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(54) **Wireless communications device and operating method thereof**

(57) A wireless television receiver 17, in the form of a GSM wireless telephone, comprises a DAB receiver capable of receiving data from a plurality of data channels over a unidirectional link. The received data comprises video data, audio data or both, enabling the reception of video and radio programmes. The receiver 17 also comprises means for selectively decoding and outputting data from a channel onto a display screen. An actuation

element 18 is provided on the body of the receiver 17 and is operable, during output of data from a selected channel, to send identification data, indicative of the channel, over a GPRS data link to a predetermined network address. In response, the receiver 17 is arranged to receive a different network address from the location 25 identified by the predetermined network address, and to download a web page from the different network address for display on the display screen.

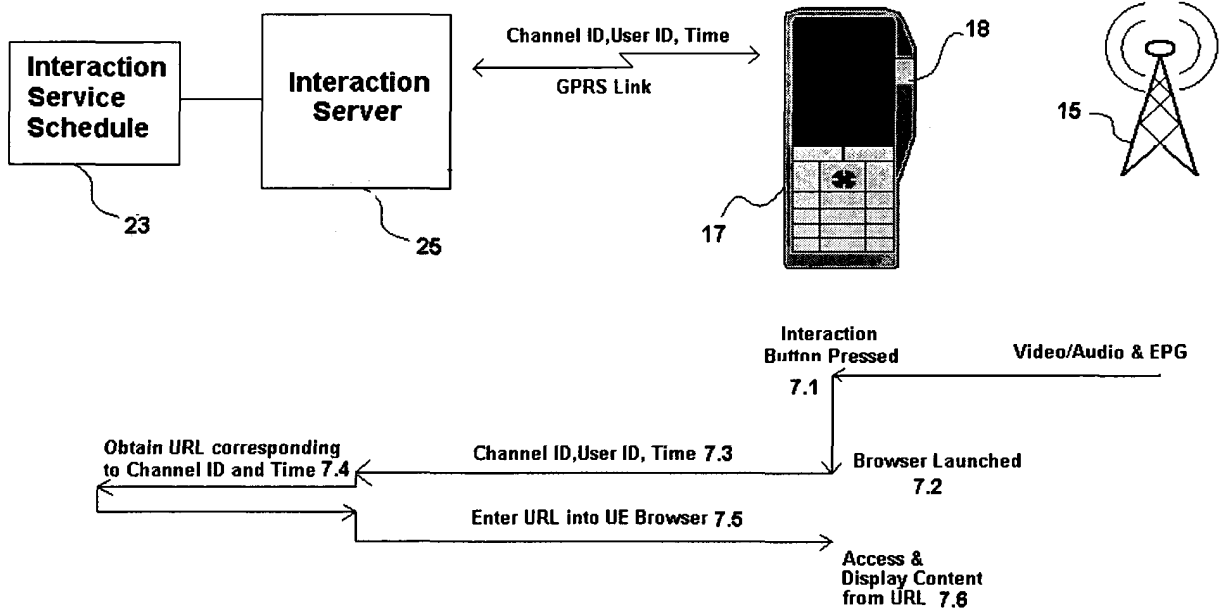


Figure 7

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DescriptionFIELD OF THE INVENTION

[0001] This invention relates to a wireless communications device and operating method thereof.

DESCRIPTION OF THE PRIOR ART

[0002] Wireless devices for receiving television and radio data over a link, such as a General Packet Radio Service (GPRS) link, are known. Such devices are somewhat limited in the amount of data that can be received due to the inherent bandwidth limitations of the GPRS link which can vary according to device location and the amount of other traffic being handled by the local base station.

[0003] The applicant has proposed a system for broadcasting digital audio and video programmes to wireless devices, particularly wireless telephones, using Digital Audio Broadcasting (DAB) technology. DAB is a technology for broadcasting content in digital form using Coded Orthogonal Frequency Digital Multiplexing (COFDM) to achieve improved fidelity and noise immunity. In the United Kingdom, the DAB standard is Eureka 147 as promoted by the World DAB Forum, for which see <http://www.worlddab.org>. Further information on DAB technology can be obtained from the website or from "Digital Audio Broadcasting, Principles and Applications of Digital Radio", 2nd Edition, Wolfgang Hoeg and Thomas Lauterback (editors), 2003, Wiley.

[0004] Digital television receivers, particularly non-wireless set top box (STB) receivers, may provide some form of interactive service. Typically, a button will be provided on the set top box (STB) or remote control, operation of which causes additional content to be viewed on the television. This additional content is pushed down the same data channel as the television content. Accordingly, the amount and range of additional content that can be accessed by a user is limited.

SUMMARY OF THE INVENTION

[0005] According to a first aspect of the invention, there is provided a method of operating a wireless communications device capable of receiving video and/or audio data from a plurality of data channels broadcast from a remote source, the method comprising: selecting a channel for reception; decoding and outputting data from the selected channel onto a display screen and/or through a loudspeaker; establishing a wireless data link to a communications network; during output of data from the selected channel, sending identification data, indicative of said selected channel, to a predetermined first network address on the communications network; receiving a second network address from the location identified by the predetermined first network address; and downloading data stored at the second network address for display

in a viewer application of the device.

[0006] The invention provides advantages in that content can be downloaded to the wireless device from any number of network locations in response to a user-request, the network location or locations being referenced at a predetermined network address. The predetermined first network address preferably identifies the location of an address server which relates the selected data channel to a second network address. Each receivable channel is preferably related to a different network address so that content-related data can be downloaded to provide user interactivity.

[0007] The data received from the selected data channel can correspond to a plurality of programmes broadcast in sequence, in which case step (b) comprises decoding and outputting a first programme from the selected stream and step (d) comprises sending identification data, capable of distinguishing said first programme from other programmes in the selected stream, to the address server.

[0008] Preferably, step (d) occurs in response to a user command, the identification data indicating both the selected data stream and the time at which the user command is initiated. The user command can be initiated by user operation of an actuating element located on a body of the wireless communications device. The actuating element may be located on the body at a position substantially corresponding with the position of a user's thumb when the body is hand-held by the user in such a way that the display screen can be viewed. Typically, the body or casing of the device will be gripped between the user's palm and fingers.

[0009] Step (c) referred to above may comprise establishing a wireless data link using the General Packet Radio Service (GPRS) protocol. In theory, it is possible to use alternative bidirectional data links such as Bluetooth.

[0010] According to a second aspect of the invention, there is provided a data provisioning method for wireless communications devices, the method comprising: (a) storing a list of video and/or audio programmes; (b) associating a network address with each video and/or audio programme in the list; (c) receiving identification data from a wireless communications device over a communications network, the identification data being capable of identifying (a) a return address associated with said device and (b) one of the video and/or audio programmes in the list, and (d) transmitting the network address associated with the video and/or audio programme identified in (c) to the return address of said device.

[0011] According to a third aspect of the invention, there is provided a wireless communications device comprising: means for receiving video and/or audio data from a plurality of data channels broadcast from a remote source; means for selectively decoding and outputting data from one of said plurality of data channels onto a display screen and/or through a loudspeaker; means for establishing a wireless data link to a communications network; means operable, during output of data from a se-

lected channel, to send identification data, indicative of said selected channel, to a predetermined first network address on the communications network; and a viewer application arranged to receive a second network address from the location identified by the predetermined first network address and to download data stored at said second network address for display.

[0012] The receiving means is preferably a Digital Audio Broadcasting (DAB) receiver. The means for establishing a wireless data link is preferably a GPRS transceiver. The device may further comprise a GSM telephone transceiver.

[0013] In the preferred embodiment, the means operable to send identification data comprises an actuating element located on the device body and a controller which responds to operation of the element in order to send said identification data. The actuating element can be located on the body at a position substantially corresponding with the position of a user's thumb when the body is hand-held by the user in such a way that the display screen can be viewed. The actuating element may cause identification data to be sent in response to a single user action.

[0014] According to a fourth aspect of the present invention, there is provided a data provisioning system for wireless communications devices, the system comprising: a memory storing a list of video and/or audio programmes, and, associated with each programme, a respective network address which references a data source; a receiver for receiving identification data from a wireless communications device over a communications network, the identification data being capable of identifying (a) a return address associated with said device, and (b) one of the video and/or audio programmes in the list; and a transmitter for transmitting the network address associated with the identified video and/or audio programme to the return address of said device.

[0015] According to a fifth aspect of the present invention, there is provided a wireless television receiver comprising: a display screen; a DAB receiver for receiving data from a plurality of data channels, each channel comprising video data; means for selectively decoding and outputting data from one of said data channels onto a display screen; and interaction means operable, during output of a selected data channel, to send identification data, indicative of the selected channel, over a GPRS data link to a predetermined network address, to receive a different network address from the location identified by the predetermined network address, and to download a web page from the different network address for display on the display screen.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The invention will now be described, by way of example, with reference to the accompanying drawings in which:

Figure 1 is a block diagram showing components of a broadcast system, a wireless receiver, and a network arrangement over which web pages can be requested by the wireless receiver

Figure 2 is a graphical representation of an electronic programme guide (EPG) stored in, and transmitted from, the broadcast system;

Figure 3a is a front view of a wireless receiver, in the form of a wireless telephone;

Figure 3b is a block diagram showing the main functional components of the wireless receiver;

Figure 3c is a schematic diagram indicating a plurality of software applications stored in memory on the wireless receiver;

Figures 3d and 3e are screen shots of menu pages displayable by an operating system of the wireless receiver;

Figure 4 is a flow chart showing navigating steps provided by a TV/Radio application of the wireless receiver;

Figure 5 is a graphical representation of an EPG when displayed on a display screen of the wireless receiver;

Figure 6 is a graphical representation of a modified EPG stored at a location accessible by the network arrangement, the modified EPG indicating associations between programmes and web site addresses; and

Figure 7 is a schematic diagram showing the main steps in a method of acquiring data over the network arrangement.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0017] Referring to Figure 1, respective systems for broadcasting and receiving multimedia content using the known digital audio broadcast (DAB) system are shown.

[0018] The broadcast system comprises a head-end 1 and a DAB transmitter 2. The head-end 1 comprises a media encoder 5, a digital rights management (DRM) application 7, a multicast server 9 and an electronic programme guide (EPG) server 11. Audio and video data files, which may already be encoded in one of a number of digital formats (for example MP3, AVI, MPEG), are input to the media encoder 5 from one or more sources 3 which can be internal or external to the head-end 1. The media encoder 5 is arranged to convert the files into one or more video and/or audio formats appropriate for

the media playing software at user equipment (UE) 17. In this case, Microsoft Media Encoder™ 9 is used to convert each file into Windows Media Format (WMV). The media encoder 5 is also used to arrange the WMV files into one of a number of separate channels, in this case four. Each file in a channel has a defined name and duration indicative of an audio or video programme. The WMF files are passed to the DRM application 7, in this case Microsoft Windows DRM™ 9, which provides a facility by which the files can be encrypted prior to transmission to user equipment (UE) 17. The UE 17 may read and display the files only if the UE has the correct decryption key which is sent separately of the content.

[0019] The encrypted WMV files are sent to a multicast server 9 which also receives EPG data from an EPG server 11. The EPG data reflects the programme schedule for each channel.

[0020] The multicast server 9 is arranged to convert the WMV files for each channel into packet data for streaming transmission to the DAB transmitter 2 using a respective IP address. Combined with each channel stream is the EPG data corresponding to that stream. A suitable multicast server product is Microsoft Windows Media Streaming Server™.

[0021] Further information on the above-mentioned off-the-shelf Microsoft packages is available from <http://www.microsoft.com/windows/windowsmedia/default.msp>. A detailed understanding of each is not necessary for understanding the present invention.

[0022] At the DAB transmitter 2, a DAB multiplex 13 retrieves each of the four multicast streams from their respective IP addresses and broadcasts them in a single DAB multiplex channel from a transmitter aerial 15. The DAB multiplex may thereafter be received by the UE 17, or indeed any number of UEs in range of the aerial 15, and the individual stream channels selectively decoded.

[0023] Referring to Figure 2a, an example set of EPG data stored in the EPG server 9 is shown for each of the four above-mentioned stream channels (C1, C2, C3 and C4) for the time period 1700hrs to 2300hrs. Channel 1 carries video programmes relating primarily to news and current affairs, channel 2 carries entertainment-type video programmes, channel 3 carries video programmes of sporting events and sports-related entertainment and channel 4 is an audio channel carrying radio programmes.

[0024] Referring to Figure 3a, the UE 17 represented in Figure 1 is shown in further detail. The UE 17 comprises a GSM wireless telephone having a display screen and keypad. A so-called tv/interaction button 18 is provided on the right-hand side of the telephone casing, the purpose of which will be described later on in the description. Referring to Figure 3b, the main functional components of the UE 17 comprise a microprocessor 27 to which is connected a GSM/GPRS transceiver 29, a DAB receiver 31, a loudspeaker 33, a display 35, a keypad 37 and a memory 39. The UE 17 is capable of conventional tri-band GSM (GSM 900, 1800 and 1900) and GPRS operation for voice and data communications. The DAB re-

ceiver 31 provides the UE 17 with the capability of receiving, amongst other channels, the four stream channels in the multiplex broadcast from the transmitter aerial 15. The UE 17 includes an antenna capable of receiving DAB signals in L-band and band III. Therefore, in addition to its function as a GSM telephone, the UE 17 is capable of receiving, decoding and displaying streaming multimedia content in the form of broadcast video and audio programmes.

[0025] The memory 39 serves to buffer video/audio data as it is decoded from the DAB receiver 31. The memory 39 also stores a number of software applications which, when executed under the control of the processor 27, provide different services on the UE 17. Referring to Figure 3c, a top-level application is provided in the form of a handset operating system (OS) 41. The OS 41 provides a graphical user interface (GUI) that is output to the display screen 35 when the user first switches the UE 17 on. As well as providing conventional GSM voice call/reception functionality, the OS GUI provides a menu through which a user can view and run other applications. As Figure 3c shows, these further applications include a TV/Radio application 43, MS Mobile Explorer™ 45 and MS Media Player™ 47. Figures 3d and 3e show example screen shots taken from the OS 41 to indicate how applications can be run from the OS GUI. Figure 3d represents a homepage which is presented on the display screen 35 when the UE 17 is switched on. At the top part of the screen is presented a number of shortcut icons representing pre-selected ones of the available applications. To execute a particular application, the user uses the keypad 37 to move a cursor to the appropriate icon whereafter a selection command is made. In this case, the TV/Radio application 43 (represented here by a television icon 43') is highlighted. Figure 3e indicates a so-called start sub-menu screen presented by the OS 41 which shows the full range of available applications. Again, selection is made by moving a cursor using the keypad and pressing a selection button.

[0026] The above-described menu selection steps have drawbacks in that the user is required to navigate using the keypad 37, usually by means of a cursor control or joystick, which can be small and awkward to use. Selection usually requires a number of inputs, such as directional controls and the selection command. Depending on how the menu system is set up, it may be necessary to go through a number of menu levels to access the desired application. To provide improved operation, the OS 41 enables one-click selection of a particular application by means of the tv/interaction button 18. At the software level, this is achieved by assigning one of the available applications to said tv/interaction button 18 and saving the assignment to memory 39. Thereafter, one-click actuation of the tv/interaction button 18 in any menu level of the OS 41 causes the assigned application to be executed on the UE 17.

[0027] In the present embodiment, the TV/Radio application 43 is assigned to the tv/interaction button 18.

Pressing said button 18 in any menu of the OS 41, or even during execution of any other application (other than the TV/Radio application 43 itself) causes the TV/Radio application to be executed by the UE processor 27. Other applications being executed immediately prior to the tv/interaction button 18 being actuated are preferably closed. Actuating the tv/interaction button whilst running the TV/Radio application 43 causes an interactive service to operate within said application.

[0028] The operation of the TV/Radio application 43 will now be explained in further detail with reference to Figure 4 which shows the basic navigation tree of the application. As indicated by reference numerals 4.1 to 4.3, the TV/Radio application 43 can be executed by one of three methods, namely by keypad navigation to the start menu (Figure 3e) or homepage menu (Figure 3d) or by single-click actuation of the tv/interaction button 18. In step 4.4 the user is initially presented with a 'splash screen' which is a pre-stored image in the UE memory 39 which has two main purposes. First, the splash screen acts as a holding screen which is displayed whilst any obsolete data is removed from the memory 39. The time the image is displayed will depend on the amount of processing necessary to clear the obsolete data. Secondly, the splash screen provides brand, version and copyright information. In step 4.5 it is determined whether the application 43 is being run for the first time, in which case a scan of available streams/channels is performed in step 4.6. Following this, or if it is not the first time, EPG data is displayed in step 4.7. Figure 5 shows an example set of EPG data for the four available channels assuming a current time of 1915 hrs. Thereafter, the user may select a channel by moving a cursor to the desired audio or video programme and pressing a select key (steps 4.8 and 4.9). Provided the user has subscribed to the selected channel, the control application will decode the appropriate DAB signal for display on MS Media Player™ 47 together with programme details, if available (step 4.10). Since the media content is encrypted prior to broadcast, decoding requires the appropriate decryption key for that particular stream. This is ordinarily acquired at the time of subscription. If the user has not subscribed to the selected channel, or indeed any channel, the control application will ordinarily prompt the user with the option to subscribe now, following which the appropriate decryption key or keys are transmitted to the UE 17 to enable subsequent decoding. Step 4.11 indicates an interactive option that can be selected during play of a video or audio programme. This option will be described in further detail below.

[0029] As mentioned previously, the UE 17 is capable of GPRS data communication via a service provider (SP) network 19. As will be appreciated by those skilled in the art, GPRS is a mobile data service available to users of GSM mobile telephones, assuming their SP provides GPRS capabilities. GPRS is considered an 'always on' type data link since no dial-up connection is usually required - the link exists from the time the user switches

their telephone on until the time the telephone is switched off. Compared with alternative mobile data communications methods, such as WAP, GPRS is favourable in terms of the speeds at which it can operate and provides convenient Internet access. To provide GPRS capabilities, the SP provides a controller at each base station to identify users within the relevant cell and to determine whether they have subscribed to that SP's GPRS service. Packet data switching nodes and gateways are also installed at the basestation to provide access to data networks, such as the Internet 21.

[0030] In the present embodiment, the TV/Radio application 43 utilises the UE's GPRS capability to download content-related data to the UE in response to a specific user request. More particularly, actuation of the tv/interaction button 18 causes the said application 43 to access a predefined URL over the Internet. The predefined URL corresponds to a web portal associated with the broadcaster, although this association is by no means essential. Connecting to said web portal provides access to an interaction server 23 and an interaction service schedule 25, as indicated in Figure 1. The interaction service schedule 25 provides a means by which network addresses, such as Internet URLs, can be associated with programmes contained in the broadcast channels. Access to and from the interaction service schedule is controlled by the interaction server 23 which serves also to transfer URLs back to the UE 17 over the GPRS link so that the UE can automatically access the webpage to which it corresponds.

[0031] Referring to Figure 6, the contents of the interaction service schedule 25 are shown in graphical representation. It will be seen that the schedule 25 comprises a copy of the EPG data stored in the EPG server 11 and, associated with each programme, a URL. Said URLs represent web pages having relevance to the programme with which they are associated. So, taking channel 1 as an example, the global news programme might be associated with a first URL1 that references a news website produced by the same news organisation, e.g. the news programme might be BBC News 24 and URL1 might be <http://news.bbc.co.uk/>. Similarly, the subsequent sports news and finance programmes might have an associated URLs (URL2 and URL3) <http://news.bbc.co.uk/sport> and <http://news.bbc.co.uk/2/hi/business/> respectively. The interaction service schedule effectively provides a look-up table (LUT) which corresponds programmes to URLs.

[0032] Whilst the association depicted in Figure 6 is between individual programmes and URLs, other association rules can be applied. For example, a single URL can be associated with a single channel or a particular time frame. Editing or updating of the interaction service schedule 25 can be performed remotely by the broadcaster or, if desired, by third parties such as the SP or the provider of the programme.

[0033] Figure 7 indicates the processing steps that occur in response to actuation of the tv/interaction button 18. For illustration purposes, it is assumed that the user

has accessed the EPG shown in Figure 5 (at time 1915 hrs) and selected the programme "Live Football" on Channel 3 which is being displayed on Windows Media Player. In an initial step 7.1, the user presses the interaction button 18. In response to actuation, in a second step 7.2, the browser application is launched on the UE 17. In this step, the video programme is hidden by the browser application, although the sound associated with the video may continue to be played. In a third step 7.3, data identifying (a) the currently-viewed channel (C3), (b) the current time (1715 hrs) and (c) a user or device ID unique to the UE 17 is sent over the GPRS link to the predefined URL of the interaction server 23. In a fourth step 7.4, the interaction server 23 retrieves the URL stored in the interaction service schedule 25 that corresponds with the identified channel and time. In this case, URL8 is retrieved. In a fifth step 7.5, the retrieved URL8 is sent back over the GPRS link to the UE 17, identified by the user or device ID, where it is entered into the browser application. In a final, sixth step 7.6, the browser application displays the web page referenced by the retrieved URL8. In this case, URL8 might access a web page detailing up-to-date information relating to the live football match, such as the current score, players taking part, match statistics and so on.

[0034] The above-mentioned steps can be performed automatically from the time when the user actuates the tv/interaction button 18 to the display of the web page. Alternatively, a confirmation screen may be displayed in the browser at step 7.2 to give the user the option of confirming/cancelling the data request. It will be appreciated that the browser application can be launched (step 7.2) after the URL is retrieved from the interaction server in step 7.5.

[0035] The interaction facility provides the user with data content complementary to the video and/or audio content being played at the UE 17. Rather than additional content being updated and 'pushed' to the UE 17 with broadcast information, the TV/Radio application 43 and GPRS link separately access web pages that are accessible via the Internet 21. This means that broadcast bandwidth is not used to transmit the additional data content. The broadcaster or SP has the ability to associate programmes with any one of a huge number of web pages that may be relevant to the programme content. Web pages, by their nature, can be updated regularly (and even in near real-time) by their owner which serves to improve the quality of information supplied to users. Web pages are generally interactive in that they enable access to related pages via hyperlinks and even enable online shopping and competition entry. Hence, it is possible to associate online shopping web pages with shopping programmes and to enable online entry to competitions being run as part of a video or radio programme.

[0036] Optionally, management data can be drawn from the interaction server 23. Since actuation of the interaction button 18 causes data indicative of the channel, time and therefore the programme accessed by identified

users, statistical data can be gathered centrally by the broadcaster or SP, e.g. for marketing or programme planning purposes.

[0037] Referring back to Figure 3a, it will be noted that the tv/interaction button 18 of the UE 17 is positioned on the face of the handset body, at a location that substantially corresponds with the position of a user's thumb when the UE is held in the right hand. As Figure 5 shows, the handset body includes a protruding ridge on its right-hand lateral side. When viewing programme content, a right-handed user will generally hold the handset such that the protruding ridge is located between the thumb and index finger. By situating the interaction button 18 on the protruding ridge, quick and convenient actuation of said button is achieved. An alternative arrangement can be provided for left-handed users in which the interaction button is located to the left hand side of the UE body.

Claims

1. A method of operating a wireless communications device capable of receiving video and/or audio data from a plurality of data channels broadcast from a remote source, the method comprising:
 - (a) selecting a channel for reception;
 - (b) decoding and outputting data from the selected channel onto a display screen and/or through a loudspeaker;
 - (c) establishing a wireless data link to a communications network;
 - (d) during output of data from the selected channel, sending identification data, indicative of said selected channel, to a predetermined first network address on the communications network;
 - (e) receiving a second network address from the location identified by the predetermined first network address; and
 - (f) downloading data stored at the second network address for display in a viewer application of the device.
2. A method according to claim 1, wherein the predetermined first network address identifies the location of an address server which relates the selected channel to the second network address.
3. A method according to claim 2, wherein data received from the selected channel corresponds to a plurality of programmes broadcast in sequence, step (b) comprises decoding and outputting a first programme from the selected channel, and step (d) comprises sending identification data, capable of distinguishing said first programme from other programmes in the selected channel, to the address server.

4. A method according to any preceding claim, wherein step (d) occurs in response to a user command, the identification data indicating both the selected channel and the time at which the user command is initiated. 5
5. A method according to claim 4, wherein the user command is initiated by user operation of an actuating element located on a body of the wireless communications device. 10
6. A method according to claim 5, wherein the actuating element is located on the body at a position substantially corresponding with the position of a user's thumb when the body is hand-held by the user in such a way that the display screen can be viewed. 15
7. A method according to any preceding claim, wherein step (c) comprises establishing a wireless data link using the General Packet Radio Service (GPRS) protocol. 20
8. A method according to any preceding claim, wherein step (c) comprises establishing a wireless data link to an Internet Protocol (IP) network, the predetermined first network address and the second network address being IP addresses. 25
9. A computer program stored on a computer-readable medium, the program comprising computer-readable instructions for performing the steps of a method according to any preceding claim. 30
10. A wireless communications device comprising a processor arranged to operate under the control of a computer program according to claim 10. 35
11. A data provisioning method for wireless communications devices, the method comprising: 40
- (a) storing a list of video and/or audio programmes;
 - (b) associating a network address with each video and/or audio programme in the list;
 - (c) receiving identification data from a wireless communications device over a communications network, the identification data being capable of identifying (a) a return address associated with said device, and (b) one of the video and/or audio programmes in the list; and 45
- transmitting the network address associated with the video and/or audio programme identified in (c) to the return address of said device. 50
12. A wireless communications device comprising: 55
- means for receiving video and/or audio data
- from a plurality of data channels broadcast from a remote source;
- means for selectively decoding and outputting data from one of said plurality of data channels onto a display screen and/or through a loud-speaker;
- means for establishing a wireless data link to a communications network;
- means operable, during output of data from a selected channel, to send identification data, indicative of said selected channel, to a predetermined first network address on the communications network; and
- a viewer application arranged to receive a second network address from the location identified by the predetermined first network address and to download data stored at said second network address for display.
13. A device according to claim 12, wherein the receiving means is a Digital Audio Broadcasting (DAB) receiver.
14. A device according to claim 12 or claim 13, wherein the means for establishing a wireless data link is a GPRS transceiver.
15. A device according to any of claims 12 to 14, further comprising a GSM telephone transceiver.
16. A device according to any of claims 12 to 14, wherein the means operable to send identification data comprises an actuating element located on the device body and a controller which responds to operation of the element in order to send said identification data.
17. A device according to claim 16, wherein the actuating element is located on the body at a position substantially corresponding with the position of a user's thumb when the body is hand-held by the user in such a way that the display screen can be viewed.
18. A data provisioning system for wireless communications devices, the system comprising:
- a memory storing a list of video and/or audio programmes, and, associated with each programme, a respective network address which references a data source;
 - a receiver for receiving identification data from a wireless communications device over a communications network, the identification data being capable of identifying (a) a return address associated with said device, and (b) one of the video and/or audio programmes in the list; and
 - a transmitter for transmitting the network address associated with the identified video and/or

audio programme to the return address of said device.

19. A wireless television receiver comprising:

5
a display screen;
a DAB receiver for receiving data from a plurality
of data channels, each channel comprising vid-
eo data;
10 means for selectively decoding and outputting
data from one of said data channels onto the
display screen; and
interaction means operable, during output of a
selected data channel, to send identification da-
15 ta, indicative of the selected channel, over a
GPRS data link to a predetermined network ad-
dress, to receive a different network address
from the location identified by the predetermined
network address, and to download a web page
20 from the different network address for display
on the display screen.

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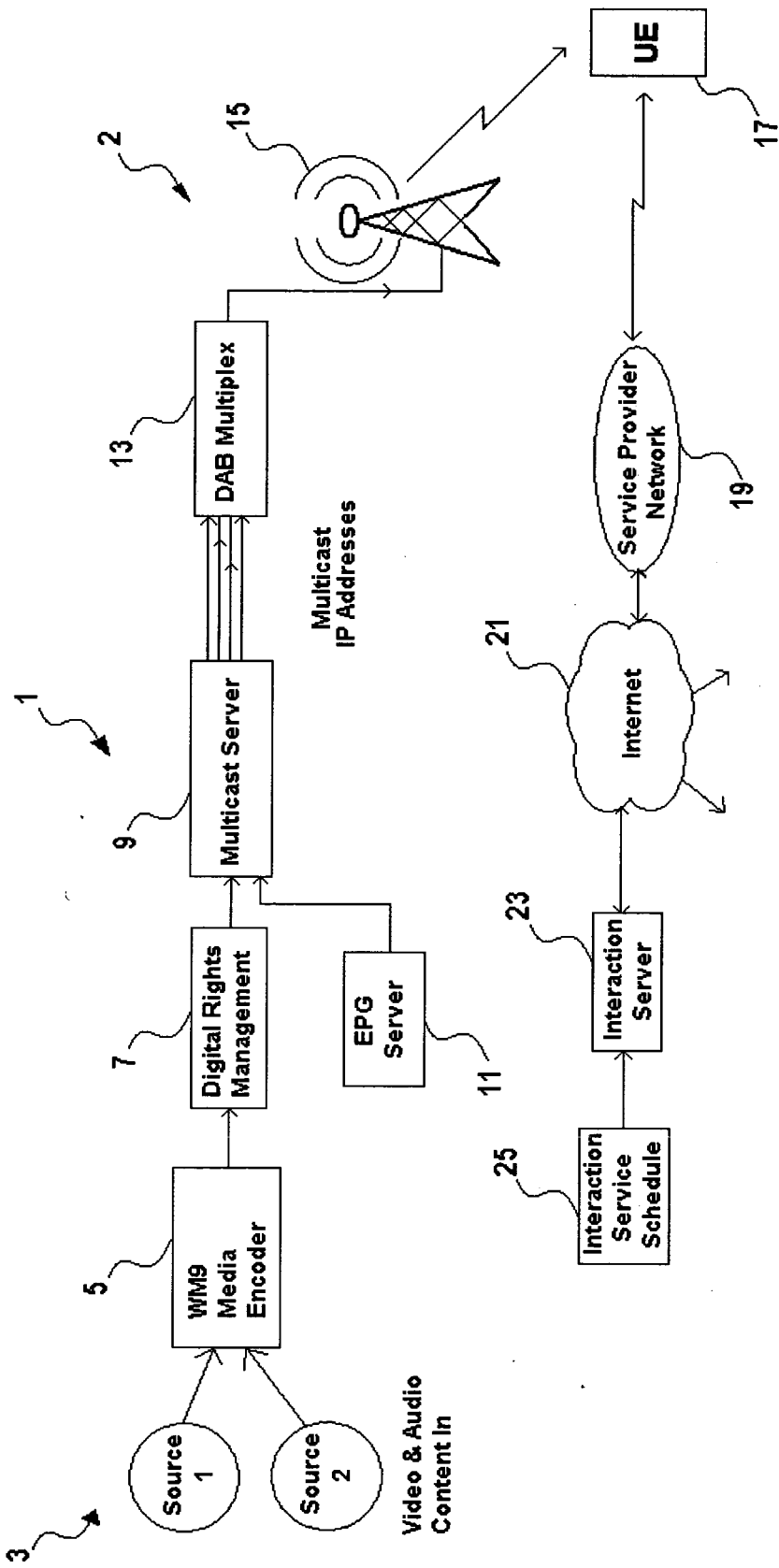


Figure 1

	1700	1900	2100	2300
C1	GLOBAL NEWS		SPORTS NEWS	FINANCE REPORT NO SERVICE
C2	THE OFFICE	REGIONAL NEWS	POP IDOL	FILM: TITANIC
C3	LIVE FOOTBALL: ENGLAND V. BRAZIL			SPORTS QUIZ
C4	TALK RADIO		UK CHART	NO SERVICE

Figure 2

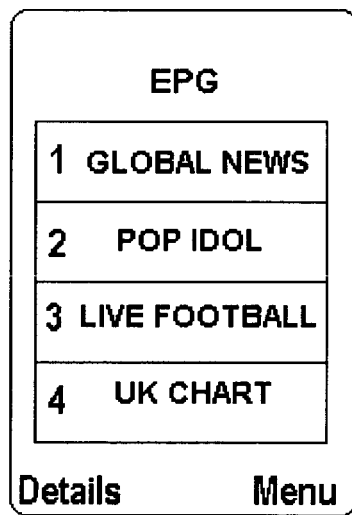


Figure 5

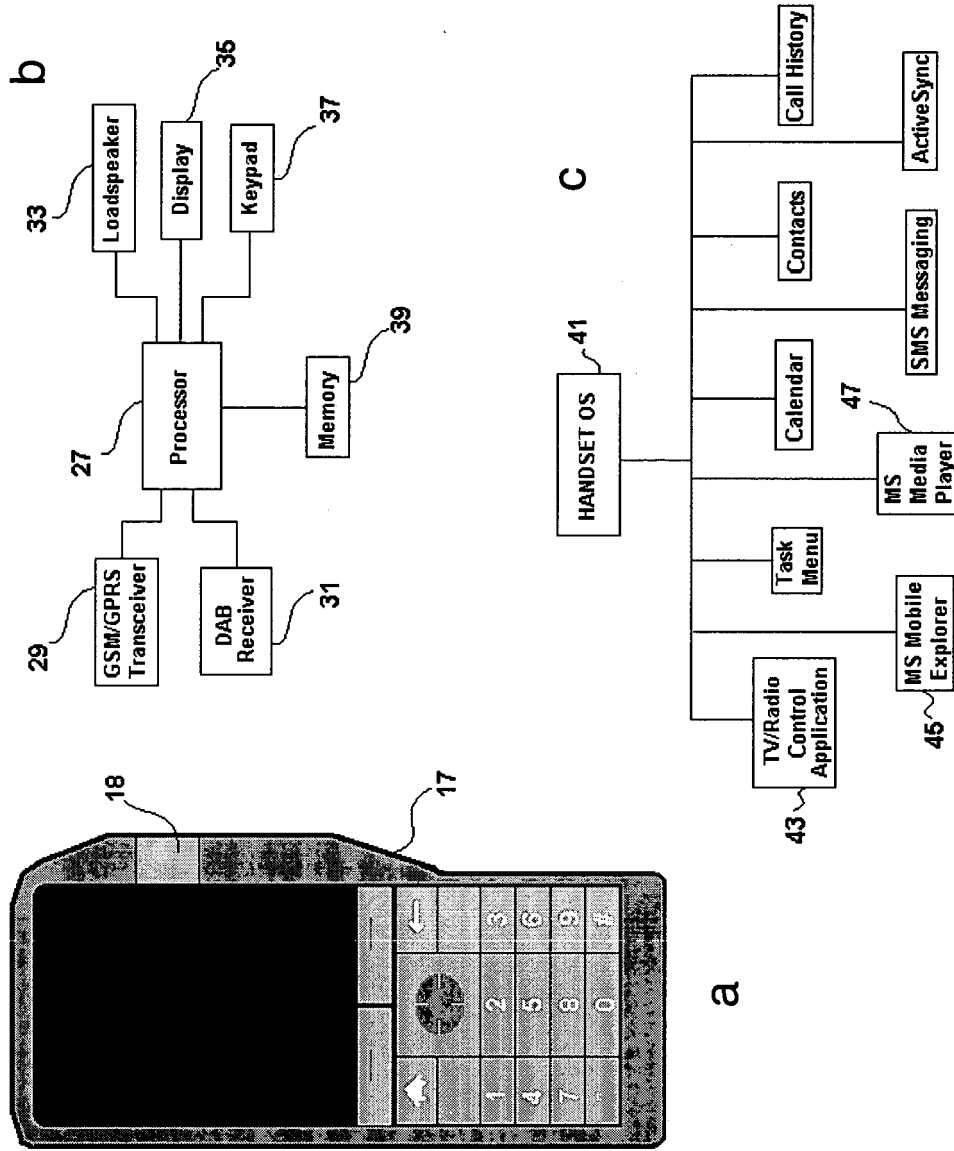
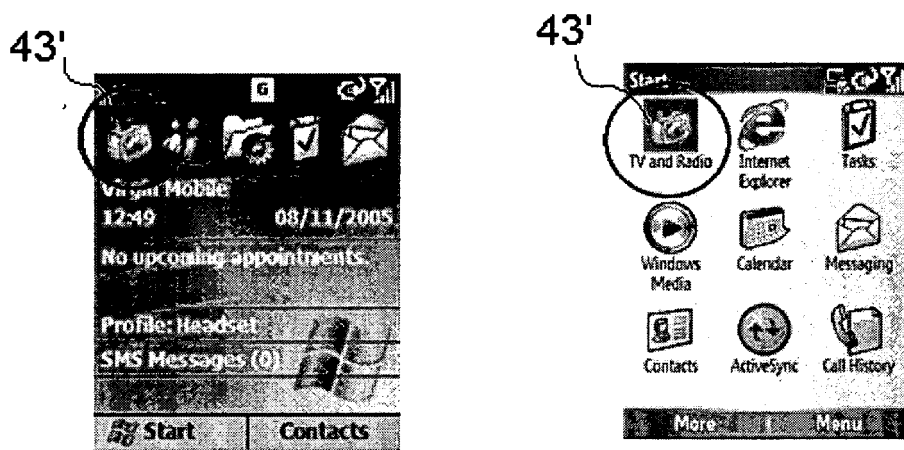


Figure 3



d e
Figure 3 ctd

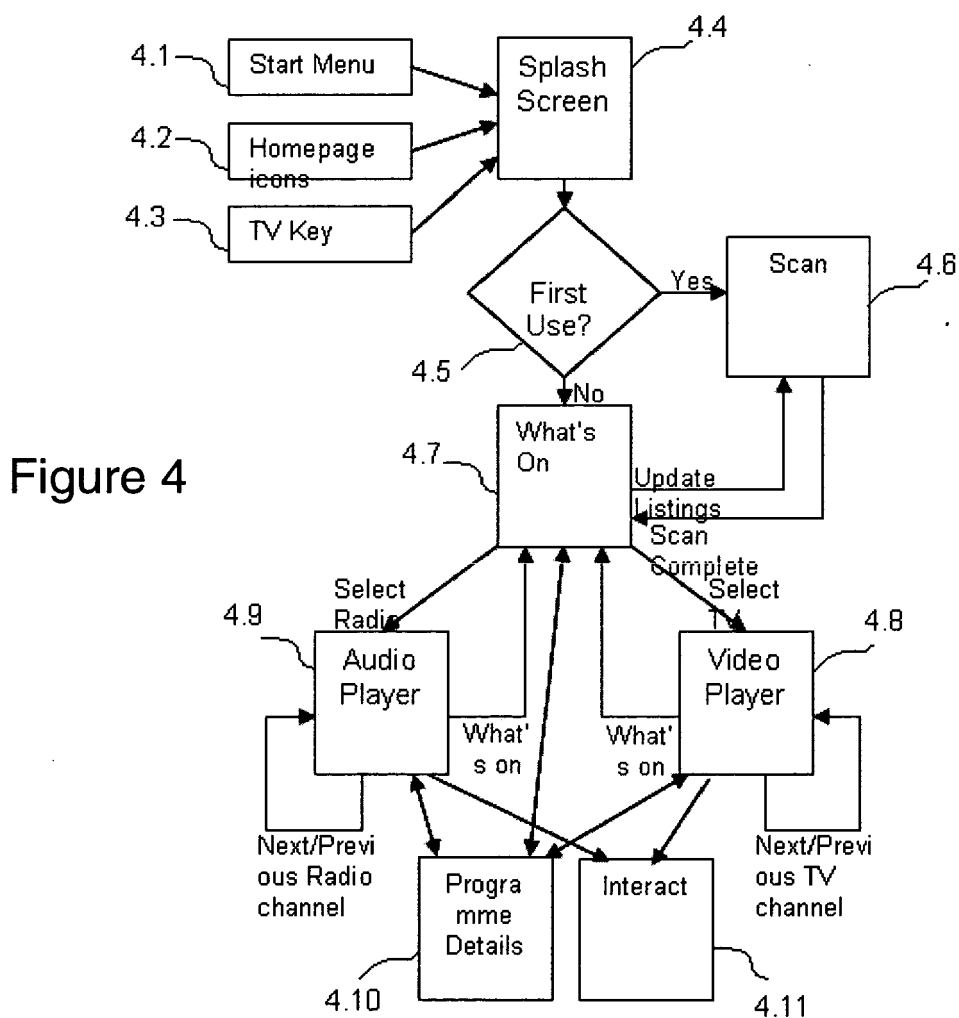


Figure 4

	1700	1900	2100	2300
C1	GLOBAL NEWS		SPORTS NEWS	FINANCE REPORT NO SERVICE
	URL1		URL2	URL3 URL1
C2	THE OFFICE	REGIONAL NEWS	POP IDOL	FILM: TITANIC
	URL4	URL5	URL6	URL7
C3	LIVE FOOTBALL: ENGLAND V. BRAZIL			SPORTS QUIZ
	URL8			URL9
C4	TALK RADIO	UK CHART	NO SERVICE	
	URL10		URL10	URL10

Figure 6

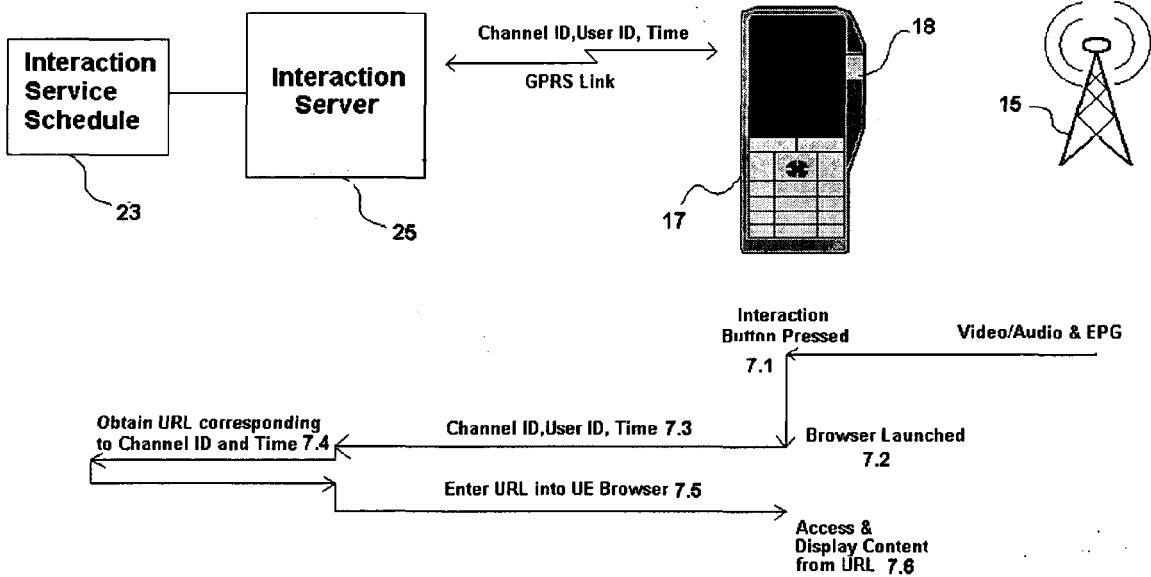


Figure 7



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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			H04H
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 9 October 2006	Examiner PANTELAKIS, P
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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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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