in tunnels, in deep basements, or following catastrophic system outages, there is a need to support D2D communications for PS in absence of any operating network or prior to the arrival of AdHoc deployed radio infrastructure. However, even when operating in presence of operating network infrastructure, PS communications may typically still require higher reliability than commercial services.

[0005] V2X communications standards and technologies may be developed based on the current D2D LTE specifications, in addition to potential enhancements to LTE, in both D2D and non-D2D, to meet requirements of the services subgroup to the 3GPP Technical Specification Group on Service and System Aspects (SA1).

SUMMARY

[0006] Methods, apparatuses and systems are provided for aligning a generation and transmission of a cooperative awareness message (CAM) to a semi-persistent scheduling (SPS) resource timing based on an SPS configuration, including transmitting an indication to change an SPS configuration to a node-B based on a trigger event, wherein the indication to change the SPS configuration includes a request to change at least one of a scheduling interval and an offset of a current SPS configuration, reconfiguring the current SPS configuration based on the indication to change the SPS configuration, and transmitting the CAM using SPS resources according to the changed SPS configuration.

[0006A] In one aspect, there is provided a method performed by a wireless transmit / receive unit (WTRU). The method can include: transmitting a semi-persistent scheduling (SPS) message, from the WTRU to a base station, wherein the SPS message indicates a traffic periodicity, a transport block size and a timing offset indicative of a timing for a packet arrival, wherein the timing offset is an offset with respect to subframe number 0 of system frame number 0; receiving, by the WTRU from the base station, in response to the transmitting of the SPS message, an indication of an SPS configuration; and transmitting data on a

sidelink channel, by the WTRU to another WTRU, in accordance with the SPS configuration and a ProSe Per-Packet Priority (PPPP).

[0006B] In one aspect, there is provided a wireless transmit / receive unit (WTRU) which can include: a transmitter configured to transmit a semi-persistent scheduling (SPS) message, from the WTRU to a base station, wherein the SPS message indicates a traffic periodicity and a timing offset indicative of a timing for a packet arrival, wherein the timing offset is an offset with respect to subframe number 0 of system frame number 0; a receiver configured to receive, by the WTRU from the base station, in response to transmission of the SPS message, an indication of an SPS configuration; and the transmitter further configured to transmit data, from the WTRU to another WTRU, on a sidelink channel in accordance with the SPS configuration and a ProSe Per-Packet Priority (PPPP).

[006C] In one aspect, there is provided a method performed by a base station. The method can include: receiving, from a WTRU, a semi-persistent scheduling (SPS) message indicating a traffic periodicity, a transport block size and a timing offset indicative of a timing for a packet arrival, wherein the timing offset is an offset with respect to subframe number 0 of system frame number 0; and transmitting, to the WTRU, in response to reception of the SPS message, an indication of an SPS configuration.

[0007] In one aspect, there is provided a method for operation in a wireless transmit / receive unit (WTRU). The method may comprise transmitting, from the WTRU to an evolved Node B (eNB), a request for semi-persistent scheduling (SPS) resources including a periodicity of the requested SPS resources and a time offset indicative of a time in which the WTRU expects have an SPS resource allocated. The method may further comprise receiving, by the WTRU from the eNB, in response to the transmitted request for SPS resources, an SPS configuration. The time offset of the transmitted request may include a subframe number (SFN) offset with respect to SFN 0 of the WTRU. The received SPS configuration may

CLAIMS

What is claimed is:

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

transmitting a semi-persistent scheduling (SPS) message, from the WTRU to a base station, wherein the SPS message indicates a traffic periodicity, a transport block size and a timing offset indicative of a timing for a packet arrival, wherein the timing offset is an offset with respect to subframe number 0 of system frame number 0;

receiving, by the WTRU from the base station, in response to the transmitting of the SPS message, an indication of an SPS configuration; and

transmitting data on a sidelink channel, by the WTRU to another WTRU, in accordance with the SPS configuration and a ProSe Per-Packet Priority (PPPP).

2. The method according to claim 1, wherein the SPS configuration corresponds to a PC5 interface.

3. The method according to claim 1, wherein the indication of the SPS configuration is an activation of the SPS configuration.

4. The method according to claim 1, wherein the request includes an index of the SPS configuration.

5. The method according to claim 1, further comprising:

transmitting the data, in accordance with a logical channel priority (LCP).

6. The method according to claim 1, wherein the transmitted request for SPS resources includes a PPPP information element.

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

a transmitter configured to transmit a semi-persistent scheduling (SPS) message, from the WTRU to a base station, wherein the SPS message indicates a traffic periodicity and a timing offset indicative of a timing for a packet arrival, wherein the timing offset is an offset with respect to subframe number 0 of system frame number 0;

a receiver configured to receive, by the WTRU from the base station, in response to transmission of the SPS message, an indication of an SPS configuration; and

the transmitter further configured to transmit data, from the WTRU to another WTRU, on a sidelink channel in accordance with the SPS configuration and a ProSe Per-Packet Priority (PPPP).

8. The WTRU according to claim 7, wherein the SPS configuration corresponds to a PC5 interface.

9. The WTRU according to claim 7, wherein the indication of the SPS configuration is an activation of the SPS configuration.

10. The WTRU according to claim 7, wherein the request includes an index of the SPS configuration.

11. The WTRU according to claim 7, further comprising:

the transmitter further configured to transmit the data, in accordance with a logical channel priority (LCP).

12. The WTRU according to claim 7, wherein the message includes a PPPP information element.

13. A method performed by a base station, the method comprising:

receiving, from a WTRU, a semi-persistent scheduling (SPS) message indicating a traffic periodicity, a transport block size and a timing offset indicative

of a timing for a packet arrival, wherein the timing offset is an offset with respect to subframe number 0 of system frame number 0; and

transmitting, to the WTRU, in response to reception of the SPS message, an indication of an SPS configuration.

14. The method according to claim 13, wherein the SPS configuration corresponds to a PC5 interface.

15. The method according to claim 13, wherein the indication of the SPS configuration is an activation of the SPS configuration.

16. The method according to claim 13, wherein the request includes an index of an SPS configuration.

17. The method according to claim 13, wherein the request for SPS resources includes a PPPP information element.