CLAIMS

1. A wireless communication method for use in a wireless terminal, the method comprising:

performing a second uplink, UL, transmission when a listen-before-talk procedure of a first UL transmission fails and a flag is configured,

wherein a first UL duration of the first UL transmission overlaps a second UL duration of the second UL transmission.

2. The wireless communication method of claim 1, wherein the second UL transmission have been deprioritized by the first UL transmission for being transmitted.

3. The wireless communication method of claim 1 or 2, further comprising:

determining the second UL transmission from a plurality of UL transmissions, wherein each of the plurality of UL transmissions has a UL duration overlaps the first UL duration,

wherein the second UL transmission is a prioritized UL transmission in the plurality of UL transmissions or the second UL transmission is randomly selected from the plurality of UL transmissions.

4. The wireless communication method of any of claims 1 to 3, wherein each of the first UL transmission, the second UL transmission and the plurality of UL transmissions is one of a physical UL shared channel transmission for a UL grant or a scheduling request transmission.

5. The wireless communication method of any of claims 1 to 4, wherein the flag is associated with performing a hybrid automatic repeat request, HARQ, operation for a

~~deprioritized UL transmission when a listen-before-talk procedure of a prioritized transmission overlapping the deprioritized UL transmission fails.~~

~~6. The wireless communication method of any of claims 1 to 5, wherein the flag is configured per cell group, per serving cell or per bandwidth part.~~

~~7. The wireless communication method of any of claims 1 to 6, wherein the second UL transmission is performed by:~~

~~transmitting, to a hybrid automatic repeat request, HARQ, entity, a first UL grant of the first UL transmission, a second UL grant of the second UL transmission and HARQ information of the first UL grant and the second UL grant.~~

~~8. The wireless communication method of claim 7, wherein the first UL grant is one of a configured grant and a dynamic grant and the second UL grant is another one of the configured grant and the dynamic grant.~~

~~9. The wireless communication method of any of claims 7, further comprising:~~

~~instructing a physical layer to perform a scheduling request transmission when the scheduling request transmission overlaps at least one of the first UL transmission or the second UL transmission.~~

~~10. A wireless communication method for use in a wireless network node, the method comprising:~~

~~configuring, to a wireless terminal, a flag associated with performing a hybrid automatic repeat request, HARQ, operation for a deprioritized UL transmission when a listen-before-talk procedure of a prioritized transmission overlapping the deprioritized UL transmission fails.~~

~~11. The wireless communication method of claim 10, wherein the flag is configured per cell group, per serving cell or per bandwidth part.~~

1~~2~~. A wireless communication method for use in a wireless terminal, the method comprising:

determining whether a condition ~~of~~ associated with using a configured uplink~~,~~ (UL)~~,~~ grant for retransmitting a small data transmission~~,~~ (SDT)~~,~~ message of an SDT is met, and

retransmitting, to a wireless network node, the SDT message by using the configured UL grant when the condition is met,

wherein the condition associated with using the configured grant for retransmitting the SDT message comprises that no acknowledge message corresponding to the SDT message is received before a first timer expires.

2~~13~~. The wireless communication method of claim 1~~12~~, wherein the SDT message comprises at least one of:

a radio resource control message of initiating the SDT, or

a data message of the SDT.

3~~14~~. The wireless communication method of claim 1~~12 or 13~~, the condition associated with using the configured grant for retransmitting the SDT message comprises ~~at least one of~~:

the SDT message has been transmitted by using the configured grant and has not been transmitted by using a dynamic grant scheduled with an identifier of the wireless terminal~~,~~

~~no acknowledge message corresponding to the SDT message is received before a first timer expires,~~

~~a non-acknowledge message corresponding to the SDT message is received,~~

~~no acknowledge message corresponding to the SDT message is received when a time duration terminates,~~

the first timer stops and a second timer is running, wherein the second timer starts when a hybrid automatic repeat request, HARQ, process identification, ID, of transmitting the SDT message is used, or

a counter does not reach the maximum number of attempt times for transmissions or retransmission.

415. The wireless communication method of claim 314, wherein the first timer is configured per configured UL grant and associated with an HARQ process ID of the corresponding configured UL grant.

516. The wireless communication method of claim 314 or 15, wherein the first timer associated with an HARQ process ID starts when the SDT message is transmitted by using the configured UL grant associated with the HARQ process ID.

617. The wireless communication method of any of claims 314 to 16, wherein the first timer associated with an HARQ process ID stops when the wireless terminal receives the acknowledge message or the non-acknowledge message in response to the SDT message transmission associated with the HARQ process ID.

18. The wireless communication method of any of claims 14 to 17, wherein the acknowledge message comprises at least one of:
downlink feedback information indicating the acknowledge message in response to the SDT message transmission, or
downlink control information indicating the same HARQ process ID of sending a new SDT message by using the dynamic UL grant.
19. The wireless communication method of any of claims 14 to 18, wherein the non-acknowledge message comprises downlink feedback information indicating the non-acknowledge message in response to the SDT message transmission.

~~20. The wireless communication method of any of claims 14 to 19, wherein the counter is configured per configured UL grant and/or associated with an HARQ process ID.~~

~~21. The wireless communication of any of claims 14 to 20, wherein the counter associated with an HARQ process is increased by 1 for at least one of:~~
~~each time of performing the SDT message transmission by using the configured UL grant associated with the HARQ process,~~
~~each time of the first timer associated with the HARQ process expires,~~
~~each time of receiving the configured UL grant of the SDT message transmission associated with the HARQ process, or~~
~~each time of receiving a non-acknowledge message of the HARQ process.~~

~~22. The wireless communication of any of claims 14 to 21, wherein the counter associated with an HARQ process is reset when the wireless terminal performs at least one of:~~
~~receiving a radio resource control, RRC, release message of releasing to an inactive state,~~
~~transmitting, to the wireless network node, an SDT message by using the configured UL grant with the HARQ process for the first time,~~
~~receiving the acknowledge message or the non-acknowledge message corresponding to the HARQ process of the SDT message, or~~
~~receiving a downlink control channel for scheduling a UL transmission associated with the HARQ process of the SDT message.~~

~~23. The wireless communication method of any of claims 14 to 22, wherein the counter reaches the maximum number of attempt times, and~~
~~wherein the method further comprises at least one of:~~

~~performing a random access channel based small data transmission,~~

~~performing a random access procedure,~~

~~notifying a fail reason to an RRC layer, or~~

~~entering an idle state.~~

7~~24~~. The wireless communication of ~~any of~~ claim~~s 12 to 23~~1, wherein the retransmission of the SDT message and the first transmission of the SDT message have the same HARQ process ID.

~~25. A wireless terminal, comprising:~~

~~a communication unit, configured to perform a second uplink, UL, transmission when a listen-before-talk procedure of a first UL transmission fails and a flag is configured,~~

~~wherein a first UL duration of the first UL transmission overlaps a second UL duration of the second UL transmission.~~

~~26. The wireless terminal of claim 25, further comprising a processor configured to perform the wireless communication method of any one of claims 2 to 9.~~

~~27. A wireless network node, comprising:~~

~~a communication unit, and~~

~~a processor, configured to configure, to a wireless terminal via the communication unit, a flag associated with performing a hybrid automatic repeat request, HARQ, operation for a deprioritized UL transmission no earlier than a listen-before-talk procedure of a prioritized transmission overlapping the deprioritized UL transmission fails.~~

~~28. The wireless network node of claim 27, wherein the processor is further configured to perform the wireless communication method of claim 11.~~

829. A wireless terminal, comprising:

a processor, configured to:

determine an eventwhether a condition associated with using a configured uplink, (UL), grant for retransmitting a small data transmission (SDT) message of an SDT occurs is met, and

a communication unit, configured to:

retransmit, to a wireless network node, the SDT message by using the configured UL grant when the condition is met,

wherein the condition associated with using the configured grant for retransmitting the SDT message comprises that no acknowledge message corresponding to the SDT message is received before a first timer expires.

930. The wireless terminal of claim 829, further comprising a processor configured to perform the wireless communication method of any one of claims 13 to 24, wherein the SDT message comprises at least one of: a radio resource control message of initiating the SDT, or a data message of the SDT.

10. The wireless terminal of claim 8, wherein the condition associated with using the configured grant for retransmitting the SDT message comprises:

the SDT message has been transmitted by using the configured grant and has not been transmitted by using a dynamic grant scheduled with an identifier of the wireless terminal.

11. The wireless terminal of claim 10, wherein the first timer is configured per configured UL grant and associated with an HARQ process ID of the corresponding configured UL grant.

12. The wireless terminal of claim 10, wherein the first timer associated with an HARQ process ID starts when the SDT message is transmitted by using the configured UL grant associated with the HARQ process ID.

13. The wireless terminal of claim 8, wherein the first timer associated with an HARQ process ID stops when the wireless terminal receives the acknowledge message or the non-acknowledge message in response to the SDT message transmission associated with the HARQ process ID.

~~31. A computer program product comprising a computer-readable program medium code stored thereupon, the code, when executed by a processor, causing the processor to implement a wireless communication method recited in any one of claims 1 to 23.~~

14. A wireless communication method for use in a wireless network node, the method comprising:

receiving, by a wireless ~~terminal~~network node, a retransmission of a small data transmission, SDT, message by using a configured uplink, UL, grant when ~~the~~a wireless terminal has determined that a condition associated with using the configured UL grant for retransmitting a small data transmission, SDT, message of an SDT is met,

wherein the condition associated with using the configured grant for transmitting the SDT message comprises that no acknowledge message corresponding to the SDT message is received before a first timer expires.

15. The wireless communication method of claim 14, wherein the SDT message comprises at least one of:

a radio resource control message of the SDT, or

a data message of the SDT.

16. The wireless communication method of claim 14, the condition associated with using the configured grant for transmitting the SDT message comprises:

the SDT message has been transmitted by using the configured grant and has not been transmitted by using a dynamic grant scheduled with an identifier of the wireless terminal.

17. The wireless communication method of claim 16, wherein the first timer is configured per configured UL grant and associated with an HARQ process ID of the corresponding configured UL grant.

18. The wireless communication method of claim 16, wherein the first timer associated with an HARQ process ID starts when the SDT message is transmitted by using the configured UL grant associated with the HARQ process ID.

19. The wireless communication method of claim 16, wherein the first timer associated with an HARQ process ID is stopped when the wireless terminal receives the acknowledge message or the non-acknowledge message in response to the SDT message transmission associated with the HARQ process ID.

20. The wireless communication of claim 14, wherein the retransmission of the SDT message and the first transmission of the SDT message have the same HARQ process ID.