CLAIMS

What is Claimed:

1. A method implemented by a wireless transmit/receive unit (WTRU), the method comprising:

receiving information indicating a configuration of one or more small data transmission (SDT) resources;

receiving information indicating one or more data radio bearers (DRBs) which support SDT;

receiving information indicating an inactive radio network temporary identifier (I-RNTI); and

after receiving the indicated I-RNTI and on condition that (1) a size of UL SDT data present in a buffer of the WTRU is less than a first threshold, (2) the UL SDT data present in the buffer is for the one or more DRBs which support SDT, and (3) a reference signal received power (RSRP) is greater than a second threshold:

sending a first transmission that includes at least a portion of the UL SDT data present in the buffer using a configured grant (CG) resource or a random access (RA) resource from among one or more SDT resources.

2. The method of claim 1, wherein the receiving of the information indicating the I-RNTI includes receiving information indicating a configuration of one or more CG resources including the CG resource.

3. The method of claim 1, wherein the receiving of the information indicating the configuration of the one or more SDT resources includes any of information indicating a configuration of one or more RA resources including the RA resource, information indicating the first threshold, and/or information indicating the second threshold.

4. The method of claim 1, further comprising:

receiving information indicating a timer value associated with SDT,

wherein, on condition that a first time period associated with the timer value has not expired, the sending of the first transmission uses the CG resource.

5. The method of claim 1, further comprising:

after sending the first transmission using the CG resource and on condition that a second time period associated with the first transmission has expired, resending the first transmission using one of the one or more SDT resources.

6. The method of claim 1, further comprising:

after sending the first transmission using the CG resource and on condition that a second time period associated with the first transmission has not expired, receiving scheduling information for the WTRU.

7. The method of claim 1, further comprising:

receiving information indicating a timer value associated with SDT,

wherein, on condition that a first time period associated with the timer value has expired, the sending of the first transmission is performed using the RA resource.

8. The method of claim 7, wherein the sending of the first transmission includes:

sending a preamble using the RA resource;

receiving a response message including information indicating an uplink (UL) grant; and

sending the first transmission that includes the at least the portion of the UL SDT data present in the buffer via the UL grant.

9. The method of claim 1, wherein the first transmission includes information indicating the I-RNTI.

10. A wireless transmit/receive unit (WTRU) comprising:

a processor and a transceiver which are configured to:

receive information indicating a configuration of one or more small data transmission (SDT) resources,

receive information indicating one or more data radio bearers (DRBs) which support SDT,

receive information indicating an inactive radio network temporary identifier (I-RNTI), and

after receiving the indicated I-RNTI and on condition that (1) a size of UL SDT data present in a buffer of the WTRU is less than a first threshold, (2) the UL SDT data present in the buffer is for the one or more DRBs which support SDT, and (3) a reference signal received power (RSRP) is greater than a second threshold:

send a first transmission that includes at least a portion of the UL SDT data present in the buffer using a configured grant (CG) resource or a random access (RA) resource from among the one or more SDT resources.

11. The WTRU of claim 10, wherein the processor and the transceiver are configured to:

receive the information indicating the I-RNTI which further includes information indicating a configuration of one or more resources including the CG resource.

12. The WTRU of claim 10, wherein the information indicating the configuration of the one or more SDT resources includes any of information indicating a configuration of one or more RA resources including the RA resource, information indicating the first threshold, and/or information indicating the second threshold.

13. The WTRU of claim 10, wherein the processor and the transceiver are configured to:

receive information indicating a timer value associated with SDT, and

wherein the processor and the transceiver are configured to, on condition that a first time period associated with the timer value has not expired, send the first transmission using the CG resource.

14. The WTRU of claim 10, wherein the processor and the transceiver are configured to:

after sending the first transmission using the CG resource and on condition that a second time period associated with the first transmission has expired, resending the first transmission using one of the one or more SDT resources.

15. The WTRU of claim 10, wherein the processor and the transceiver are configured to:

after sending the first transmission and on condition that a second time period associated with the first transmission has not expired, receiving scheduling information for the WTRU.

16. The WTRU of claim 10, wherein the processor and the transceiver are configured to:

receive information indicating a timer value associated with SDT, and

wherein the processor and the transceiver are configured to, on condition that a first time period associated with the timer value has expired, send the first transmission using the RA resource.

17. The WTRU of claim 16, wherein the processor and the transceiver are configured to send the first transmission which includes a preamble and the at least the portion of the UL SDT data present in the buffer via RA resource.

18. The WTRU of claim 16, wherein the processor and the transceiver are configured to send the first transmission which includes to:

send a preamble via the RA resource,

receive a response message including information indicating an uplink (UL) grant, and

send the first transmission that includes the at least the portion of the UL SDT data present in the buffer via the UL grant.

19. The WTRU of claim 10, wherein the first transmission includes information indicating the I-RNTI.