CLAIMS

1. A distributed remote sensing system comprising:

   a group of gateways; and

   a sensing device group associated with each gateway in the group of gateways wherein the sensing device group associated with one gateway is different than another sensing device group associated with a different gateway, wherein each sensing device of the sensing device group is independently associated with the gateway associated with the sensing device group, said independent association

   between each sensing device and the associated gateway is predefined independently of a relative position between the associated gateway and each sensing device, wherein the independent association effecting the association between the sensing device group and the associated gateway.

2. The distributed remote sensing system of claim 1,wherein the distributed remote sensing system comprises a parking monitoring system.

3. The distributed remote sensing system of claim 1, wherein one gateway in the group of gateways provides a redundant gateway for at least one sensing device of the different gateway.

4. The distributed remote sensing system of claim 1, wherein each sensing device in each sensing device group is a vehicle detection sensor.

5. The distributed remote sensing system of claim 1, wherein each gateway is configured for wireless communication with respective sensing devices.

6. The distributed remote sensing system of claim 1, wherein each gateway includes a swivelable directional antenna for communication with respective sensing devices.

7. The distributed remote sensing system of claim 6, wherein each gateway includes a processor unit configured to control a directionality of the directional antenna.

8. The distributed remote sensing system of claim 1, wherein each gateway includes a solar panel and a power storage unit, wherein the solar panel effects at least recharging of the power storage unit.

9. The distributed remote sensing system of claim 8, wherein the solar panel provides power for operation of a respective gateway.

10. A distributed remote sensing system comprising:

    a group of gateways; and

    a sensing device group associated with each gateway in the group of gateways wherein the sensing device group associated with one gateway is different than another sensing device group associated with a different gateway, wherein each gateway in the group of gateways is prioritized in a communication sequence for providing redundant communication for the sensing device group.

11. The distributed remote sensing system of claim 1, wherein each gateway is configured to time stamp each communication received from a sensing device of the sensing device group.

12. The distributed remote sensing system of claim 1, further comprising a central controller, each gateway being configured for communication with the central controller through at least one wireless access point.

13. The distributed remote sensing system of claim 12, wherein each gateway is configured to store time stamped messages from sensing devices when the at least one wireless access point is unavailable.

14. A distributed remote sensing system comprising:

    a network of gateways; and

    sensing devices;

    wherein the network of gateways and sensing devices includes at least one gateway group where each gateway in the gateway group is paired to multiple sensing devices that define a primary sensing device group for a respective gateway, where the pairing is predefined independently of a relative position between the primary sensing device group and the respective gateway, and wherein each gateway providing each sensing device in the primary sensing device group for a different gateway with a redundant gateway.

15. The distributed remote sensing system of claim 14, wherein the distributed remote sensing system comprises a parking monitoring system.
16. The distributed remote sensing system of claim 14, wherein each gateway has a different frequency switching scheme for communicating with the sensing devices.
17. The distributed remote sensing system of claim 14, further comprising a central controller, each gateway being configured to communicate with the central controller through a respective wireless access point.
18. A distributed remote sensing system comprising:
    a central controller;
    at least one wireless access point; and
    a group of gateways where each gateway is paired with a
    group of sensing devices to define a primary sensing device group for a respective gateway, wherein the primacy of the primary sensory device group is predefined independently of a relative position between the primary sensing device group and the respective gateway, and where the group of gateways provide at least two levels of redundancy for communication within the distributed remote sensing system.
19. The distributed remote sensing system of claim 18, wherein the distributed remote sensing system comprises a parking monitoring system.
20. A distributed remote sensing system comprising:
    a central controller;
    at least one wireless access point; and
    a group of gateways where each gateway is paired with a
    group of sensing devices to define a primary sensing device group and where the group of gateways provide at least two levels of redundancy for communication within the distributed

remote sensing system, wherein each of the gateways is configured to switch between more than one of the at least one wireless access point for communication with the central controller when one of the at least one wireless access point is unavailable.

21. The distributed remote sensing system of claim 18, wherein each gateway is configured to store messages from the sensing devices when communication to the central controller through the at least one wireless access point is unavailable.
22. The distributed remote sensing system of claim 18, wherein each gateway is a redundant gateway to a group of sensing devices paired with a different gateway to define a redundant sensing device group.
23. The distributed remote sensing system of claim 18, wherein each gateway communicates with the primary sensing device group and the redundant sensing device group over a common communication channel.
24. The distributed remote sensing system of claim 18, wherein each gateway communicates with respective sensing devices using time division duplexing.
25. A method comprising:
    pairing at least one gateway with a primary communicator
    and at least one secondary communicator for providing communication between the at least one gateway and a central controller;
    switching from the primary communicator to the at least one secondary communicator when communication between the at least one gateway and the primary communicator is unavailable; and
    storing messages within the at least one gateway when communication between the at least one gateway and the at least secondary communicator is unavailable.

26. The method of claim 25, further comprising transmitting the messages when communication with the primary or the at least one secondary communicator is re-established.