

Reproducing Speech files in Mobile Telecommunications devices

The present invention relates to the generation of speech in a mobile telephone using a remote server.

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Nowadays, mobile phones are used not only for real-time conversation, but also for running software applications.

Mobile phone based applications are already a thriving market and will be even
10 more so in the coming years. It is possible to perform many tasks in these applications from the popular sms (short message service) and games to recording video from a plug in camera and then sending it to another phone.

What is not possible at the moment is dedicated audio functionality i.e. the ability
15 for dynamic creation of audio data. It will come eventually but only on the very expensive handsets and not for a while yet.

Distributed architectures can relieve handsets of dedicated functionality by having a simple client that connects across a network to a server that does all of the hard
20 work. In this context "client" means an application using the services of a server.

The present invention is based on the proposal that a distributed architecture can provide dedicated audio functionality. This will work by the server doing the hard work of generating the required audio file and the client that resides on the phone
25 simply downloading the resulting audio file.

Thus, the present invention provides a method of generating speech in a mobile telephone operating in a mobile communications network including a remote server capable of communication simultaneously with several mobile telephones, in which

an application running on the mobile telephone causes a text request for a speech file to be sent to the remote server, the requested speech file is generated by means within the remote server in response to the text request, transmitted from the remote server to the mobile telephone and reproduced by the mobile telephone.

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Some embodiments of the invention will now be described by way of example only and with reference to the accompanying drawings in which:

Figure 1 is a schematic diagram of a communications network in which the present
10 invention may be used; and

Figure 2 is a schematic diagram of a possible software architecture implementing the invention.

15 Figure 1 shows a mobile telephone 10 having a communication channel to a data centre 11 having server 13 via a radio access network including base transmitter stations 12 and a core network linking base stations 12 to various data centres.

In the example in Figure 2, the telephone 10 has distributed audio client software
20 indicated at 20 and the server 13 has distributed audio server software indicated at 23.

In the specific examples which follow, the phone 10 must support the following client software:

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1. Application environment; and
2. Ability to play sound files through the application environment

or

1. SMS capability; and

2. Ability to playback MMS audio files

The following types of currently available handsets are examples that meet the required criteria:

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1. MIDP 1.0 with audio extensions
2. DoJava 1.0 with audio extensions
3. MIDP 2.0
4. Native (proprietary) application support with audio capability

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The phone will run an application 20 that acts as a client. This client will send a request to the server software 23 to perform a task, i.e. generate a speech file.

The server 23 will read in the request, perform the required request and then send
15 the resulting audio file back.

Preferably the server is able to support the following:

1. Receive messages by Http
- 20 2. Send message by MMS or Http
3. Create audio files

The following types of currently available server will meet the required criteria:

- 25 1. J2SE 1.3+
2. C/C++ with audio capabilities
3. PERL with audio capabilities

Use Case 1: Text to speech

1. The client 20 is written in MIDP 2.0
- 5 2. The client is used by a game which wishes to play some speech which says "Game Over"
3. The game asks the client to request the "Game Over" speech
4. The client sends a text based message to the server 23 (using TCP/IP) containing the message "Game Over"
- 10 5. The server receives the text-based message and proceeds to call a program to convert the "Game Over" text into a (8-bit, 8K, PCM, mono) WAV file.
6. The server sends the WAV file to the client
7. The client receives the WAV file and notifies the game that it has received the sound file
- 15 8. The game retrieves the sound file and plays it
9. The player hears the speech "Game Over"

The round trip time may be less than 5 seconds for small pieces of speech

Glossary

20	SMS	short message service
	MMS	multimedia messaging
	MIDP	mobile information device profile
	Java	a platform independent programming language
	MIDI	musical instrument digital interface
25	Http	hypertext transfer protocol
	WAV	file type for audio files
	TCP	transmission control protocol
	IP	internet protocol
	RAN	radio access network

Claims

1. A method of generating speech in a mobile telephone operating in a mobile communications network including a remote server capable of communication simultaneously with several mobile telephones, in which an application running on the mobile telephone causes a text request for a speech file to be sent to the remote server, the requested speech file is generated by means within the remote server in response to the text request, transmitted from the remote server to the mobile telephone and reproduced by the mobile telephone.
2. A method as claimed in claim 1 in which the text request is generated from text input by the telephone user via the keypad.
3. A method as claimed in claim 1 in which the remote server is arranged to convert text which is included in the text request to speech.
4. A method of generating speech in a mobile telephone substantially as herein before described with reference to the accompanying drawings.