The electronic equipment accessory 14 in the exemplary embodiment is a rendering device and will be referred to as the headset 14. The headset 14 is shown as an ear mountable speaker and microphone assembly that exchanges audio data with the mobile telephone 12 over a wireless link. One of ordinary skill in the art will appreciate that any rendering device operable to receive signals from the mobile telephone 10 is

5   deemed to fall within the scope of the present invention. For example, suitable rendering devices include headphones, earphones, speakers, televisions, stereos, and the like.

For purposes of the description herein, a wireless link is established using a Bluetooth protocol, such as in accordance with the Specification of the Bluetooth System, Covered Core Package version 2.0 + EDR, dated November 4, 2004, which is incorporated herein by reference in its entirety. Other suitable wireless interfaces

10   (e.g., radio frequency, 802.11 compatible protocols, infrared, etc.) may be used to transmit data to the mobile telephone 12 and/or to the headset 14.

The mobile telephone 12 includes a display 18. The display 18 displays information to a user such as operating state, time, telephone numbers, contact information, various navigational menus, etc., which enables the user to utilize the various feature of the mobile telephone 12. The display 18 may also be used to visually

15   display content accessible by the mobile telephone 12 and/or headset 14 from one or more remote sources (e.g., a media server). The displayed content may include audio and/or video presentations stored locally in memory 20 (Figure 2) of the mobile telephone 12 and/or stored remotely from the mobile telephone 12 (e.g., on a remote storage device, a media server, remote personal computer, etc.). Such presentations may be derived, for example, from multimedia files, including audio and/or video files, from a received mobile radio and/or

20   television signal, etc. In many situations, the video presentations are accompanied by audio presentations. For example, the displayed video component may be a "music video" and the corresponding audio component may be music intended to be synchronized with the video component. As another example, the displayed video component may correspond to a received mobile television signal and the corresponding audio component may be speech and/or music intended to be synchronized with the video component.

25   The audio component may be broadcast to the user with a speaker 22 of the mobile telephone 12. Alternatively, the audio component may be broadcast to the user with a speaker 24 (Figure 2) of the headset 14. For stereo listening, the headset 14 may include a pair of speakers 24. Delivery of audio data from content source to the mobile telephone 12 and the headset 14 will be described in greater detail below.

The mobile telephone 12 further includes a keypad 26 that provides for a variety of user input

30   operations. For example, the keypad 26 may include alphanumeric keys 28 for allowing entry of alphanumeric information such as telephone numbers, phone lists, contact information, notes, etc. In addition, the keypad 26 typically may include special function keys such as a "call send" key for initiating or answering a call, and a "call end" key for ending, or "hanging up" a call. Special function keys may also include menu navigation keys, for example, for navigating through a menu displayed on the display 18 to select different telephone functions,

35   profiles, settings, etc., as is conventional. Other keys associated with the mobile telephone 12 may include a volume key, audio mute key, an on/off power key, a web browser launch key, a camera key, etc. Keys or key-like functionality may also be embodied as a touch screen associated with the display 18.

The mobile telephone 12 includes conventional call circuitry that enables the mobile telephone 12 to establish a call and/or exchange signals with a called/calling device, typically another mobile telephone or

landline telephone. However, the called/calling device need not be another telephone, but may be some other device such as an Internet web server, content providing server, etc.

Referring to Figure 2, a functional block diagram of the electronic equipment assembly 10 is illustrated. The mobile telephone 12 includes a primary control circuit 30 that is configured to carry out overall control of the functions and operations of the mobile telephone 12. The control circuit 30 may include a processing device 32, such as a CPU, microcontroller or microprocessor. The processing device 32 executes code stored in a memory (not shown) within the control circuit 30 and/or in a separate memory, such as memory 20, in order to carry out conventional operation of the mobile telephone 12. The memory 20 may be, for example, a buffer, a flash memory, a hard drive, a removable media, a volatile memory and/or a non-volatile memory. In addition, the processing device 32 executes code to carry out various functions of the mobile telephone 12.

Continuing to refer to Figures 1 and 2, the mobile telephone 12 includes an antenna 34 coupled to a radio circuit 36. The radio circuit 36 includes a radio frequency transmitter and receiver for transmitting and receiving signals via the antenna 34 as is conventional. The mobile telephone 12 further includes a sound signal processing circuit 38 for processing the audio signal transmitted by/received from the radio circuit 36. Coupled to the sound processing circuit 38 are the speaker 22 and a microphone 40 that enable a user to listen and speak via the mobile telephone 12 as is conventional. The radio circuit 36 and sound processing circuit 38 are each coupled to the control circuit 30 so as to carry out overall operation.

The mobile telephone 12 also includes the aforementioned display 18 and keypad 26 coupled to the control circuit 30. The mobile telephone 12 further includes an I/O interface 42. The I/O interface 42 may be in the form of typical mobile telephone I/O interfaces, such as a multi-element connector at the base of the mobile telephone 12. As is typical, the I/O interface 42 may be used to couple the mobile telephone 12 to a battery charger to charge a power supply unit (PSU) 44 within the mobile telephone 12. In addition, or in the alternative, the I/O interface 42 may serve to connect the mobile telephone 12 to a wired personal hands-free adaptor, to a personal computer or other device via a data cable, etc. The mobile telephone 12 may also include a timer 46 for carrying out timing functions. Such functions may include timing the durations of calls, generating the content of time and date stamps, etc.

The mobile telephone 12 may include various built-in accessories, such as a camera 48 for taking digital pictures. Image files corresponding to the pictures may be stored in the memory 20. In one embodiment, the mobile telephone 12 also may include a position data receiver (not shown), such as a global positioning satellite (GPS) receiver, Galileo satellite system receiver or the like.

To establish wireless communication with other locally positioned devices, such as the headset 14, another mobile telephone, a computer, etc., the mobile telephone 12 may include a local wireless interface adapter 50, such as a Bluetooth adapter.

To establish wireless communication with other locally positioned devices, such as a wireless local area network, wireless access point and the like, the mobile telephone 12 may further include a wireless interface adapter 51. As shown in Figure 2, the wireless interface adapter 51 may be a wireless local area network interface adapter and is referred to herein as WLAN adapter 52. One of ordinary skill in the art will readily appreciate that the WLAN adapter 52 is exemplary and any suitable connectivity technology may be implemented in accordance with the present invention (e.g., Bluetooth, infrared, etc.). Preferably, the WLAN

adapter 52 is compatible with one or more IEEE 802.11 protocols (e.g., 802.11(a), 802.11(b) and/or 802.11(g), etc.) and allows the mobile telephone 12 to acquire a unique identifier (e.g., MAC and IP addresses) on the WLAN and communicate with one or more devices on the WLAN, assuming the user has the appropriate privileges and/or has been properly authenticated.

5   The mobile telephone 12 may be configured to operate in a wide area communications system. The system can include one or more servers or call control elements for managing calls placed by and destined to the mobile telephone 12, transmitting content (e.g., image files, audio files, video files, voice and/or data packets, etc.) to the mobile telephone 12 and carrying out any other support functions. The server communicates with the mobile telephone 12 via a network and a transmission medium. The transmission medium may be any
10   appropriate device or assembly, including, for example, a communications tower, another mobile telephone, a wireless access point, a satellite, etc. Portions of the network may include wireless transmission pathways.

The headset 14 includes a primary control circuit 54 that is configured to carry out overall control of the functions and operations of the headset 14. The control circuit 54 may include a processing device 56, such as a CPU, microcontroller or microprocessor. The processing device 56 executes code stored in a memory (not
15   shown) within the control circuit 54 and/or in a separate memory, such as memory (not shown), in order to carry out operation of the headset 14, as described herein. The memory may be, for example, a buffer, a flash memory, a hard drive, a removable media, a volatile memory and/or a non-volatile memory. In addition, the processing device 56 executes code to carry out various functions of the headset 14.

The headset 14 includes a local interface adapter 58 that is compatible with the local interface adapter
20   50 of the mobile telephone 12 to establish a wireless interface between the headset 14 and the mobile telephone 12. The local interface adapter 58 is coupled to the control circuit 54 to selectively control and process information and/or data received and/or transmitted by the local interface adapter 58. Preferably, as discussed above, the local interface adapter 58 is Bluetooth compatible. The wireless interface established between adapters 50 and 58 may be used to exchange data, such as audio data, commands, control and/or status
25   information between the mobile telephone 12 and the headset 14. One of ordinary skill in the art will understand the basic operations of a Bluetooth wireless communication interface, so the details will not be described here in detail for the sake of brevity.

The headset 14 further includes a WLAN interface adapter 60. The WLAN interface adapter 60 is coupled to the control circuit 54 to selectively control and process information and/or data received and/or
30   transmitted by the WLAN interface adapter 60. Preferably, the WLAN adapter 60 is compatible with one or more IEEE 802.11 protocols (e.g., 802.11(a), 802.11(b) and/or 802.11(g), etc.) and allows headset 14 to acquire a unique address (e.g., IP address) on the WLAN and communicate with one or more devices associated with the WLAN, assuming the user has the appropriate privileges and/or has been properly authenticated. Although the interface adapter 60 has been described in terms of WLAN interface, similar to wireless interface adapter 52
35   described above, the interface adapter 60 may implement any suitable connectivity technology in accordance with the present invention (e.g., Bluetooth, infrared, etc.).

The headset 14 further includes an audio data processing device 62 that manages audio data. For example, the audio data processing device 62 may include an encoder 64 that encodes an audio signal received from a microphone 66 coupled to the headset 14. Encoded audio data may be transmitted to the mobile
40   telephone 12 for use as part of a telephone call.

In addition, the audio data processing device 62 may include a decoder 68 and a data buffer 70 to process audio data received from the mobile telephone 12 and/or one or more devices associated with a WLAN.

The received audio data may be incoming audio data associated with a telephone call. In other situations, the audio data received by the headset 14 may be audio (e.g., music, sound, voice, etc.) derived from
5   an audio file played back by the mobile telephone 12. The audio data received by the headset 14 may also originate from one or more devices associated with a WLAN and transmitted and/or streamed to the headset 14 for listening by the user, as described below. In yet other situations, the audio data may be associated with video content displayed on the display 18 by the mobile telephone 12. For example, a video file containing an audio component stored in the memory 20 may be played back by the mobile telephone 12 or a video signal
10   containing an audio component may be received by the mobile telephone 12.

In these situations, a video component of the video file or received video signal may be decoded by, for example, the control circuit 30 or dedicated video decoder (not shown) to generate a video signal output to the display 18 for viewing. The audio component of the video file or received video signal may be decoded and delivered as an audio signal to the speaker 22 and/or the audio component may be transmitted as audio data to
15   the headset 14 for decoding into an audio signal that is broadcast by the speaker 24. In another embodiment, the audio component of the video file or received video signal may be transmitted as audio data directly to the headset 14 from one or more devices associated with a local area network, without transmission to the mobile telephone 12, for decoding into an audio signal that is broadcast by the speaker 24.

As explained in detail below, audio data transmitted from the mobile telephone 12 to the headset 14
20   and/or transmitted from one or more devices associated with a WLAN to the headset 14 is typically in the form of media packets. Each media packet may contain a quantity of audio data, such as about 5 milliseconds of audio data. The audio data may be buffered by the buffer 62 and decoded by the decoder 60 into an audio signal for delivery to the speaker 24. As will be appreciated by one of ordinary skill in the art, the audio data may be mono, stereo or surround-sound, or arranged in any other suitable audio format.

25   An exemplary communication network 100 in accordance with aspects of the present invention is illustrated in Figure 3. The exemplary network illustrated in Figure 3 is a public wireless local area network, which utilizes Internet Engineering Task Force (IETF) protocols (e.g., IP, TCP, UDP, RTP, HTTP and the like) between the endpoints (e.g., the streaming source and rendering device (e.g., headset)). In this illustration, the mobile telephone 12 acts as a gateway or proxy for routing content (e.g., audio files, video files, etc.) stored on
30   the server 102 through one or more routers 104 and an IP network 106, which may be any suitable network to a destination source. From the IP network 106 and, optionally, router 104, the multimedia content is transmitted to wired LAN 108, routed to the ACCESS POINT 110, and output to the destination source (e.g., mobile telephone 12 and/or rendering device 14) in a wireless manner.

Although the server 102 is shown as being outside of the wired LAN 108, this is for illustrative
35   purposes only. One of ordinary skill in the art will readily appreciate that the server 102 may be located within the wired LAN 108 depending on the specific requirements of the server 102 and/or the LAN 108 or can be on a remote network that is connected to LAN 108 via the Internet. One of ordinary skill in the art will also appreciate that the exemplary LAN 108 may be a wireless local area network, a wide area network, personal-area access technology (e.g., wireless local area network, cellular network, WiMax, ultra wideband network,
40   etc.) and/or a public network (e.g., the Internet).

As shown in Figure 3, the LAN 108 is communicatively couple to the access point 110. Access point 110 provides wireless communication medium between the mobile telephone 12 and/or headset 14 to the LAN 108. Thus, the mobile telephone 12 and/or headset 14 are communicatively coupled to the server 102.

One of ordinary skill in the art will appreciate that the communication medium between devices take the form of any medium that permits electronic devices to exchange information or data. For instance, the communication medium may be a wired communications medium, such as Ethernet, or a wireless communication medium, such as IEEE 802.11(a), 802.11(b) or 802.11(g). In addition, the communication medium may also be a combination of wired and wireless communications mediums. One of ordinary skill in the art will also appreciate that any communications medium allowing the functionality described herein shall be deemed to be within the scope of the present invention. Preferably the communication medium can support a variety of network protocols including, for example, IETF-compatible protocols (e.g., IP, TCP, UDP, RTP, HTTP and the like)

Figure 4 illustrates a schematic block diagram of an exemplary server (e.g., server 102). The server 102 may be any type of server. Preferably, the server 102 is a media server that is compatible with protocols developed by the Internet Engineering Task Force (IETF) (e.g., IP, TCP, UDP, RTP, HTTP and the like). The server 102 generally includes a processor 110, a memory 112, a data storage medium 114, a local interface 116, video and input/output interfaces 118, and various communication interfaces 120. The server 102 may include optionally a display 122, a keyboard 124, and a user input device 126 (e.g., a computer mouse).

The server 102 is capable of executing one or more computer applications 128 in accordance with aspects of the present invention. In one embodiment, computer applications 128 include at least one audio and/or video application program that is capable of transmitting multimedia content (e.g., audio files, video files, audiovisual files, photographs, slides, radio, streaming audio and/or video, etc.) in a user-sensible format upon request from an associated user. The multimedia content may be stored in the data storage medium 114 or a remote storage medium (not shown) that is communicatively coupled to the WLAN 100.

As stated above, the multimedia content may take any form (e.g., audio, video, photographs, streaming audio and/or video and the like) and may be stored in any suitable format (e.g., MPEG, AVI, MP3, JPG, TIFF, and the like). The server 102 may also store communications software, which is capable of converting the multimedia content stored on the server 102 and/or the remote storage medium to a format that can be rendered locally and/or remotely by the requesting device and/or a peripheral device associated with the requesting device (e.g., headset 14). Alternatively, the server 102 may provide the multimedia content in a known format and allow the requesting device and/or a peripheral device associated with the requesting device to perform any necessary conversion.

The computer application 128 may be logically associated with or call one or more additional computer applications or one or more sub-computer applications 130, which generally include compilations of executable code. In one embodiment, the computer application 128, and/or the sub-applications 130 are embodied as one or more computer programs (e.g., one or more software applications including compilations of executable code). The computer program(s) can be stored on a data storage medium or other computer readable medium, such as a magnetic or optical storage device (e.g., hard disk, CD-ROM, DVD-ROM, etc.).

To execute the computer application 128 and associated sub-applications 130, the server 102 can include one or more processors 110 used to execute instructions that carry out a specified logic routine(s).

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