

In one embodiment, the call is a voice call. In another embodiment, the call is a video call.

The step of controlling the audio output device further comprises the
5 communication client accessing user preference data stored at the user
terminal to determine whether the communication client is permitted to control
the audio output device. In the case that the communication client is permitted
to control the audio output device, the method comprises the communication
client deactivating the muted state automatically without interaction from the
10 user of the user terminal. In embodiments, in the case that the communication
client is not permitted to control the audio output device, the method
comprises displaying a notification message in a user interface of the user
terminal such that the user is notified that the audio output device is in a
muted state.

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By displaying the notification message to the user, the user is informed of the
muting of the audio output device, such that it becomes clear that the output
audio device settings, which can be controlled through the OS, can affect the
operation of the communication client. This increases user awareness and
20 avoids similar problems occurring in subsequent calls.

Preferably, the notification message comprises a user-operable control
arranged to deactivate the muted state upon actuation by the user. Preferably,
the method further comprises the step of removing the notification message
25 from the user interface after the notification message has been displayed for a
predetermined length of time if the user-operable control is not actuated by
the user.

Preferably, the step of controlling the audio output device to deactivate the
30 muted state comprises storing an indicator that the status of the audio output
device has been changed in a storage means. Preferably, the method further
comprises the steps of detecting at the communication client that the
connection between a user of the user terminal and a further user has been
terminated; reading the indicator from the storage means; and restoring the

status of the audio output device to the muted state if the status of the audio output device has been changed.

By restoring the muted state of the audio output device, it can be ensured that
5 the removal of the mute setting only occurs for the duration of the call. The user has given his approval to un-mute the audio output device for the purposes of the call over the communication system, but not for any other purpose. The restoration of the mute setting prevents user being disturbed by the user terminal subsequently emitting sounds, for which has not explicitly
10 selected to un-mute the audio output device.

Preferably, the communication network is a packet-based communication network. In one embodiment, the packet-based communication network is a voice over internet protocol communication network. In another embodiment,
15 the packet-based communication network is a peer-to-peer communication network.

According to another aspect of the present invention, there is provided a user terminal, comprising: means for connecting the user terminal to a
20 communication network, an audio output device, and processing means arranged to execute a communication client and perform method steps according to the above-described method.

According to another aspect of the present invention there is provided a
25 computer program product comprising program code means which, when executed by a computer implement the steps according to the above-described method.

CLAIMS:

1. A method of controlling an audio output device at a user terminal.
connected to a communication network and executing a communication client,
5 comprising:
 - establishing a connection between a user of the user terminal and a
further user over the communication network, wherein the step of establishing
the connection comprises one of: the further user answering a call initiated by
the user of the user terminal, and the user of the user terminal answering a
10 call initiated by the further user;
 - responsive to establishing the connection, analysing the status of the
audio output device with the communication client;
 - in the case that the communication client determines that the audio
output device is in a muted state, controlling the audio output device to
15 deactivate the muted state such that audio information transmitted from the
further user via the connection can be heard by the user of the user terminal;
 - wherein the step of controlling the audio output device further
comprises:
 - the communication client accessing user preference data stored at the
20 user terminal to determine whether the communication client is permitted to
control the audio output device; and
 - in the case that the communication client is permitted to control the
audio output device, the communication client deactivating the muted state
automatically without interaction from the user of the user terminal.
- 25 2. A method according to claim 1, wherein the call is a voice call.
3. A method according to claim 1, wherein the call is a video call.
- 30 4. A method according to claim 1, wherein, in the case that the
communication client is not permitted to control the audio output device,
displaying a notification message in a user interface of the user terminal such
that the user is notified that the audio output device is in a muted state.

5. A method according to claim 4, wherein the notification message comprises a user-operable control arranged to deactivate the muted state upon actuation by the user.
- 5 6. A method according to claim 5, further comprising the step of removing the notification message from the user interface after the notification message has been displayed for a predetermined length of time if the user-operable control is not actuated by the user.
- 10 7. A method according to any preceding claim, wherein the step of controlling the audio output device to deactivate the muted state comprises storing an indicator that the status of the audio output device has been changed in a storage means.
- 15 8. A method according to claim 7, further comprising the steps of detecting at the communication client that the connection between a user of the user terminal and a further user has been terminated; reading the indicator from the storage means; and restoring the status of the audio output device to the muted state if the status of the audio output device has been changed.
- 20 9. A method according to any preceding claim, wherein the communication network is a packet-based communication network.
10. A method according to claim 9, wherein the packet-based
25 communication network is a voice over internet protocol communication network.
11. A method according to claim 9 or 10, wherein the packet-based communication network is a peer-to-peer communication network.
- 30 12. A user terminal, comprising:
means for connecting the user terminal to a communication network;
an audio output device; and

processing means arranged to execute a communication client, wherein the communication client is arranged to establish a connection between a user of the user terminal and a further user over the communication network, wherein the connection between the user of the user terminal and the further user is established responsive to one of: the further user answering a call initiated by the user of the user terminal, and the user of the user terminal answering a call initiated by the further user; and

wherein the processing means is further arranged to analyse the status of the audio output device responsive to establishing the connection, and, in the case that the communication client determines that the audio output device is in a muted state, control the audio output device to deactivate the muted state such that audio information transmitted from the further user via the connection can be heard by the user of the user terminal;

wherein the communication client is further arranged to access user preference data stored at the user terminal to determine whether the communication client is permitted to control the audio output device; and

wherein, in the case that the communication client is permitted to control the audio output device, the communication client is arranged to deactivate the muted state automatically without interaction from the user of the user terminal.

13. A user terminal according to claim 12, wherein the call is a voice call.

14. A user terminal according to claim 12, wherein the call is a video call.

15. A user terminal according to claim 12, wherein the user terminal further comprises a display means, and, in the case that the communication client is not permitted to control the audio output device, the communication client is arranged to display a notification message on the display means such that the user is notified that the audio output device is in a muted state.

16. A user terminal according to claim 15, wherein the notification message comprises a user-operable control arranged to deactivate the muted state upon actuation by the user.

17. A user terminal according to claim 16, wherein the communication client is arranged to remove the notification message from the user interface after the notification message has been displayed for a predetermined length
5 of time if the user-operable control is not actuated by the user.

18. A user terminal according to any of claims 12 to 17, wherein the user terminal further comprises a storage means, and the communication client is arranged to store an indicator that the status of the audio output device has
10 been changed in the storage means.

19. A user terminal according to claim 18, wherein the communication client is further arranged to detect that the connection between a user of the user terminal and a further user has been terminated; read the indicator from
15 the storage means; and restore the status of the audio output device to the muted state if the status of the audio output device has been changed.

20. A user terminal according to any of claims 12 to 19, wherein the communication network is a packet-based communication network.
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21. A user terminal according to claim 20, wherein the packet-based communication network is a voice over internet protocol communication network.

25 22. A user terminal according to claim 20 or 21, wherein the packet-based communication network is a peer-to-peer communication network.

23. A computer program product comprising program code means which, when executed by a computer implement the steps according to the method
30 of any of claims 1 to 11.

In one embodiment, the call is a voice call. In another embodiment, the call is a video call.

Preferably, the step of controlling the audio output device further comprises
5 the communication client accessing user preference data stored at the user
terminal to determine whether the communication client is permitted to control
the audio output device. In the case that the communication client is permitted
to control the audio output device, the method comprises the communication
client deactivating the muted state automatically without interaction from the
10 user of the user terminal. In embodiments, in the case that the communication
client is not permitted to control the audio output device, the method
comprises displaying a notification message in a user interface of the user
terminal such that the user is notified that the audio output device is in a
muted state.

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By displaying the notification message to the user, the user is informed of the
muting of the audio output device, such that it becomes clear that the output
audio device settings, which can be controlled through the OS, can affect the
operation of the communication client. This increases user awareness and
20 avoids similar problems occurring in subsequent calls.

Preferably, the notification message comprises a user-operable control
arranged to deactivate the muted state upon actuation by the user. Preferably,
the method further comprises the step of removing the notification message
25 from the user interface after the notification message has been displayed for a
predetermined length of time if the user-operable control is not actuated by
the user.

Preferably, the step of controlling the audio output device to deactivate the
30 muted state comprises storing an indicator that the status of the audio output
device has been changed in a storage means. Preferably, the method further
comprises the steps of detecting at the communication client that the
connection between a user of the user terminal and a further user has been
terminated; reading the indicator from the storage means; and restoring the

status of the audio output device to the muted state if the status of the audio output device has been changed.

By restoring the muted state of the audio output device, it can be ensured that
5 the removal of the mute setting only occurs for the duration of the call. The user has given his approval to un-mute the audio output device for the purposes of the call over the communication system, but not for any other purpose. The restoration of the mute setting prevents user being disturbed by the user terminal subsequently emitting sounds, for which has not explicitly
10 selected to un-mute the audio output device.

Preferably, the communication network is a packet-based communication network. In one embodiment, the packet-based communication network is a voice over internet protocol communication network. In another embodiment,
15 the packet-based communication network is a peer-to-peer communication network.

According to another aspect of the present invention, there is provided a user terminal, comprising: means for connecting the user terminal to a
20 communication network; an audio output device; and processing means arranged to execute a communication client, wherein the communication client is arranged to establish a connection between a user of the user terminal and a further user over the communication network, analyse the status of the audio output device responsive to establishing the connection,
25 and, in the case that the communication client determines that the audio output device is in a muted state, control the audio output device to deactivate the muted state such that audio information transmitted from the further user via the connection can be heard by the user of the user terminal and perform
method steps according to the above-described method.

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According to another aspect of the present invention there is provided a computer program product comprising program code means which, when executed by a computer implement the steps according to the above-described method.

CLAIMS:

1. A method of controlling an audio output device at a user terminal connected to a communication network and executing a communication client,
5 comprising:

establishing a connection between a user of the user terminal and a further user over the communication network, wherein the step of establishing the connection comprises one of: the further user answering a call initiated by the user of the user terminal, and the user of the user terminal answering a
10 call initiated by the further user;

responsive to establishing the connection, analysing the status of the audio output device with the communication client;

in the case that the communication client determines that the audio output device is in a muted state, controlling the audio output device to
15 deactivate the muted state such that audio information transmitted from the further user via the connection can be heard by the user of the user terminal;

wherein the step of controlling the audio output device further comprises:

the communication client accessing user preference data stored at the user terminal to determine whether the communication client is permitted to control the audio output device; and
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in the case that the communication client is permitted to control the audio output device, the communication client deactivating the muted state automatically without interaction from the user of the user terminal.
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2. A method according to claim 1, wherein the call is a voice call.

3. A method according to claim 1, wherein the call is a video call.

4. — A method according to any preceding claim, wherein the step of controlling the audio output device further comprises the communication client accessing user preference data stored at the user terminal to determine whether the communication client is permitted to control the audio output device.
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~~5.~~ – A method according to claim ~~4~~, wherein, in the case that the communication client is permitted to control the audio output device, the communication client deactivating the muted state automatically without
5 interaction from the user of the user terminal.

~~64.~~ A method according to claim ~~4~~ or ~~51~~, wherein, in the case that the communication client is not permitted to control the audio output device, displaying a notification message in a user interface of the user terminal such
10 that the user is notified that the audio output device is in a muted state.

~~75.~~ A method according to claim ~~64~~, wherein the notification message comprises a user-operable control arranged to deactivate the muted state upon actuation by the user.
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~~86.~~ A method according to claim ~~75~~, further comprising the step of removing the notification message from the user interface after the notification message has been displayed for a predetermined length of time if the user-operable control is not actuated by the user.
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~~97.~~ A method according to any preceding claim, wherein the step of controlling the audio output device to deactivate the muted state comprises storing an indicator that the status of the audio output device has been changed in a storage means.
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~~108.~~ A method according to claim ~~97~~, further comprising the steps of detecting at the communication client that the connection between a user of the user terminal and a further user has been terminated; reading the indicator from the storage means; and restoring the status of the audio output device to
30 the muted state if the status of the audio output device has been changed.

~~119.~~ A method according to any preceding claim, wherein the communication network is a packet-based communication network.

1210. A method according to claim 129, wherein the packet-based communication network is a voice over internet protocol communication network.

5 1311. A method according to claim 119 or 1210, wherein the packet-based communication network is a peer-to-peer communication network.

1412. A user terminal, comprising:

means for connecting the user terminal to a communication network;

10 an audio output device; and

processing means arranged to execute a communication client, wherein the communication client is arranged to establish a connection between a user of the user terminal and a further user over the communication network, wherein the connection between the user of the user terminal and the further user is established responsive to one of: the further user answering a call initiated by the user of the user terminal, and the user of the user terminal answering a call initiated by the further user; and

wherein the processing means is further arranged to analyse the status of the audio output device responsive to establishing the connection, and, in the case that the communication client determines that the audio output device is in a muted state, control the audio output device to deactivate the muted state such that audio information transmitted from the further user via the connection can be heard by the user of the user terminal;

15 wherein the communication client is further arranged to access user preference data stored at the user terminal to determine whether the communication client is permitted to control the audio output device; and

wherein in the case that the communication client is permitted to control the audio output device, the communication client is arranged to deactivate the muted state automatically without interaction from the user of the user terminal.

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1513. A user terminal according to claim 1412, wherein the call is a voice call.

1614. A user terminal according to claim 1412, wherein the call is a video call.

~~17. — A user terminal according to any of claims 14 to 16, wherein the communication client is further arranged to access user preference data stored at the user terminal to determine whether the communication client is permitted to control the audio output device.~~

~~18. — A user terminal according to claim 17 wherein, in the case that the communication client is permitted to control the audio output device, the communication client is arranged to deactivate the muted state automatically without interaction from the user of the user terminal.~~

19~~15~~. A user terminal according to claim 17 or 18~~12~~, wherein the user terminal further comprises a display means, and, in the case that the communication client is not permitted to control the audio output device, the communication client is arranged to display a notification message on the display means such that the user is notified that the audio output device is in a muted state.

20~~16~~. A user terminal according to claim 19~~15~~, wherein the notification message comprises a user-operable control arranged to deactivate the muted state upon actuation by the user.

21~~17~~. A user terminal according to claim 20~~16~~, wherein the communication client is arranged to remove the notification message from the user interface after the notification message has been displayed for a predetermined length of time if the user-operable control is not actuated by the user.

22~~18~~. A user terminal according to any of claims 14~~12~~ to 21~~17~~, wherein the user terminal further comprises a storage means, and the communication client is arranged to store an indicator that the status of the audio output device has been changed in the storage means.

23~~19~~. A user terminal according to claim 22~~18~~, wherein the communication client is further arranged to detect that the connection between a user of the

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user terminal and a further user has been terminated; read the indicator from the storage means; and restore the status of the audio output device to the muted state if the status of the audio output device has been changed.

5 2420. A user terminal according to any of claims 1412 to 2319, wherein the communication network is a packet-based communication network.

2521. A user terminal according to claim 2420, wherein the packet-based communication network is a voice over internet protocol communication
10 network.

2622. A user terminal according to claim 2420 or 2521, wherein the packet-based communication network is a peer-to-peer communication network.

15 2723. A computer program product comprising program code means which, when executed by a computer implement the steps according to the method of any of claims 1 to 131.