WHAT IS CLAIMED IS:

1. A radio communications system capable of providing a radio route for transmitting data between plural system nodes including multiple orbiting satellite nodes, wherein:

at least one of said multiple orbiting satellite nodes comprises a rotating satellite node that during each orbit rotates continuously through plural revolutions about a rotational axis passing through said orbiting satellite node;

each of a number of said orbiting satellite nodes includes a plurality of satellite antennas having separate identities for transmitting and receiving radio signals in a plurality of different directions, route creation circuitry for transmitting routing messages to and receiving routing messages transmitted from other system nodes, and data transmission circuitry for transmitting data to other system nodes;

said route creation circuitry of a said rotating satellite node determines a value of a parameter associated with a routing message received by said rotating satellite node from another system node, the value of the parameter indicating the suitability of including said rotating satellite node as a link in a radio route for transmitting the data to the other system node; and

said data transmission circuitry of the said rotating satellite node transmits the data to the other system node using a satellite antenna selected by said route creation circuitry of the said rotating satellite node based at least in part on the value of the parameter associated with a routing message received on said satellite antenna.

2. The radio communications system in claim 1, wherein:

said other system node is an initiating ground node with at least one ground station antenna for transmitting and receiving radio signals;

the route creation circuitry of the said rotating satellite node transmits on at least one said satellite antenna a further routing message incorporating a parameter value associated with an initial routing message received from said initiating ground node; and

the route creation circuitry in a further system node that receives said further routing message determines the value of said parameter associated with said received further routing message and determines a combined parameter value based on said value and the parameter value incorporated in said received further routing message, said combined parameter value indicating the suitability of including said further system node and the said rotating satellite node as a radio link for transmitting the data to said initiating ground node; and

said data transmission circuitry of said further system node transmits the data to said rotating satellite node using a satellite antenna selected by said route creation circuitry of said further system node based at least in part on the value of the combined parameter associated with a routing message received on said satellite antenna.

3. The radio communications system in claim 2, wherein:

said further system node is a receiving ground node, said receiving and initiating ground nodes including a plurality of directional ground station antennas having separate identities for transmitting and receiving radio signals in a plurality of different directions;

said receiving ground node includes antenna pairing circuitry for associating the identities of each of a plurality of said directional ground station antennas receiving a further routing message from one of said orbiting satellite nodes and for storing the identity of each ground station directional antenna associated with said value of the combined parameter of a corresponding further routing message; and

said data transmission circuitry of said receiving ground node transmits the data using the stored antenna associated with the highest value combined parameter.

4. The radio communications system in claim 3, wherein said value is a quantitative figure of merit, a higher value of which indicates a higher suitability as a radio link comprising a system node receiving a routing message and a system node sending the routing message.

5. The radio communications system in claim 4 wherein:

said combined parameter value is determined by an algorithm from the figures of merit of said received further routing message and the figure of merit incorporated in said received further routing message; and

said antenna pairing circuitry only stores antenna identities associated with figures of merit higher than a predetermined threshold.

6. The radio communications system in claim 3, wherein:

said orbiting satellite nodes are designated as a first type of node and said ground nodes are designated as a second type of node; and

nodes of the same type cannot communicate with each other.

7. The radio communications system in claim 3, wherein:

said route creation circuitry of said initiating ground node sends from a plurality of said ground station antennas initial routing messages including an address uniquely identifying a particular said initiating ground node;

said route creation circuitry of each orbiting satellite node receiving an initial routing message associates the address of the initiating ground node with the satellite antenna that received the initial routing message and transmits from a plurality of its antennas said further routing messages including the address of the initiating ground node that sent the initial information signal;

said antenna pairing circuitry of a said receiving ground node associates each said further routing message and said initiating ground node address included therein with the stored identity of the receiving ground antenna that received the further routing message; and

said data transmission circuitry of said receiving ground node transmits data addressed to a particular ground node using the stored ground station antenna associated with said particular ground node.

8. The radio communications system in claim 1, wherein the parameter is one of signal strength, signal-to-noise ratio, and an error rate of a sample data stream included in a said routing message.

9. The radio communications system in claim 1 wherein said satellite antennas comprise directional antennas for transmitting and receiving radio signals in a plurality of directions.

10. The radio communications system in claim 9, wherein said satellite antennas comprise parabolic antennas with the mouths thereof recessed below a surface of said orbiting satellite node surrounding said mouth.

11. The radio communications system in claim 9, wherein said satellite antennas are constructed to transmit and receive radio signals in multiple directions around at least some of the spherical space surrounding the orbiting satellite nodes.

12. The radio communications system in claim 11, wherein the orbiting satellite nodes travel in orbital paths located randomly relative to each other without attitude control.

13. The radio communications system in claim 1, wherein said system nodes are designated as one of a first type for transmitting data on a first set of frequencies and receiving data

on a second set of frequencies and a second type for transmitting data on the first set of frequencies and receiving data on the second set of frequencies.

14. The radio communications system in claim 1, wherein each of a plurality of said multiple orbiting satellite nodes comprises a said rotating satellite node that during each orbit rotates continuously through plural revolutions about a rotational axis passing through said satellite node.

15. The radio communications system in claim 14 wherein said orbiting satellite nodes travel in orbital paths located randomly relative to each other without attitude control.

16. The radio communications system in claim 14, wherein a first number of the plurality of orbiting satellite nodes rotates at a first predetermined angular velocity and a second number of the plurality of orbiting satellite nodes rotates at a second predetermined angular velocity.

17. The radio communications system in claim 14, wherein at least some of said plurality of rotating satellite nodes rotate through plural revolutions in opposite directions about substantially parallel rotational axes passing through said rotating satellite nodes.

18. The radio communications system in claim 1, wherein said at least one rotating satellite node rotates at a predetermined angular velocity.

19. A radio communications system capable of providing a radio route for transmitting data between plural system nodes including multiple orbiting satellite nodes that travel in uncontrolled orbital paths, wherein:

at least one of said multiple orbiting satellite nodes comprises a rotating satellite node that during each orbit rotates continuously through plural revolutions about a rotational axis passing through said orbiting satellite node;

each of a number of said orbiting satellite nodes includes a plurality of satellite antennas having separate identities for transmitting and receiving radio signals in a plurality of different directions, route creation circuitry for transmitting routing messages to and receiving routing messages transmitted from other system nodes, and data transmission circuitry for transmitting data to other system nodes;

said route creation circuitry of a said rotating satellite node determines a value of a parameter associated with a routing message received by said rotating satellite node from another system node, the value of the parameter indicating the suitability of including said rotating satellite node as a link in a radio route for transmitting the data to the other system node; and

said data transmission circuitry of the said rotating satellite node transmits the data to the other system node using a satellite antenna selected by said route creation circuitry of the said rotating satellite node based at least in part on the value of the parameter associated with a routing message received on said satellite antenna.

20. The radio communications system in claim 19, wherein:

said other system node is an initiating ground node with at least one ground station antenna for transmitting and receiving radio signals;

the route creation circuitry of the said rotating satellite node transmits on at least one said satellite antenna a further routing message incorporating a parameter value associated with an initial routing message received from said initiating ground node; and

the route creation circuitry in a further system node that receives said further routing message determines the value of said parameter associated with said received further routing message and determines a combined parameter value based on said value and the parameter value incorporated in said received further routing message, said combined parameter value indicating the suitability of including said further system node and the said rotating satellite node as a radio link for transmitting the data to said initiating ground node; and

said data transmission circuitry of said further system node transmits the data to said rotating satellite node using a satellite antenna selected by said route creation circuitry of said further system node based at least in part on the value of the combined parameter associated with a routing message received on said satellite antenna.

21. The radio communications system in claim 20, wherein:

said further system node is a receiving ground node, said receiving and initiating ground nodes including a plurality of directional ground station antennas having separate identities for transmitting and receiving radio signals in a plurality of different directions;

said receiving ground node includes antenna pairing circuitry for associating the identities of each of a plurality of said directional ground station antennas receiving a further routing message from one of said orbiting satellite nodes and for storing the identity of each ground station directional antenna associated with said value of the combined parameter of a corresponding further routing message; and

said data transmission circuitry of said receiving ground node transmits the data using the stored antenna associated with the highest value combined parameter.

22. The radio communications system in claim 21, wherein said value is a quantitative figure of merit, a higher value of which indicates a higher suitability as a radio link comprising a system node receiving a routing message and a system node sending the routing message.

23. The radio communications system in claim 22, wherein:

said combined parameter value is determined by an algorithm from the figures of merit of said received further routing message and the figure of merit incorporated in said received further routing message; and

said antenna pairing circuitry only stores antenna identities associated with figures of merit higher than a predetermined threshold.

24. The radio communications system in claim 21, wherein:

said orbiting satellite nodes are designated as a first type of node and said ground nodes are designated as a second type of node; and

nodes of the same type cannot communicate with each other.

25. The radio communications system in claim 21, wherein:

said route creation circuitry of said initiating ground node sends from a plurality of said ground station antennas initial routing messages including an address uniquely identifying a particular said initiating ground node;

said route creation circuitry of each orbiting satellite node receiving an initial routing message associates the address of the initiating ground node with the satellite antenna that received the initial routing message and transmits from a plurality of its antennas said further routing messages including the address of the initiating ground node that sent the initial information signal;

said antenna pairing circuitry of a said receiving ground node associates each said further routing message and said initiating ground node address included therein with the stored identity of the receiving ground antenna that received the further routing message; and

said data transmission circuitry of said receiving ground node transmits data addressed to a particular ground node using the stored ground station antenna associated with said particular ground node.

26. The radio communications system in claim 19, wherein the parameter is one of signal strength, signal-to-noise ratio, and an error rate of a sample data stream included in a said routing message.

27. The radio communications system in claim 19, wherein said satellite antennas comprise directional antennas for transmitting and receiving radio signals in a plurality of directions.

28. The radio communications system in claim 27, wherein said satellite antennas comprise parabolic antennas with the mouths thereof recessed below a surface of said orbiting satellite node surrounding said mouth.

29. The radio communications system in claim 27, wherein said satellite antennas are constructed to transmit and receive radio signals in multiple directions around at least some of the spherical space surrounding the orbiting satellite nodes.

30. The radio communications system in claim 29, wherein the orbiting satellite nodes travel in orbital paths located randomly relative to each other without attitude control.

31. The radio communications system in claim 19, wherein said system nodes are designated as one of a first type for transmitting data on a first set of frequencies and receiving data on a second set of frequencies and a second type for transmitting data on the first set of frequencies and receiving data on the second set of frequencies.

32. The radio communications system in claim 19, wherein each of a plurality of said multiple orbiting satellite nodes comprises a said rotating satellite node that during each orbit rotates continuously through plural revolutions about a rotational axis passing through said satellite node.

33. The radio communications system in claim 32, wherein said orbiting satellite nodes travel in orbital paths located randomly relative to each other without attitude control.

34. The radio communications system in claim 32, wherein a first number of the plurality of orbiting satellite nodes rotates at a first predetermined angular velocity and a second number of the plurality of orbiting satellite nodes rotates at a second predetermined angular velocity.

35. The radio communications system in claim 32, wherein at least some of said plurality of rotating satellite nodes rotate through plural revolutions in opposite directions about substantially parallel rotational axes passing through said rotating satellite nodes.

36. The radio communications system in claim 19, wherein said at least one rotating satellite node rotates at a predetermined angular velocity.