CLAIMS

What is claimed is:

1. A distributed low altitude radar system comprising:

a) wireless networking equipment for producing RF signals;

b) at least one transmitting antenna coupled with the wireless networking equipment for radiating signals in a skyward direction;

c) at least one receiving antenna for receiving signals reflected from a low flying object;

d) a radar processor electronically coupled with the wireless networking equipment to receive signals therefrom, and being coupled with the receiving antenna to receive signals therefrom;

e) a computing component coupled to receive information from the radar processor;

f) wherein the computing component is configured to receive information from a plurality of radar processors distributed throughout a network for a region of coverage, and wherein said computing component aggregates said information to detect and track low flying objects over the region of coverage; and

g) wherein

(i) said wireless network equipment is configured to communicate with UAVs, or wherein

(ii) said transmitting antenna provides RF communications for communications with one or more UAVs, wireless networking equipment comprises at least one transmitter, wherein said RF communications comprise RF signals generated by the transmitter; and wherein said receiving antenna is configured to receive echoes of the transmitted RF signals that are reflected off of an object.

2. The system of claim 1, wherein said wireless networking equipment comprises a transceiver, a power supply, and a processor for processing communications transmitted and received over a network.

3. The system of claim 1, wherein at least one of said transmitting antenna and said receiving antenna comprises an antenna array.

4. The system of claim 1, wherein at least one of said transmitting antenna and said receiving antenna comprises a phased array.

5. The system of claim 1, wherein said system is configured to detect reflected RF radiation reflected off of a corner reflector of a UAV.

6. The system of claim 1, wherein the transceiver is configured to produce a transceiver signal that is polarized in a circular direction and wherein the receiving antenna is polarized in the opposite circular direction from the communications transceiver signal in order to reduce direct interference from the communications transceiver signals and provide increased responsiveness to reflections from objects.

7. The system of claim 1, wherein a plurality of wireless networking equipment is provided forming a plurality of nodes.

8. The system of claim 7, wherein said nodes are configured to provide signals indicating the presence of objects within the regions of the respective nodes.

9. The system of claim 1, wherein a plurality of transmitting antennas are coupled with a respective plurality of wireless networking equipment for radiating signals in a skyward direction from the transmitting antenna; wherein each said plurality of transmitting antennas are configured to provide a skyward region of signal coverage; wherein a respective plurality of receiving antennas are provided for receiving reflected signals generated from said respective plurality of transmitting antennas; wherein each receiving antenna is located proximate to a respectively associated transmitting antenna, and wherein a said transmitting antenna and said respectively associated receiving antenna define a detection region by their respective signal radiation and signal reception; wherein said system comprises a plurality of detection regions; and wherein said computing component detects and tracks objects within the detection regions.

10. The system of claim 9, wherein each said transmitting antenna emits a signal polarized in a one circular direction, and wherein each respectively associated receiving antenna is polarized in the opposite circular direction of its respectively associated transmitting antenna.

11. The system of claim 9, further comprising a UAV air traffic control system that is configured having at least one processor for processing information and is electronically coupled with said radar processor to receive tracking information for low flying objects within the region of detection, and to manage UAV operations by controlling one or more UAVs to minimize potential collisions with other UAVs and other objects within the detection region detected by the system.

12. The system of claim 10, further comprising a UAV air traffic control system that is configured having at least one processor for processing information and is electronically coupled with said radar processor to receive tracking information for low flying objects within the region of detection, and to manage UAV operations by controlling one or more UAVs to

minimize potential collisions with other UAVs and other objects within the detection region detected by the system.

13. The system of claim 1, wherein the transmitter generating the RF signals provides a copy of the signals to the radar processor.

14. The system of claim 13, wherein the radar signals comprise communication signals transmitted to one of the UAVs from the at least one transmitting antenna.

15. The system of claim 14, wherein said RF signals comprise coded modulation.

16. The system of claim 14, wherein the codes of the coded modulated RF signals comprise codes from signal communications between the at least one transmitting antenna and a UAV.

17. The system of claim 16, wherein said codes are provided from said transmitter to both (i) said at least one transmitting antenna and (ii) said radar processor.

18. The system of claim 16, wherein said transmitter is linked to provide said codes to said radar processor.

19. The system of claim 16, wherein said transmitter is linked to provide said codes to a plurality radar processors within the transmission and echo range of said transmitter.

20. The system of claim 1, wherein said system comprises a skyward communications system for RF communications from a plurality of transmitters and a respective plurality of associated antennas that radiate RF signals from said respective plurality of transmitters; wherein a plurality of radar processors with associated receiving antennas are provided for receiving signals from the respective plurality of transmitters that are reflected off of skyward objects.

21. The system of claim 20, wherein said plurality of radar processors receive a copy of a transmitted RF signal from the transmitter.

22. The system of claim 21, wherein said radar processor is configured to process phase differences between a reflected signal that is detected by the radar processor associated antenna, and a signal copy received from the transmitter.

23. The system of claim 1, wherein codes are imposed on the transmitter frequency carrier.

24. The system of claim 1, wherein codes are imposed on the transmitter frequency carrier that comprise pseudo random codes.

25. The system of claim 24, wherein said pseudo random codes are generated for a code length of L bits which repeats periodically based on a number of shift register stages N, wherein for the number of shift register stages N, L bits is determined by the expression $L= 2^N - 1$.

26. The system of claim 1, wherein said wireless networking equipment includes a transmitter for transmitting an RF transmission which is broadcast from said transmitting antenna, and wherein said wireless network equipment provides a copy of said RF transmission to said radar processor.

27. The system of claim 26, wherein codes are imposed on the transmitter frequency carrier that comprise pseudo random codes.