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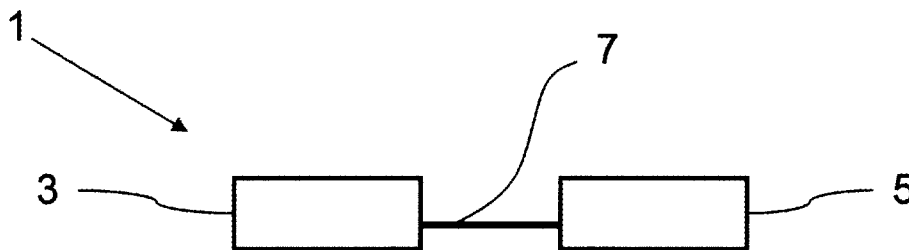
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(54) Title: A METHOD FOR PROVIDING ALERTS ON A MOBILE COMMUNICATIONS DEVICE



(57) Abstract: This invention relates to a method of providing alerts on a mobile communication device (5). The alerts take the form of an audio-video clip with moving video images supported by an appropriate sound track. The alerts may be excerpts from films, television programs, music videos or other video images specifically recorded for the purpose. The audio-video clips are distributed through a traditional content network (1) but an additional audio-video clip alert application is provided on the mobile communication device (5) to allow encryption of the content. There is further provided a number of alternative systems for distributing the alerts to users. In this way, a new type of alert is provided and dissemination of the audio-video clips from one mobile communication device to another is prevented through the encryption of the alerts.



WO 2007/144387 A2

**“A method for providing alerts on a mobile communications device”****Introduction**

5 The present invention relates to a method for providing alerts on a mobile communications device in a system comprising a remote content provider, a plurality of mobile communications devices and a communications network.

10 As the technology of mobile communications devices has advanced, a wide array of mobile communication device personalisation options have become available. For some time now, on certain brands of mobile communications device there has been the option of loading additional ring tones on to the mobile communications device, allowing a user to assign certain ring tones to certain actions or certain people in their phonebook so that when that action occurs or that person attempts to call the mobile communications  
15 device, the dedicated ring tone will sound. The ability to download additional ring tones is now available on most makes of mobile communications device and is a very popular service. In 2004, the worldwide ring tone market was estimated to be worth approximately \$4 billion annually and growing rapidly. It is not uncommon for some mobile communications device users to purchase 5 or 6 new ring tones a week. It is  
20 widely accepted that many mobile communications device users are constantly looking for new ways of personalising their mobile communications devices.

Another manner of personalising mobile communications devices that has been popular for some time is the addition of different screensavers or logos to the mobile  
25 communications devices. These screensavers or logos are displayed on the screen of the mobile communications device while it is idle and can also be assigned to a number in the phonebook so that they are displayed on receipt of a call from that number. As the complexity of the mobile communications devices has increased so too has the quality of the images that may be used as screensavers or logos, to the point where, currently,  
30 photographs taken with the mobile communications device's on-board camera can be used.

Personalising a mobile communications device using digital content of different forms is clearly a very widespread activity. Phones with sound recording equipment allow users

- 2 -

to record voices, everyday sounds or music for use as a ring tone or other alert. Ringback functionality has proven to be a popular, and profitable, method of personalising the mobile communications device user experience. Mobile communications devices with cameras allow people to use pictures they've taken with their phones as screensavers or wallpapers. With the arrival of the Media Messaging Service (MMS), it is possible for users to send messages with still pictures and sound to other mobile communications devices. The contents of these messages could then be used to personalise the second mobile communications device in the manner described above.

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The popularity of personalising mobile communications devices using downloadable content has led to a wide variety of content suppliers entering the market. Most, if not all, mobile network operators have a certain amount of content available on their own websites. They often enter into marketing or advertising partnerships with other companies to offer content related to a certain product or service, for example providing a ring tone or wallpaper associated with a new film in conjunction with that film's distributor. Other content suppliers simply focus on supplying ring tone versions of the latest chart music. A third variety of content supplier is a company or organisation such as a television station or football club who make a ring tone and or wallpaper associated with their organisation available on their website. This can act as a marketing device and a possible extra source of revenue. Content providers are continuously looking for new ways of improving and updating their product range and the services that they supply to their customers.

25 There are however many problems with the existing personalisation options available to the mobile communications device users. First of all, the personalisation options have been in existence for some time now and there is a need to devise new ways to personalise the mobile communications devices. Somewhat similar to a passing fad or trend, there is a danger that the provision of ring tones, wallpapers and the like will become less popular with the target market thereby leading to a loss in revenue. In order to keep up with the market, content providers are forced to innovate and come up with new and exciting products for their customers.

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- 3 -

Recently, mobile communications devices have become even more advanced. It is now possible to download video clips such as news flashes on to the mobile communications device and view the video clip on the mobile communications device. Although still in its infancy, many are predicting that the mobile communications device video content market will in due course effectively replace the existing more established markets. It is therefore imperative that the market can be exploited in the most comprehensive manner possible.

It is an object of this invention to provide a new personalisation option and in particular a new type of alert for a mobile communications device. The alert will be suitable for use for the likes of an incoming call, incoming message or alarm. The alerts may be distributed in a manner similar to the way in which ring tones are currently distributed. It is a further object of the invention to provide a method of providing a personalisation option on a mobile communications device that is both easy to implement and simple to use. It is an additional object of this invention to provide a method of blocking the successful transmission of alerts between mobile communications devices, thereby protecting the rights of the content suppliers and safeguarding the revenue stream of both the content owners and distributors.

## **Statements of Invention**

According to the invention there is provided a mobile communications device comprising audio-video display means, means for providing alerts and an alert management system for controlling the alerts, the alert management system further comprising a number of alert-settings options characterised in that:-

there is an audio-video alert-settings option linked to the audio-video display means such that, on the occurrence of an event requiring an alert, the mobile communications device displays an audio-video clip as the alert.

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In this way, the mobile communications device user will be able to have an alert on their mobile communications device that is both an audio alert and a video alert. The video alert will comprise a relatively high quality moving image such as a scene taken from a music video, film, latest cinema release or even a video stream captured by the mobile

- 4 -

communications device user with their device. It is envisaged that the video clip and the audio clip could be chosen to compliment one another such as a chart hit and the accompanying music video or parts thereof. Alternatively, a well known clip from a film with the accompanying dialogue or monologue or indeed the accompanying soundtrack  
5 from the film could be used. Furthermore, advertising material such as a film trailer or a television advertisement could be used as the audio-video clip. This is seen as a fun and exciting alternative to the known ring tones. The mobile communications device users will have the benefit of being able to personalise their mobile communications device in a different way. The content providers will also benefit by having a new market which  
10 they may exploit and generate new streams of revenue. The audio-video clips are also seen as an entirely new advertising platform that may be used by companies selling their goods or services. For example, television executives, film distributors, event organisers, product or service vendors could use the audio-video clips as a new method of market penetration.

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In another embodiment of the invention there is provided a mobile communication device in which the mobile communications device has means to install the audio-video alert-settings option and means to install the link between the audio-video alert settings option and the audio-video display means. In this way, existing mobile communications devices  
20 may be loaded with the appropriate means to display audio-video clips as alerts and the new alerts will not be restricted to a new generation of mobile phone technology. The audio-video clips may be enjoyed by any user having a mobile communications device that has multimedia functionality.

25 In one embodiment of the invention there is provided a mobile communications device in which the audio-video alert settings option further comprises an encryption module, the encryption module having means to encrypt each audio-video clip stored in a mobile communications device memory. By encrypting the audio-video clip in mobile communication device memory the clip may be encrypted with mobile communication  
30 device specific encryption. This will prevent the dissemination of the audio-video clips between mobile communications device users and the subsequent loss in revenue to the content providers and copyright owners.

- 5 -

In a further embodiment of the invention there is provided a mobile communications device in which the encryption module further comprises means to decrypt an audio-video clip as it is extracted from the mobile communications device memory for display on the audio-video display means. The audio-video clip will be decrypted as it is  
5 extracted thereby allowing the mobile communications device user to view the clip on their mobile communications device. However, if they attempt to transmit the audio-video clip to another user, the other mobile communications device user will not have the means to decrypt the audio-video clip.

10 In another embodiment of the invention there is provided a mobile communications device comprising audio-video display means and alert provision means characterised in that:-

the alert provision means further comprise an audio-video alert mechanism;

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the audio-video alert mechanism comprising encryption means, and means to link the alert provision means to the audio-video display means such that an encrypted audio-video clip can be decrypted and displayed as an alert.

20 The mobile communications device will possess an alert provision means that will allow the mobile communications device user to display audio-video clips on their mobile communications device without the user of the mobile communications device being able to transmit the audio-video clips to other users. This will help maximise the revenue that may be generated from the sale of the audio-video clips.

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In one embodiment of the invention there is provided a mobile communications device in which the encryption means comprises a mobile communications device public-private key pair and a private key of a content provider public-private key pair. This is seen as a particularly efficient way of providing a form of encryption for the mobile communications  
30 device alert mechanism. The mobile communications device will receive an audio-video clip from a content provider in an encrypted format which may be decrypted using the private key of the content provider public-private key pair. The audio-video clip may then be re-encrypted on the mobile communications device using the mobile communications device public key. In order to view the audio-video clip, the audio-video clip is decrypted

- 6 -

using the private key of the mobile communications device public-private key pair. This is seen as a simple way of providing security to the content providers and ensuring that their audio-video clips are not spread from one mobile communications device to another by the users without all of the mobile communications device users paying an appropriate fee for the audio-video clip. It is relatively simple to implement in the existing systems.

In a further embodiment of the invention there is provided a mobile communications device in which the encryption means further comprises means to generate a mobile communications device public-private key pair unique to that mobile communications device. This is seen as particularly useful as the mobile communications device public-private key pair will be generated on the mobile communications device itself thereby preventing the content provider from generating all the public-private key pairs for the mobile communications devices. This pushes the computational burden as well as the memory requirements from the content provider out onto the mobile communications devices. A further advantage of this is that should a mobile communications device user transmit an audio-video clip to another mobile communications device the audio-video clip will be unreadable as it will have been encrypted using the public key unique to the sending mobile communications device.

In another embodiment of the invention there is provided a method for providing an alert on a mobile communications device in a system comprising a remote content host and a communications network, the mobile communications device comprising an audio-video alert mechanism, the method comprising the steps of:-

the mobile communications device connecting to the remote content host via the communications network;

the mobile communications device downloading from the remote content host, via the communications network an audio-video clip, the audio-video clip being suitable for use through the audio-video alert mechanism.

By having such a method, the audio-video clips may be transmitted from the content host to a mobile communications device in a simple and efficient manner. The audio-

- 7 -

video clips will be packaged to allow them to be viewed solely through the audio-video alert mechanism which will prevent the clips being used through other applications on the mobile communications device. This will further prevent the unlawful spread of the audio-video clips.

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In one embodiment of the invention there is provided a method in which the initial steps are carried out of the mobile communications device connecting to a remote content provider via the communications network, downloading the audio-video alert mechanism and installing it on the mobile communications device.

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In a further embodiment of the invention there is provided a method in which the remote content host is also a remote content provider. In this way, the remote content provider will also be able to generate revenue by selling content that it produced itself. Alternatively, the remote content providers may simply supply content to a content distributor and will therefore be entirely separate entities in their own right and the content providers will be able to supply their goods to mobile communications device users through a third party without having any direct contact with the mobile communications device user. This relieves content providers of the burden of providing the distribution and billing infrastructure required if selling content to a large market of mobile communications device users. Similarly content distributors are relieved of the burden of generating suitable content for distribution if they so wish.

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In another embodiment of the invention there is provided a method for providing audio-video alerts on a mobile communications device in a system comprising a remote content provider and a communications network, the remote content provider having a remote content provider public-private key pair and the mobile communications device having an audio-video alert mechanism comprising encryption means including a user-device public-private key pair and the remote content provider private key, the method comprising the steps of:-

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the mobile communications device receiving from the remote content provider, via the communications network, an audio-video clip encrypted with the remote content provider public key;



- 8 -

the mobile communications device encryption means decrypting the encrypted audio-video clip using the remote content provider private key and thereafter re-encrypting the audio-video clip using the user device public key; and

5 on a request from the mobile communications device to provide an audio-video clip as an alert, decrypting the re-encrypted audio-video clip with the user device private key.

This method allows audio-video clips to be distributed to a mobile communications  
10 device in a secure manner, and further allows them to be maintained on the mobile communications device in a secure manner. As the audio-video clips are decrypted on reception using the content provider private key and thereafter re-encrypted on the mobile communications device using the mobile communications device public key, they will from that point on only be readable on that particular device. Should an audio-video  
15 clip be transmitted from one mobile communications device to another, the audio-video clip will not be viewable on the receiving mobile communications device as that mobile communications device will not have the required private key for decryption of the audio-video clip. The audio-video clips will therefore only be temporarily decrypted for viewing on the mobile communication device and will be re-encrypted as soon as they have  
20 been used on the device.

In one embodiment of the invention there is provided a method in which the initial steps are carried out of:

25 the mobile communications device receiving the audio-video alert mechanism from the remote content provider via the communications network;

the mobile communications device installing the audio-video alert mechanism thereon and thereby establishing the encryption means on the mobile  
30 communications device, the encryption means comprising the remote content provider private key and the mobile communications device public-private key pair.

This method allows existing mobile communications device not currently having the ability to use an audio-video clip as an alert to download the audio-video alert mechanism thereby adding audio-video alert functionality to the mobile communications device. Furthermore, the generation of the mobile communications device public-private key pair on the mobile communications device will ensure that the keys are then unique to that mobile communications device. This may be further guaranteed should an identifier unique to the mobile communications device be used to generate the public-private key pair. It is envisaged that a unique hardware identifier, such as the International Mobile Equipment Identification (IMEI) number, would be useful for this purpose.

In a further embodiment of the invention there is provided a method in which the mobile communications device receives the audio-video clip encrypted with the remote content provider public key via the communications network from a remote content host. This allows the separation of functionality between content providers and content hosts, allowing entities to focus purely on either the generation of suitable audio-video clips or the distribution of those clips.

In another embodiment of the invention there is provided a method for managing the use of digital content in a system comprising a content manager, at least one content provider having data encryption means, a plurality of user devices capable of processing the digital content, a reporting means and a communications medium, the method comprising the steps of:-

the content provider encrypting the content to be managed by the system, making a creation record of that piece of encrypted content, and transmitting that creation record to the content manager;

on the transmission of a piece of encrypted content to a mobile communications device, the reporting means generating a transmission record and sending the transmission record automatically to the content manager; and

subsequently, on reception of a transmission record, the content manager checking if there exists a creation record to match the transmission record.

- 10 -

This allows content providers and others to monitor the usage of the content in the system. The information gathered can be used to gauge the popularity of different pieces of content and can also possibly be used to develop subscription or billing models for their customers. The content manager can mediate between content providers and copyright owners, ensuring that sufficient commission is paid to the copyright owners and that their content is distributed according to their wishes. Furthermore, this method ensures that any content that has not been approved for distribution can be detected.

10 In one embodiment of the invention there is provided a method in which the content provider transmits encrypted content to a content host, the content host thereafter transmitting the encrypted content to user devices upon request.

#### **Detailed Description of the Invention**

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The invention will now be more clearly understood from the following description of some embodiments thereof given by way of example only with reference to the accompanying drawings in which:-

20 Figure 1 is a block diagram of a system in which the method according to the invention is performed;

Figure 2 is a block diagram of an alternative system in which the method is performed;

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Figure 3 is a block diagram of the components of the mobile communications device;

30 Figure 4 is a flow diagram of the set-up of the audio-video alerts showing the menu options on the mobile communications device;

Figure 5 is a block diagram showing the encoding and distribution process;

Figure 6 is flow diagram of the back-end processes according to the invention;

- 11 -

Figure 7 is a flow diagram of the distribution of content; and

5 Figure 8 is a flow diagram showing the installation of the application on the mobile communications device.

Referring to the drawings and initially to Figure 1 thereof, there is shown a block diagram of a system in which the method according to the invention is performed, indicated generally by the reference numeral 1, comprising a content provider 3 and a plurality of  
10 mobile communications devices 5 (only one of which is shown). The content provider 3 and mobile communications devices 5 are connected by way of communication network 7. In use, each of the mobile communications devices 5 may access the content provider 3 and download content from the content provider. The content provider 3 has a plurality of audio-video clips and an audio-video alert application stored in content provider  
15 memory (not shown). The mobile communications devices access the content provider over the communications network 7 and download an audio-video clip to the mobile communications device. If the mobile communications device does not have the audio-video alert application stored thereon, the mobile communications device downloads the audio-video alert application from the content provider 3 prior to downloading any audio-  
20 video clips. Throughout this specification the terms audio-video clips and RingClips will be used interchangeably and it will be understood that they are one and the same thing. Any reference made to a RingClip will be understood to mean an audio-video clip and vice versa.

25 Referring to Figure 2 of the drawings there is shown a block diagram of an alternative system where like parts have been given the same reference numerals as before. The system 1 further comprises a content host 9 intermediate the content provider 3 and the mobile communications devices 5. The content host 9 is accessible to the mobile communications devices 5 through the communications network 7. The content host 9 is  
30 in communication with the content provider 3 through a dedicated channel 11. The content host 9 has the plurality of audio-video clips stored in content host memory (not shown). In use, content is transferred from the content provider 3 to the content host 9 and thereafter may be downloaded by the mobile communications devices 5 from the content host 9.

- 12 -

Referring to Figure 3 of the drawings, there is shown a block diagram of the components of the mobile communications device. The mobile communications device comprises a profile manager 13, an audio interface 15, a video interface 17 and a device operating system 19. The device operating system 19 comprises a plurality of modules including a  
5 Personal Information Manager (PIM) database 21, access to file system 23, call alert 25, ring alert 27, volume control 29, message alert 31, tones module 33, calls/actions alert 35, audio interface file system 37, audio interface volume module 39, audio interface player 41, video interface files system 43, video interface volume module 45 and video  
10 interface player 47. The device operating system further comprises battery module 49, and utilities module 51 which include vibrate modes. The audio-video alert application may be accessed through the profile manager in a manner similar to that of other existing profiles on a device. It is envisaged however that the invention would not be limited to such a construction of mobile communications device and other configurations  
15 could be provided.

Referring now to Figure 4 of the drawings, there is shown a flow diagram of the set-up of the audio-video alerts showing the menu options on the mobile communications device. In step 53, the mobile communications device user accesses their device and in step 55,  
20 launches the profile manager. From there, the mobile communications device user chooses the Select Profile option in step 57 and thereafter is presented with a list of available profiles in step 59. The user selects the RingClip profile from the list in step 59 in the known manner and is then presented with the options of Activate, Personalise and Timed. In step 61, the user selects the Personalise option and thereafter is presented  
25 with a further list in step 63 including the various options of RingClip, Play Type, Volume, Message Alert Type, Chat Alert Type, Vibrate Alert, KeyPad Clip/Tone, Warning Clip/Tone, Alert for, Profile Name, Save & Exit. The user may then determine the RingClip setting that is to be associated with a particular function, for example an audio-video clip to be played for an incoming call alert, SMS message, MMS message, alarm,  
30 battery low or any other activity or function requiring an alert. The user may also determine the volume of the audio-video clip as well as the duration of the audio-video clip. Again, it is envisaged that the invention will not be limited to the precise operations described but may be varied to suit individual needs.

- 13 -

The RingClip profile provides similar functionality to the mobile communications device user to that previously available to them with audio ring tones. For example, the user may associate an audio-video clip containing a video-clip of a stampeding bull and an audio clip of the noise made by the stampeding bull with an incoming call from their employer or similarly, the user may associate an audio-video clip containing a video clip of a favourite musician combined with an appropriate audio clip of the musician with an incoming call from an unidentified caller. The mobile communications device user may then exit the options list in step 65 and thereafter may activate the new settings in step 67.

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Referring to Figure 5 of the drawings, there is shown a block diagram of the system showing the encoding and distribution process according to the invention. Audio-video clips are brought into the RingClip Content Application 69 which is stored on the content provider 3. An exploded view of RingClip content application is shown in block 70. The content is stored in content memory 71 in RealMedia, 3GPP, QT, Windows Media or any other available format. Metadata and any other relevant data is then added to the content before the RingClip content 73 is stored in RingClip format signed by the content provider private key 75. The additional information is tagged to the RingClip using a Metadata component 77, a Cost component 79, an IP Operator Storage component 81, an Associated Files component 83, an IP RingClip Database component 85 and a Rights component 87. The additional information may include but is not limited to title, length, ownership, copyright, territory, usage type, duration of use, type of content, original format, audio level, audio format, audio bit rate, frame rate, frame size, video bit rate, video format, total bit rate, IP Address, DNS Name of content provider, specific ID generated for each clip, number of times the content can be used/viewed, cost of the content, subscription model and other relevant metadata about the audio-video clip. The content is then signed by a public key of the content provider.

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Once the content has been transformed into a RingClip, RingClip information is saved to the Content Application Log File 89 and then selected elements of the RingClip information are sent to the RingClip Database 91. The RingClip database is otherwise known as the Content Manager. In this way, the RingClip database 91 maintains a record of each RingClip created. This record allows the RingClip content manager 91 to keep track of audio-video clips in use in the system. Further, similar records are also

- 14 -

sent to the RingClip database on the transmission of audio-video clips from content providers or content hosts to mobile communications devices. This allows the content manager 91 to keep track of the dissemination of the audio-video clips. In this manner, the content manager can provide information on the popularity and other usage statistics of each audio-video clip. This also facilitates the validation of all RingClips in the system, as any usage records generated for an audio-video clip without a creation record will alert the content manager 91 to the fact that unauthorized content is being distributed in the system. Once the processing of the RingClip information is completed, the RingClip is saved in Storage 93 and the required information is uploaded to Distributor Database 95. In this manner, the RingClip is now available for distribution to a mobile communications device or a content host.

Referring to Figure 6 of the drawings in which there is shown a diagram of the back-end processes according to the invention where like parts have been given the same reference numerals as before. A mobile communications device 5 having an audio-video alert application stored thereon requests content from a content distributor 97 which could be a content provider 3 or a content host 9. The content distributor 97 has a portal 99, which allows a mobile communications device user to receive the audio-video content application and the RingClips suitable for use therein. On receiving a request for content from a mobile communications device, the portal 99 queries access rights and logs the results. The access rights queries are processed by the Distributor Authorisation Gateways 101. The Distributor Authorisation Gateways 101 control access to the content and collect log information about the event. This information is then stored in the Distributor Authorisation Gateways database (not shown).

If access to the requested content is denied the mobile communications device user is sent a refusal message. If, on the other hand access to the content is permitted the requested audio-video clip is retrieved from storage 93 and transmitted to the mobile communications device. At this point the distributor database 95 sends transmission information to the RingClip database 91 via its log 103. It is this transmission information that is compared with the creation record that has previously been stored on the RingClip database 91, as described previously. The RingClip database creates a usage report for the piece of content and if the information does not correlate with the information on the RingClip database, an alert is issued. There is also shown for reasons

- 15 -

of clarity the creation process of the RingClip whereby content stored in content memory 71 is transformed into a RingClip by passing the content through the RingClip content application 70. Information relating to the RingClip is added to the RingClip as described previously before RingClip information is stored in the content application log file 89 and thereafter transmitted onwards to the RingClip database 91 where it may be used for comparison with transmission records.

Referring to Figure 7 of the drawings there is shown a flow diagram of the distribution of content showing several components of the system where like parts have been given the same reference numerals as before. In step 105, audio-video content is supplied to the RingClip content application 69 in a plurality of different formats. The content is transformed into a RingClip in the manner previously described in the RingClip content application 69 and signed with the public key of the content provider. In step 107 the encrypted RingClip is uploaded to the portal 99 of the content distributor (not shown) and in step 109 a sample clip along with graphic tag information is sent to the portal of the content distributor. This sample clip may be used for demonstration purposes on a mobile communications device or other device capable of displaying the audio-video clip. In step 111 the RingClip is downloaded to the mobile communications device 5. The mobile communications device user then initiates the installation process in step 113 which entails storing the signed audio-video clip, decrypting the signed audio-video clip with the content providers private key and thereafter encrypting the audio-video clip with the public key of the mobile communications device. Finally, in step 115 the mobile communications device notifies the distributor portal 99 of the specific ID for that audio-video clip and RingClip information so that the information can be forwarded to the RingClip database.

Referring now to Figure 8 of the drawings in which there is shown a flow diagram showing the installation of the application on the mobile communications device where like parts have been given the same reference numerals as before. In step 117, the audio-video alert application is delivered to the mobile communications device. The audio-video alert application then generates, in step 119, a public-private key pair on the mobile communications device, ideally using a hardware identifier unique to that mobile communications device. In step 121, the audio-video alert application installs a new audio-video alert profile on the mobile communications device, and in step 123, the



- 16 -

audio-video alert application creates a link between the new audio-video alert profile and the mobile communications device's audio-video display means, thereby allowing audio-video clips to be used as alerts on the mobile communications device. It is envisaged that mobile communications devices not having audio-video display means already  
5 installed thereon but with the capability to host such functionality could also have the audio-video display means installed thereon to allow operation of the device.

It is clear therefore that the invention provides an entirely new type of alert for a mobile communications device. The alert comprises an audio-video clip such as a music clip  
10 with both sound and video components. The new alert may be used as an alert for an incoming call on the mobile communications device, an incoming message or any other type of alert that may be signalled on a mobile communications device. The new alerts may require alteration to the existing mobile communications device structure to enable the mobile communications device to display the alert. Although requiring alteration,  
15 existing mobile communications devices can be updated to allow the alerts to be used by a relatively simple software download to the mobile communications device. This alteration comprises installing a new profile onto the mobile communications device that sits in with the existing profiles in a compact manner. The new alert also allows information such as the name, image or other information relating to the caller to be  
20 displayed in a shape-based layer on the screen.

It will be further understood that a level of security has also been introduced into the new alerts that will enable the providers of the alerts to control the dissemination of the alerts throughout the mobile communications device network thereby allowing the content  
25 providers to carefully monitor the quantities of alerts being distributed as well as ensure that alerts cannot simply be transferred from one mobile communications device to another thereby resulting in a loss of revenue to the content provider. This security comprises a method incorporating encryption in a robust and novel way. The encryption is not simply a single phase encryption but in fact incorporates a two phase encryption  
30 process.

The encryption utilises public-private key pairs, one of which is a content provider public-private key pair and the other being a mobile communications device public-private key pair. The mobile communications device public-private key pair is generated on a mobile

- 17 -

communications device on installation of the audio-video alert application on the mobile communications device. this of course may be on commission of the mobile communication device or subsequently if necessary. The content provider public-private key pair is separated into a public key and a private key. Alerts that are to be sent to a mobile communications device are encrypted using the content provider public key and are transmitted to the mobile communications device in the encrypted format. These alerts are then decrypted on the mobile communications device using the content provider private key which has been transmitted to the mobile communications device at an earlier point in time. The alert is then re-encrypted using the public key of the mobile communications device before it is stored in mobile communications device memory. If, for example, the audio-video clip is to be used as an incoming call alert on the mobile communications device, the audio-video clip must be decrypted using the private key of the mobile communications device as it is extracted from mobile communications device memory. The private key of the mobile communications device is generated using a unique hardware identifier particular to that mobile communications device and therefore the private keys will be unique to each and every mobile communications device. This will prevent one mobile communications device from sending an alert to another mobile communications device as the second mobile communications device will be unable to decrypt the alert using its own private key. Furthermore, it will not be possible to transmit the private key of one device for use on another device as the private keys once generated are not disclosed to the mobile communications device user.

The encryption method described specifies the use of public-private key pair indicating that an asymmetric encryption method is used. This is not however always the case and it is envisaged that the public and private keys may not be public and private keys within the normally understood definition of the terms. Indeed the public key and private key of a public/private key pair may be identical and therefore what is in fact being used is a symmetric encryption system. Furthermore, the public key does not necessarily have to be freely open and available to all members of the public as might be understood by the phrase. Conversely, the public key may be a key sent to the mobile communications device users for use on their communication device while at the same time being inaccessible to those users. Throughout the specification the term public key is not limited to the industry standard definition of the term but is also associated with a publicly available security mechanism associated with the delivery of a piece of content requiring

- 18 -

a unique piece of information to allow the receiving user access to that piece of content. Similarly, the term private key is not limited to the industry standard definition of the term but is also associated with a privately held piece of data which is capable of providing an authoritative response to a piece of content delivered via a public key.

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It is envisaged that the software required to create RingClips may be made available not only to organisations wishing to become content providers in the system, but also to members of the public for use on a desktop computer and similarly to mobile communications device users having the audio-video alert application installed on their devices. This editorial suite may allow users to format any content to which they have the rights so as it is suitable for use in the audio-video alert application. Users may limit the rights associated with the content as they choose, therefore they may opt to distribute the new audio-video clip without encryption.

15

Users of mobile communication devices having the audio-video application stored thereon may also make use of RingBack technology or other technology providing similar functionality. In this way a user may select a RingClip to be played to incoming calls from other mobile communications devices, once the calling mobile communications device has the audio-video alert application installed on their device.

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It is envisaged that many different subscription models could be implemented to allow mobile communications device users to avail of RingClip alerts. For instance a content distributor may insert instructions or additional alert commands into the metadata of a RingClip that cause the audio-video alert application to regularly check for new audio-video clips that may be available from that content distributor. In this way, a mobile communications device user may, for example, choose to download an audio-video clip of the current number one song in the music charts and to have that audio-video clip updated as the chart changes. The previous weeks RingClip would be overwritten in the memory of the mobile communications device automatically.

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Finally, throughout this specification mobile communications device has been used to describe a mobile telephone in general but it will be understood that a mobile communications device could also cover any other portable device capable of such communications or messaging such as game devices and remote monitors.

- 19 -

In this specification the terms "comprise, comprises, comprised and comprising" as well as the terms "include, includes, included and including" are all deemed totally interchangeable and should be afforded the widest possible interpretation.

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The invention is in no way limited to the embodiments hereinbefore described but may be varied in both construction and detail within the scope of the claims.

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**Claims**

- 1) A mobile communications device (5) comprising audio-video display means,  
5 means for providing alerts and an alert management system for controlling the alerts, the alert management system further comprising a number of alert-settings options characterised in that:-
- 10 there is an audio-video alert-settings option linked to the audio-video display means such that, on the occurrence of an event requiring an alert, the mobile communications device displays an audio-video clip as the alert.
- 2) A mobile communications device (5) as claimed in claim 1 in which the audio-  
15 video clip comprises one of a high quality moving image taken from a music video, film, a television advertisement or a video stream captured by the mobile communications device user with their device.
- 3) A mobile communications device (5) as claimed in claim 2 in which the audio-  
20 video clip comprises a separate audio clip and a separate video clip, the video clip and the audio clip could be chosen to compliment one another such as a chart hit and the accompanying music video or parts thereof.
- 4) A mobile communications device (5) as claimed in claim 2 in which the audio-  
25 video clip comprises a separate audio clip and a separate video clip, the video clip comprising a clip from a film and the audio clip comprising one of the accompanying dialogue, monologue or soundtrack from the film.
- 5) A mobile communication device (5) as claimed in any preceding claim in which  
30 the mobile communications device has means to install the audio-video alert-settings option and means to install the link between the audio-video alert settings option and the audio-video display means.
- 6) A mobile communications device (5) as claimed in any preceding claim in which  
35 the audio-video alert settings option further comprises an encryption module, the

- 21 -

encryption module having means to encrypt each audio-video clip stored in a mobile communications device memory.

5 7) A mobile communications device (5) as claimed in any preceding claim in which the encryption module further comprises means to decrypt an audio-video clip as it is extracted from the mobile communications device memory for display on the audio-video display means.

10 8) A mobile communications device (5) as claimed in any preceding claim in which the alert provision means further comprise an audio-video alert mechanism, the audio-video alert mechanism comprising encryption means and means to link the alert provision means to the audio-video display means such that an encrypted audio-video clip can be decrypted and displayed as an alert.

15 9) A mobile communications device (5) as claimed in claim 8 in which the encryption means comprise a mobile communications device public-private key pair and a private key of a content provider public-private key pair.

20 10) A mobile communications device (5) as claimed in claim 8 or 9 in which the encryption means further comprises means to generate a mobile communications device public-private key pair unique to that mobile communications device.

25 11) A method for providing an alert on a mobile communications device (5) in a system comprising a remote content host and a communications network, the mobile communications device comprising an audio-video alert mechanism, the method comprising the steps of:-

30 the mobile communications device (5) connecting to the remote content host (3) via the communications network (7);

the mobile communications device downloading from the remote content host, via the communications network an audio-video clip, the audio-video clip being suitable for use through the audio-video alert mechanism.

12) A method as claimed in claim 11 in which the initial steps are carried out of the mobile communications device (5) connecting to a remote content provider via the communications network, downloading the audio-video alert mechanism and installing it on the mobile communications device.

13) A method for providing audio-video alerts on a mobile communications device in a system comprising a remote content provider and a communications network, the remote content provider having a remote content provider public-private key pair and the mobile communications device having an audio-video alert mechanism comprising encryption means including a user-device public-private key pair and the remote content provider private key, the method comprising the steps of:-

15 the mobile communications device receiving from the remote content provider, via the communications network, an audio-video clip encrypted with the remote content provider public key;

20 the mobile communications device encryption means decrypting the encrypted audio-video clip using the remote content provider private key and thereafter re-encrypting the audio-video clip using the user device public key; and

25 on a request from the mobile communications device to provide an audio-video clip as an alert, temporarily decrypting the re-encrypted audio-video clip with the user device private key.

14) A method as claimed in claim 13 in which the initial steps are carried out of:

30 the mobile communications device receiving the audio-video alert mechanism from the remote content provider via the communications network;

- 23 -

the mobile communications device installing the audio-video alert mechanism thereon and thereby establishing the encryption means on the mobile communications device, the encryption means comprising the remote content provider private key and the mobile communications device public-private key pair.

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- 15) A method as claimed in claim 13 or 14 in which the mobile communications device receives the audio-video clip encrypted with the remote content provider public key via the communications network from a remote content host.

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- 16) A method for managing the use of digital content in a system comprising a content manager, at least one content provider having data encryption means, a plurality of user devices capable of processing the digital content, a reporting means and a communications medium, the method comprising the steps of:-

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the content provider encrypting the content to be managed by the system, making a creation record of that piece of encrypted content, and transmitting that creation record to the content manager;

20

on the transmission of a piece of encrypted content to a mobile communications device, the reporting means generating a transmission record and sending the transmission record automatically to the content manager; and

25

subsequently, on reception of a transmission record, the content manager checking if there exists a creation record to match the transmission record.

- 17) A method as claimed in claim 16 in which the content provider transmits encrypted content to a content host, the content host thereafter transmitting the encrypted content to user devices upon request.

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1/7

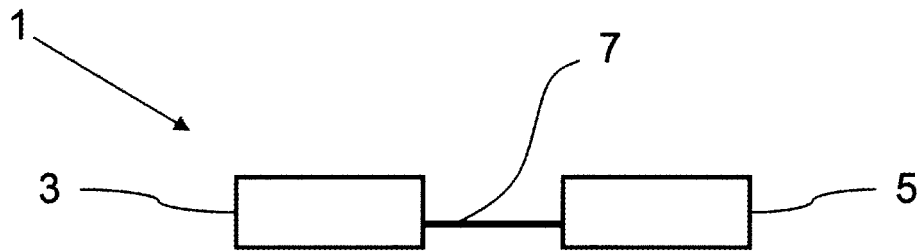


Figure 1

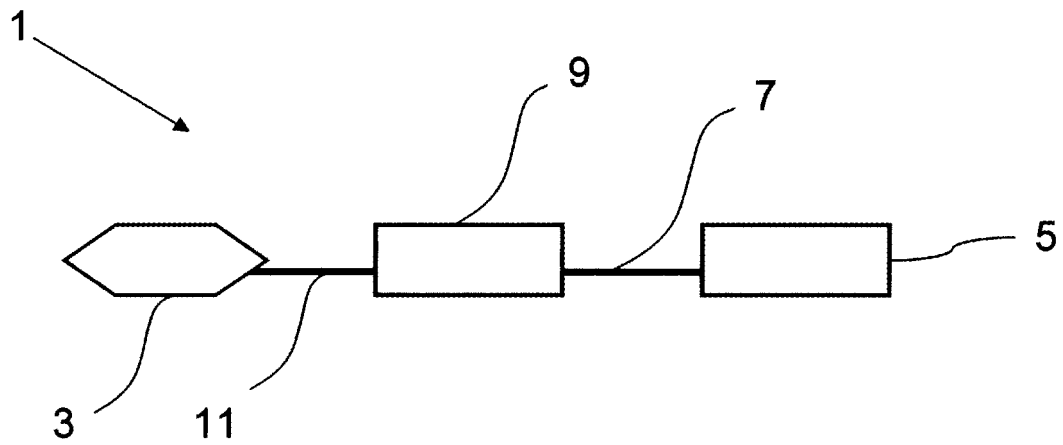


Figure 2

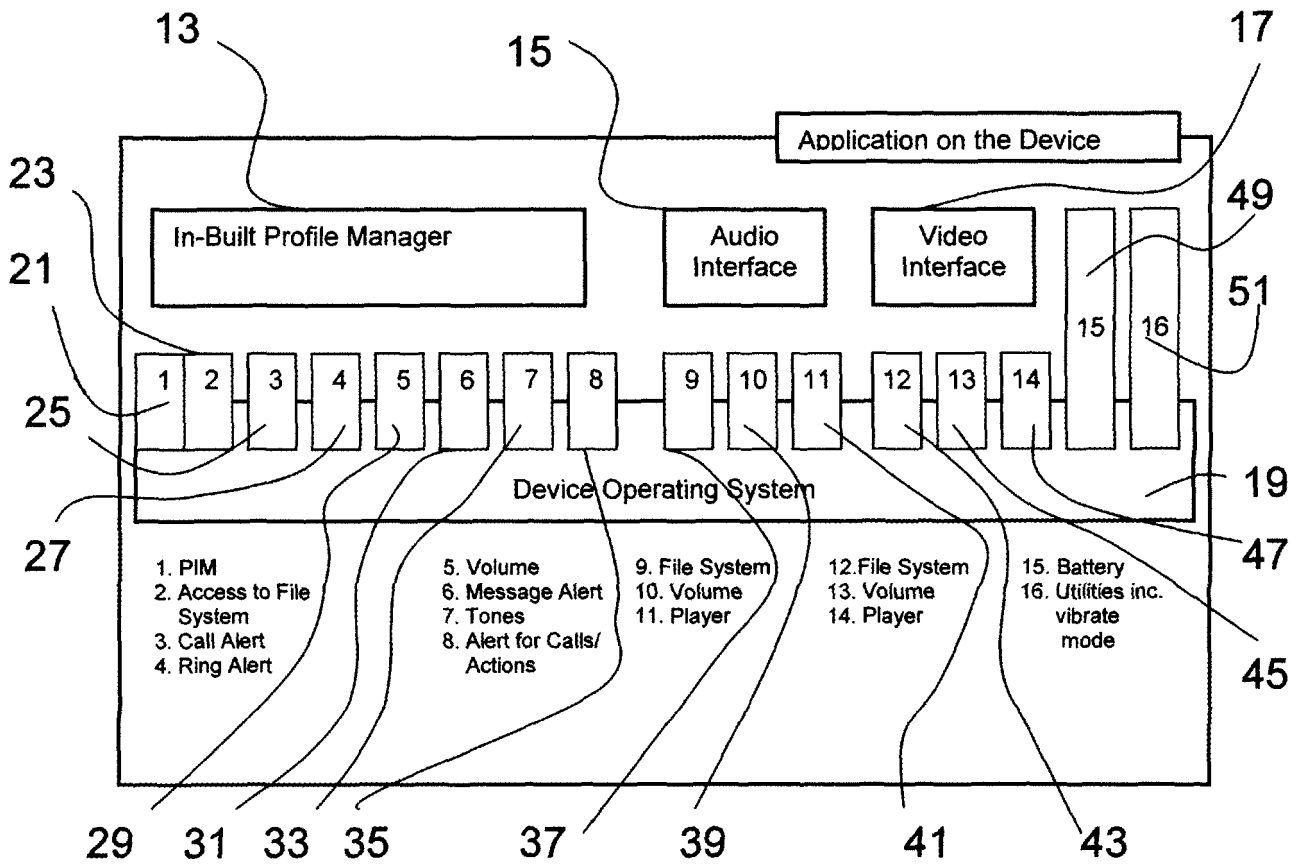


Figure 3

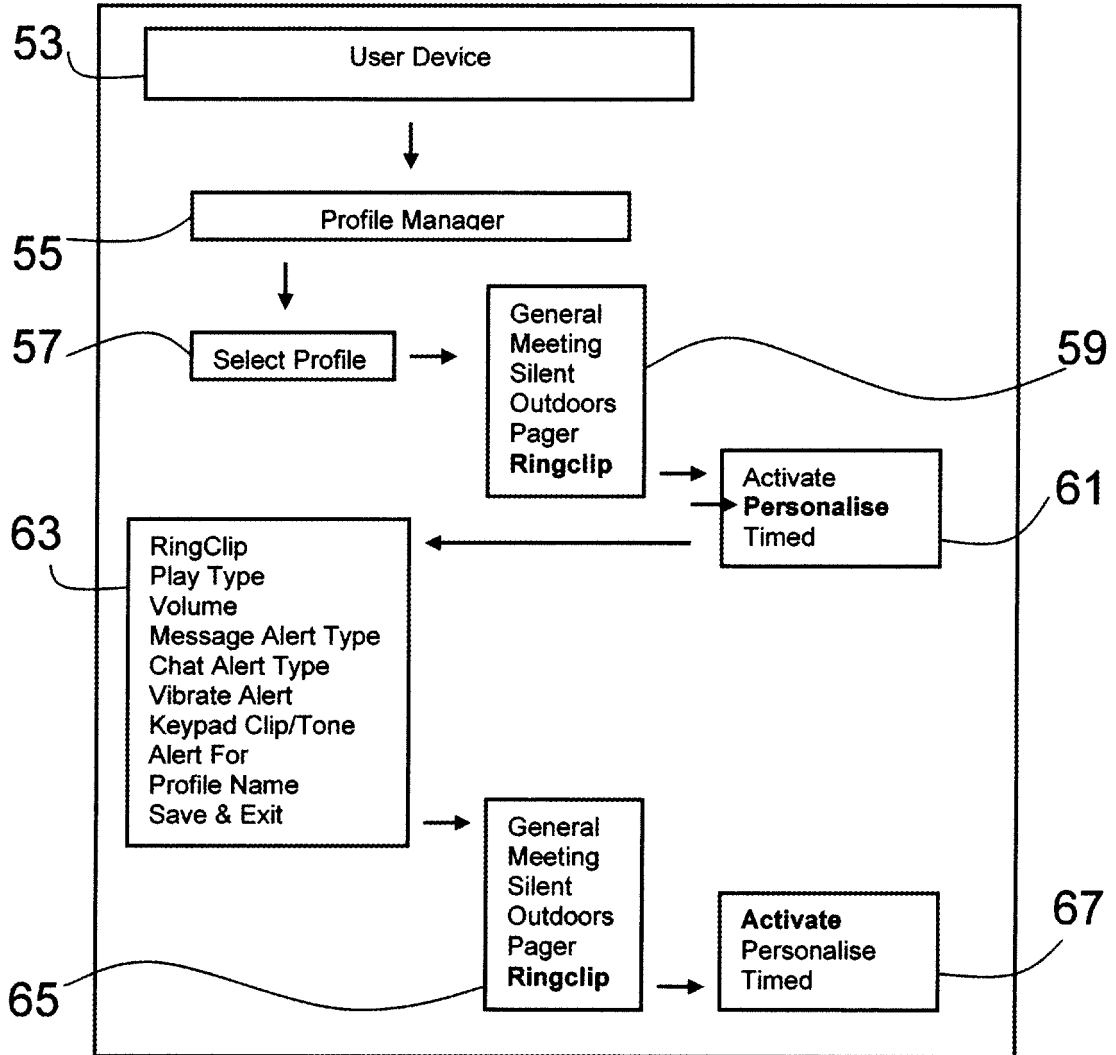


Figure 4

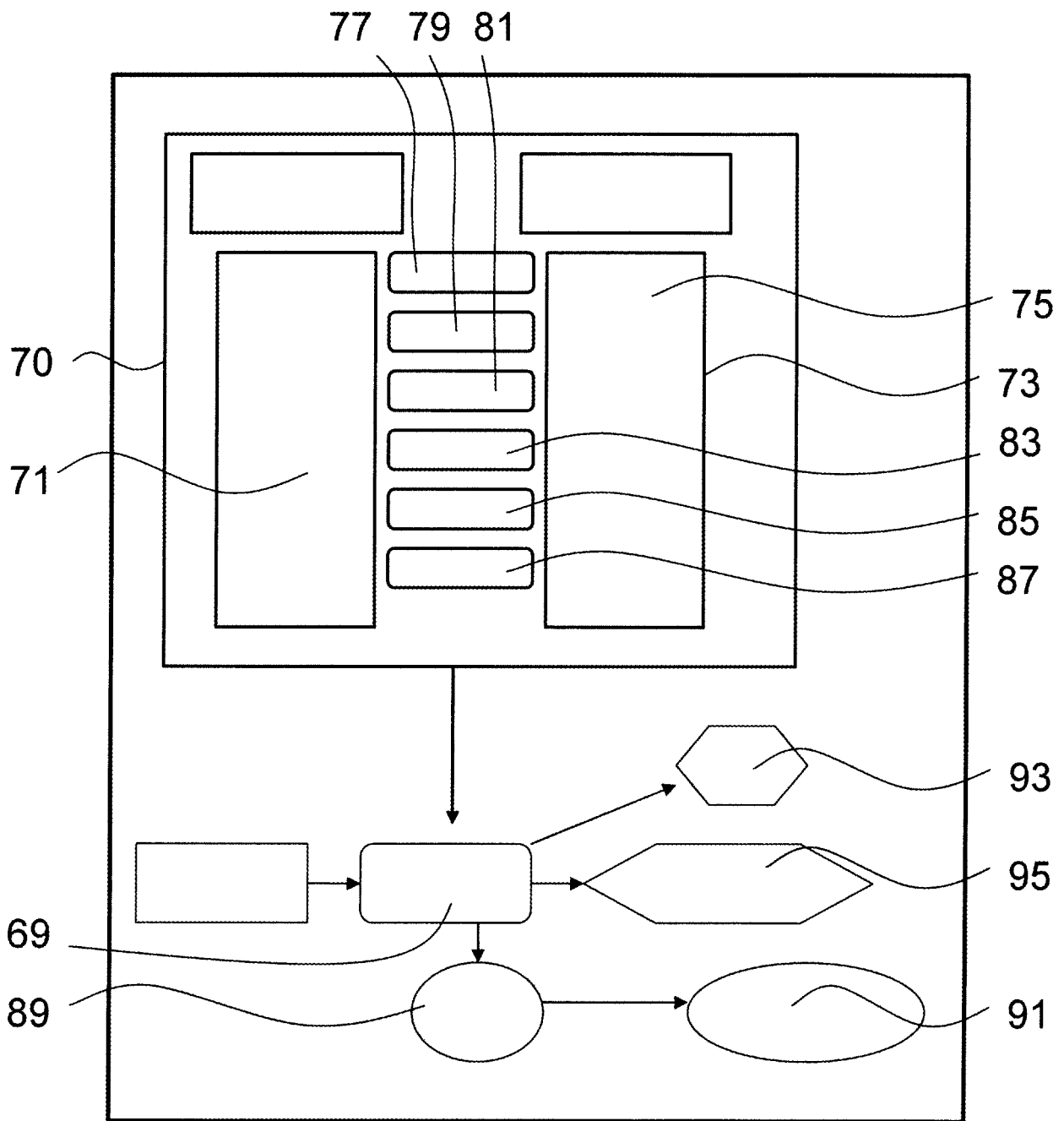


Figure 5

5/7

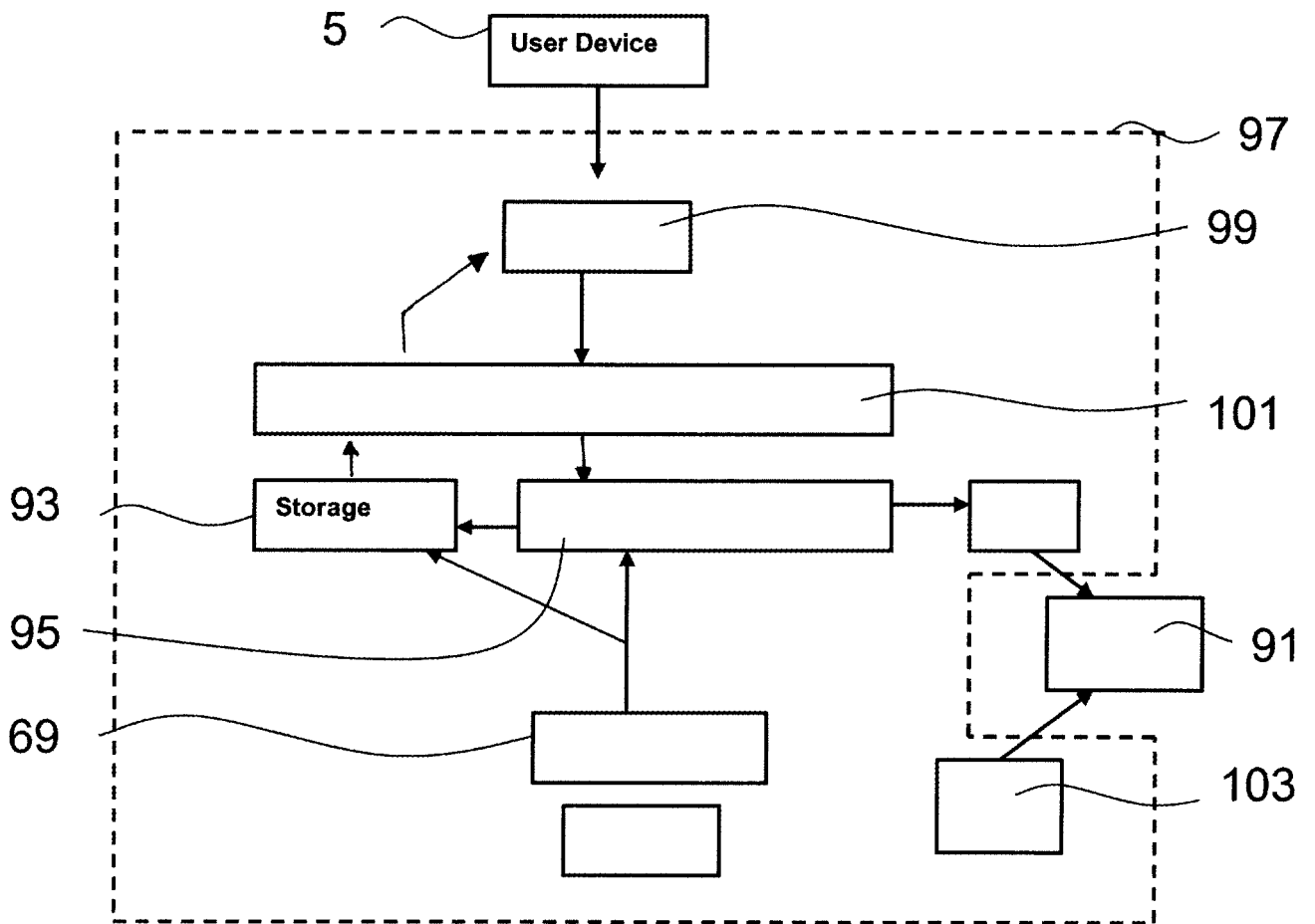


Figure 6

6/7

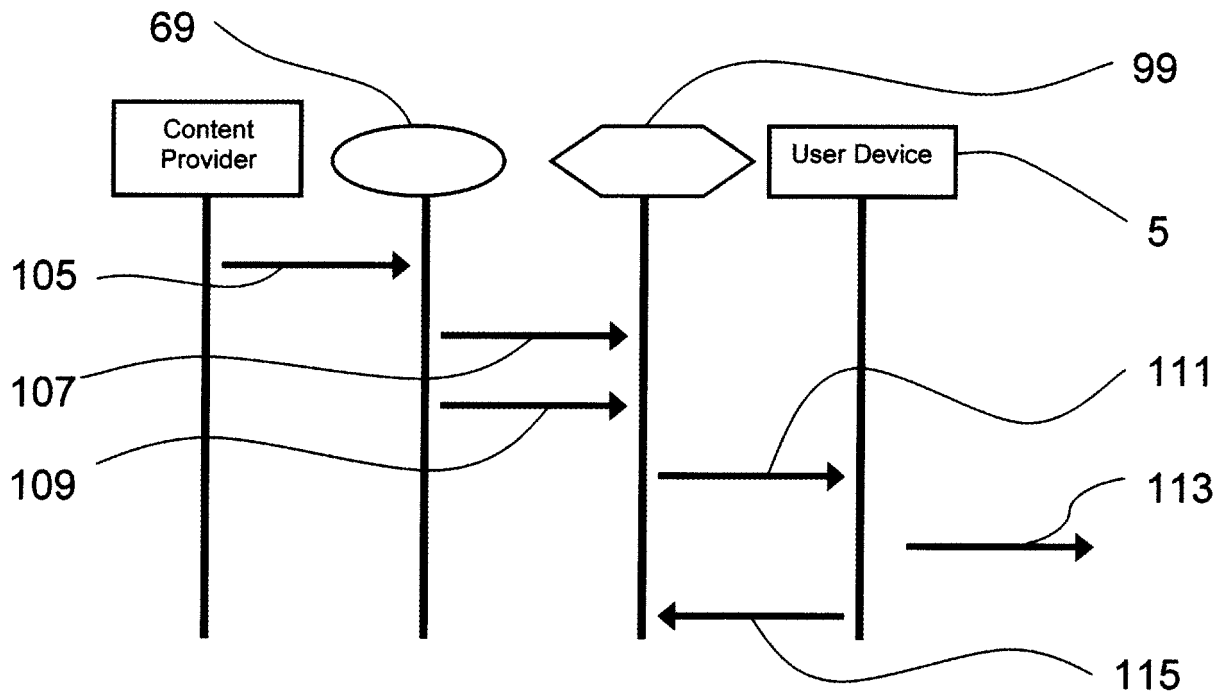


Figure 7

7/7

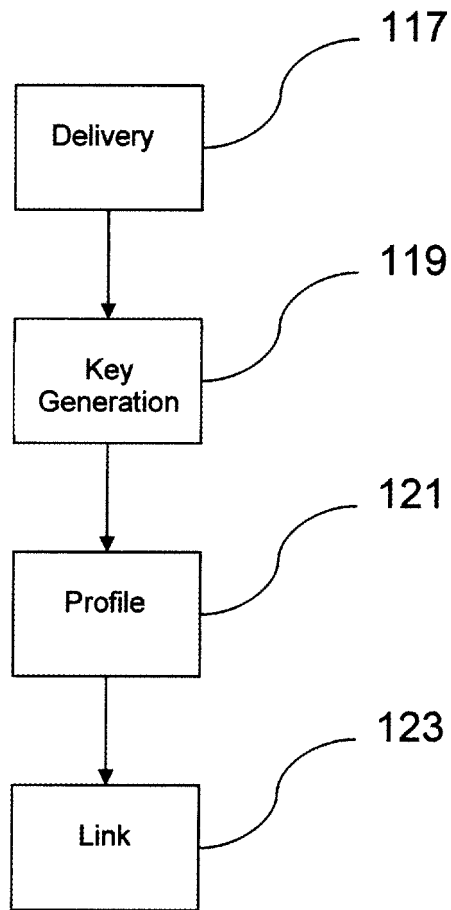


Figure 8