stream by simply pointing towards a device and pressing connect. Volume of individual streaming devices can also be controlled by pointing and pressing *volume up/down* buttons.

[0075] The user is accustomed to pointing with a remote control as this action is very similar to how a television remote control works. Hence, the present solution represents an intuitive approach.

[0076] FIG. 2 shows an embodiment of a hearing system according to the present disclosure wherein the audio device comprises an IR-transmission unit. In the embodiment of FIG. 2, the hearing system comprises a number (here 2) of audio devices (AD1, AD2), and a multitude (here 2) of hearing aid systems (HI User: Alice, HI User: Bob) and associated remote control devices (RD User: Alice, RD User: Bob). The remote control device(s) (RD) comprises wireless receiver in the form of an infrared receiver (IR-Rx) part with limited field of view (FOV), while the audio device(s) comprises an omnidirectional wireless transmitter in the form of an infrared transmitter (IR-Tx). The (omni-directional) infrared transmitter of the audio device and the infrared receiver (of limited field of view) of the remote control device implements a downstream control data channel for transferring an audio transmission control signal from the audio device (here AD1) to the remote control device (here RD User: Alice). The configuration of transmitter and receiver enables a link to be established to one device at a time, simply by pointing the remote control towards the audio device to be enabled (or disabled).

[0077] The remote control devices may comprise a wireless transmitter and the audio devices may comprise a wireless receiver configured to implement an upstream control data channel for transferring an audio device control signal from the remote control device to the audio device in question. In the embodiment of FIG. 2, the up-

stream control data channel is implemented as an RF-link, e.g. based on Bluetooth or Bluetooth Low Energy or similar (e.g. low-power, short range) technologies. Alternatively, the upstream control data channel may be implemented in any other appropriate technology compatible with the system application in question, e.g. as an infrared link or an inductive link or an acoustic or super-sonic link.

[0078] In addition to the control data channels to and from the audio device(s), the remote control device comprises a wireless link (denoted 'RF: CMD start Audio 1' in FIG. 2) to the hearing aid system, which it is associated with (here 'HI User: Alice'). In the embodiment of FIG. 2 the wireless link between the remote control and its associated hearing aid system is based on radiated fields, e.g. Bluetooth or Bluetooth Low Energy or similar (e.g. low-power, short range) technologies.

[0079] In the scenario of FIG. 2, the audio devices are broadcasting their audio streams (cf. 'RF: Audio1' and 'RF: Audio 2' from audio devices AD1 and AD2, respectively) to the users of the hearing aid systems (HI User: Alice, HI User: Bob). A specific user may select to listen to none, one or more of the audio streams provided by the audio devices (AD1, AD2). The audio transmission links from the audio devices (AD1, AD2) to the hearing aid systems (HI User: Alice, HI User: Bob) are indicated to be RF-links, e.g. based on Bluetooth/Bluetooth Low Energy or similar (e.g. low-power, short range) standardized or proprietary technologies.

[0080] Details of the scenario of FIG. 2 may be described as follows:

1. Audio sources (AD1, AD2) may be continuously broadcasting.

2. An audio device control signal requesting an audio device to identify itself is transmitted from the remote control device (RD User: Alice) to the audio devices (AD1, AD2) within reach of the upstream control data channel (denoted 'RF: CMD send ID' in FIG. 2), e.g. using Bluetooth Low Energy.

3. The audio devices (AD1, AD2) within reach of the upstream control data channel send their respective identification IDs as omnidirectional IR (only the ID (denoted 'IR: ID=Audio1') from AD1 is shown in FIG. 2).

4. The remote control device receives the Audio Source ID with IR (limited field-of-view (FOV)). The remote control device (RD User: Alice) only receives an identification (IR: ID=Audio1) from the audio device (AD1, the deliberately 'selected' audio device) towards which the remote control device is actively pointed (due to its limited FOV-reception of the IR-signal).

5. The remote control device (RD User: Alice) sends

RF command ('RF: CMD send ID') to its associated hearing aid system (HI User: Alice) to start/stop receiving audio from audio device 1 (AD1).

6. Multiple users (User: Alice, User: Bob) may listen to same stream, e.g. RF: Audio 1.

7. Multiple users (User: Alice, User: Bob) may listen to different streams, e.g. User: Alice to Audio 1 and User: Bob to Audio 2, as controlled by their associated remote control devices (RD User: Alice and RD User: Bob, respectively).

8. A single user, e.g. User: Alice, may listen to multiple streams, e.g. RF: Audio 1, RF: Audio 2.

[0081] The legend of FIG. 2 indicates the assumed current state of the system:

a) The dotted arrows indicate an *RF command signal that is received* ('RF: CMD send ID' sent from 'RD User Alice' to each of the audio devices 'AD1' and 'AD2').

b) The dash-dotted arrow indicate an *IR signal that is received* (the identification signal transmitted from audio device 1 ('AD1') is only received in remote control device 'RD User: Alice').

c) The solid arrow indicates *Audio in the air that is received and played* (the audio signal ('RF: Audio1') is only received by 'HI User: Alice', because only this hearing aid system has received the ID of audio device 1 ('AD1') and thus the authorization to receive the audio stream 'RF: Audio1' from 'AD1').

d) The dashed arrows indicate *audio in the air that can be received but is not played* (this relates to audio signal 'RF: Audio1' from AD1 to 'HI User: Bob', as well as to audio signal 'RF: Audio2' from AD2 to 'HI User: Alice' and to 'HI User: Bob').

[0082] FIG. 3 shows an embodiment of a hearing system according to the present disclosure wherein the remote control unit comprises an IR-transmission unit.

[0083] The scenario of FIG. 3 is similar to that of FIG. 2 as described above. The difference lies in the implementation of the upstream control data channel for transferring an audio device control signal from a remote control device to an audio device and in the implementation of the downstream control data channel for transferring the audio transmission control signal from the (selected) audio device to the remote control device and/or to the hearing device(s) in question. In the embodiment of a hearing system shown in FIG. 3, the upstream control data channel is implemented by an IR transmitter with a focused beam in the remote control device and an IR receiver in the audio device (cf. audio device control signal transmitted from 'RD ID Alice' to AD1, denoted 'IR: ID=Alice'). The downstream control data channel is implemented as a part of the audio link from the audio device

AD1 to the hearing aid systems ('HI User: Alice' and 'HI User: Bob'), cf audio stream with embedded audio transmission control signal denoted 'RF: Audio1 ID=Alice'. The combined audio and control data link may e.g. be based on radiated fields, e.g. Bluetooth/Bluetooth Low Energy or similar (e.g. low-power, short range) technologies.

[0084] Details of the scenario of FIG. 3 may be described as follows:

1. Audio devices (AD1, AD2) may be continuously broadcasting.

2. The audio device control signal is transmitted on an infrared link from the remote control device (here 'RD ID: Alice'). The infrared transmitter IR-Tx is configured to transmit the infrared signal ('IR: ID=Alice') in a limited cone (preferably narrow enough to allow a user (here 'User: Alice') to select a single of the relevant (selectable) audio devices ('AD1', 'AD2') located within the range of operation of the infrared link.

3. An infrared receiver (IR-Rx) located in the audio devices ('AD1', 'AD2') is configured to continuously receive IR signals (if any) from all directions (omni).

4. The user ID and command ('IR ID=Alice') is transmitted from remote control ('RD ID: Alice') to (selected) audio device 'AD1'.

5. The ID and command ('IR ID=Alice') from the HI user (User: Alice) is embedded in the audio stream link from audio device 'AD1' to hearing aid system 'HI User: Alice' as well as to hearing aid system 'HI User: Bob', however only received and presented to the user of hearing instrument(s) 'HI User: Alice', because only in this/these hearing aid system, the correct user ID has been received (ID=Alice).

6. Multiple user IDs (from multiple users (Alice, Bob)) and commands may be embedded in a given audio link.

7. The hearing instrument user decides which of the available audio streams he or she wants to listen to (by use of a dedicated remote control device).

8. Multiple users may listen to same audio stream.

9. Multiple users may listen to different audio streams.

10. A single user may listen to multiple streams.

[0085] The legend of FIG. 3 indicates the assumed current state of the system:

a) The dash-dotted arrow indicates an *IR signal that is received* (the identification signal transmitted from a remote control device ('RD ID: Alice') is only received in audio device 'AD1' due to the limited transmit cone of the IR transmitter of the remote control device).

b) The solid arrow indicates *Audio in the air that is received and played* (the user identification 'ID=Alice' is embedded in the audio signal ('Audio1') from audio device 1 (combined signal 'RF: Audio1 ID=Alice'). Hence the audio signal 'Audio1' from 'AD1' is only received by 'HI User: Alice', because only this/hearing aid system receive(s) its own ID ('ID=Alice') and thus the authorization to receive the audio stream 'RF: Audio1' from 'AD1').

c) The dashed arrows indicate *audio in the air that can be received but is not played* (this relates to audio signal 'Audio1' from AD1 to 'HI User: Bob', as well as to audio signal 'Audio2' from 'AD2' to 'HI User: Alice' and to 'HI User: Bob'; no identification signal is embedded in the audio signal 'Audio2' from audio device 'AD2', because none of the remote control devices ('RD ID: Alice' and 'RD ID: Bob') has requested such identification).

[0086] It is intended that the structural features of the devices described above, either in the detailed description and/or in the claims, may be combined with steps of the method, when appropriately substituted by a corresponding process.

[0087] As used, the singular forms "a," "an," and "the" are intended to include the plural forms as well (i.e. to have the meaning "at least one"), unless expressly stated otherwise. It will be further understood that the terms "includes," "comprises," "including," and/or "comprising," when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof. It will also be understood that when an element is referred to as being "connected" or "coupled" to another element, it can be directly connected or coupled to the other element but an intervening elements may also be present, unless expressly stated otherwise. Furthermore, "connected" or "coupled" as used herein may include wirelessly connected or coupled. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items. The steps of any disclosed method is not limited to the exact order stated herein, unless expressly stated otherwise.

[0088] It should be appreciated that reference throughout this specification to "one embodiment" or "an embodiment" or "an aspect" or features included as "may" means that a particular feature, structure or characteristic described in connection with the embodiment is included in at least one embodiment of the disclosure. Furthermore, the particular features, structures or characteris-

tics may be combined as suitable in one or more embodiments of the disclosure. The previous description is provided to enable any person skilled in the art to practice the various aspects described herein. Various modifications to these aspects will be readily apparent to those skilled in the art, and the generic principles defined herein may be applied to other aspects.

[0089] The claims are not intended to be limited to the aspects shown herein, but is to be accorded the full scope consistent with the language of the claims, wherein reference to an element in the singular is not intended to mean "one and only one" unless specifically so stated, but rather "one or more." Unless specifically stated otherwise, the term "some" refers to one or more.

[0090] Accordingly, the scope should be judged in terms of the claims that follow.

Claims

1. A hearing system comprising

- a first hearing aid system adapted to be worn by a first user,
- a number of audio devices connectable to the first hearing aid system, and
- a first remote control device for controlling connectivity between the first hearing aid system and the number of audio devices, wherein
 - the first remote control device comprises
 - o an audio ON/OFF activation element,
 - o a control unit for generating an audio device control signal for controlling at least one of said number of audio devices in response to an activation of said audio ON/OFF activation element, and
 - o a wireless transmitter for transmitting said audio device control signal to at least one of said number of audio devices,
- each of the number of audio devices comprises
 - o a wireless receiver for receiving said audio device control signal from said first remote control device,
 - o an audio device control unit for generating an audio transmission control signal for the audio device in question in response to the reception of said audio device control signal from said first remote control device,
 - o a wireless transmitter for transmitting said audio transmission control signal to said first remote control device and/or to said first hearing aid system,
 - o a wireless audio transmitter for transmitting an audio stream to the first hearing aid

- system,
- the first hearing aid system comprises a wireless audio receiver for receiving an audio stream from said number of audio devices,
 - the first remote control device and/or the first hearing aid system comprises
 - o a wireless receiver for receiving said audio transmission control signal from at least one of said number of audio devices, and
 - o an audio reception control unit for controlling audio reception in said first hearing aid system based on said audio transmission control signal from said at least one of said number of audio devices.
2. A hearing system according to claim 1 wherein the first hearing aid system adapted to be worn by the first user comprises a hearing device or a pair of hearing devices.
 3. A hearing system according to claim 1 or 2 wherein the wireless transmitter of the first remote control device and the wireless receiver of at least one of the number of audio device are configured to implement an upstream control data channel for transferring the audio device control signal from the first remote control device to the audio device(s) in question.
 4. A hearing system according to any one of claims 1-3 wherein the wireless transmitter of at least one of the number of audio devices and the wireless receiver of the first remote control device and/or of the first hearing aid system are configured to implement a downstream control data channel for transferring the audio transmission control signal from the audio device(s) in question to the first remote control device and/or to the first hearing aid system.
 5. A hearing system according to any one of claims 1-4 wherein said first hearing aid system is associated with said first remote control device.
 6. A hearing system according to any one of claims 1-5, configured to provide that the wireless transmitter of the first remote control device provides a focused or collimated beam of acoustic or electromagnetic waves with a field of view allowing a transmission of said audio device control signal to one particular of the number of audio devices.
 7. A hearing system according to any one of claims 1-6, configured to provide that the wireless transmitter of the number of audio devices provides a spatially scattered wireless signal.
 8. A hearing system according to any one of claims 1-7 wherein the wireless transmitter of the first remote control device is based on light.
 9. A hearing system according to any one of claims 1-8 wherein the field of view of the wireless receiver of the first remote control device is limited.
 10. A hearing system according to any one of claims 1-9 configured to provide that the exchange of control signals between the remote control device and the number of audio devices is bi-directional.
 11. A hearing system according to any one of claims 1-10 configured to provide that a particular audio device intended to be selected by a specific remote control device includes an identification code identifying the particular audio device to the remote control device and/or to the hearing aid system in the audio transmission control signal in response to the audio device control signal from the specific remote control.
 12. A hearing system according to any one of claims 1-11 configured to provide that the audio device control signal issued by a specific remote control device in response to an activation of the ON/OFF activation element includes an identification code identifying the specific remote control device to the particular audio device intended to be selected by the specific remote control device.
 13. A hearing system according to claim 12 configured to provide that the particular audio device includes the identification code identifying the specific remote control from which the audio device control signal has been received in the audio transmission control signal transmitted to the remote control device and/or to the hearing aid system.
 14. A hearing system according to any one of claims 1-13 wherein the wireless audio transmitter of a particular audio device for transmitting an audio stream to the at least one hearing aid system and the wireless audio receiver of a specific hearing aid system for receiving said audio stream from said particular audio device implements a wireless audio link based on a standardized or proprietary radio technology in the GHz range.
 15. A hearing system according to any one of claims 1-14 wherein the number of audio devices comprises one or more of a TV adapter and a microphone.
 16. A method of controlling a hearing system comprising a first hearing aid system adapted to be worn by a first user, a number of audio devices connectable to the first hearing aid system, and a first remote control

device for controlling connectivity between the first hearing aid system and the number of audio devices, the method comprising

- In the first remote control device 5
 - o Providing an audio ON/OFF activation,
 - o Generating an audio device control signal for controlling at least one of said number of audio devices in response to said ON/OFF activation, and 10
 - o Transmitting said audio device control signal to at least one of said number of audio devices, 15
- In at least one of the number of audio devices
 - o receiving said audio device control signal from said first remote control device,
 - o generating an audio transmission control signal in response to the reception of said audio device control signal from said first remote control device, 20
 - o transmitting said audio transmission control signal to said first remote control device and/or to said at first hearing aid system, 25
 - o transmitting an audio stream to said at first hearing aid system,
- In the first remote control device and/or the first hearing device 30
 - o receiving said audio transmission control signal from said at least one of said number of audio devices, and 35
 - o controlling audio reception in said first hearing aid system based on said audio transmission control signal from said at least one of said number of audio devices
 - o In the first hearing aid system Enabling or disabling reception of an audio stream from said at least one of said number of audio devices. 40

17. Use of a hearing system as claimed in any one of claims 1-15. 45

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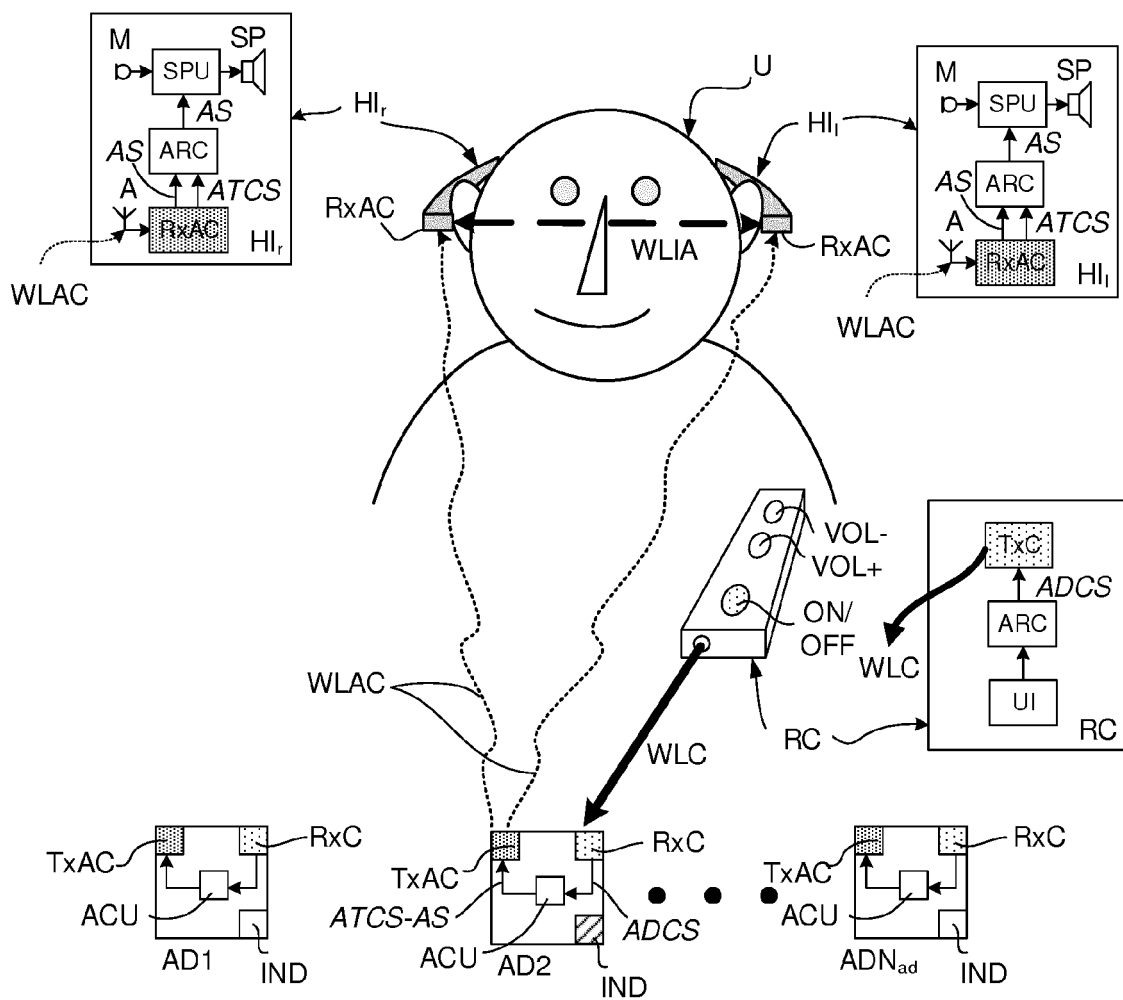


FIG. 1

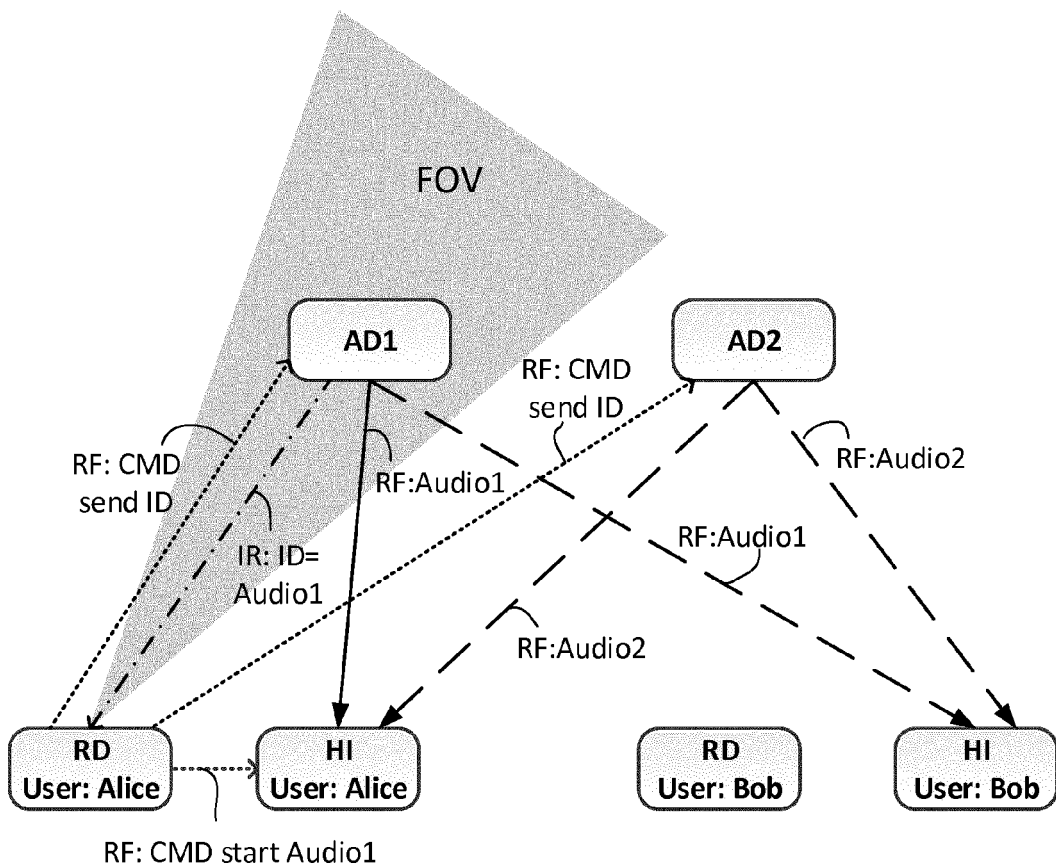
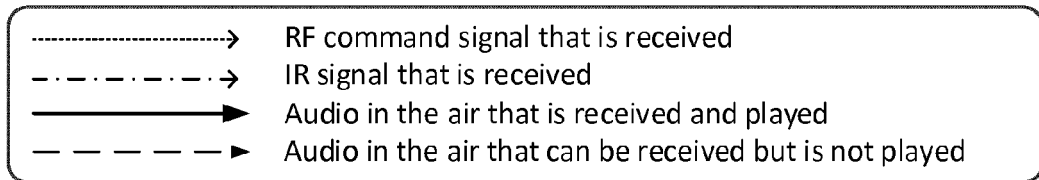


FIG. 2

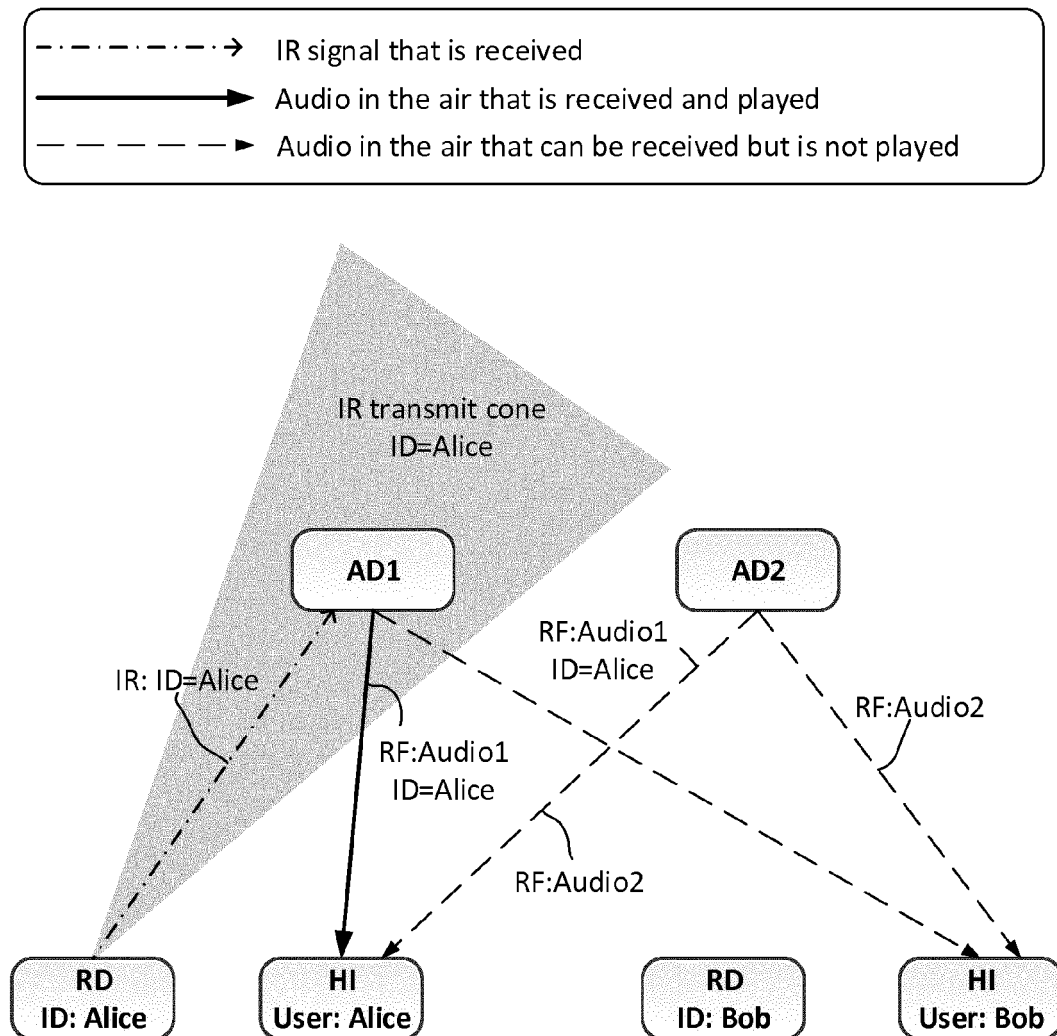


FIG. 3



EUROPEAN SEARCH REPORT

 Application Number
 EP 15 17 0314

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2012/321112 A1 (SCHUBERT EMILY CLARK [US] ET AL) 20 December 2012 (2012-12-20)	1-7,9-17	INV. H04R25/00
Y	* paragraphs [0019], [0025], [0051], [0078], [0089]; figures *	8	ADD. H04R27/00
Y	US 2015/146879 A1 (NGUYEN PHUC H [US] ET AL) 28 May 2015 (2015-05-28) * paragraph [0030]; figures *	8	
A	WO 2015/001135 A2 (PHONAK AG [CH]) 8 January 2015 (2015-01-08) * page 3, line 27 - page 6, line 16; figure 1 *	1,16,17	
A	EP 2 773 135 A1 (GN RESOUND AS [DK]) 3 September 2014 (2014-09-03) * paragraph [0010] - paragraph [0020]; figure 1 *	1,16,17	
			TECHNICAL FIELDS SEARCHED (IPC)
			H04R
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 19 November 2015	Examiner Gastaldi, Giuseppe
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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