WHAT IS CLAIMED IS:

1. A radio communication system for transmitting data to a terrestrial node via a radio route comprising at least two orbiting satellites in a constellation of multiple satellites, each of a plurality of said satellite nodes including:

a plurality of antennas for receiving and transmitting radio signals in different directions;

route creation circuitry for receiving routing messages transmitted from other nodes and for transmitting routing messages to other nodes; and

a memory for storing identities of the antennas on which respective routing messages are received, wherein:

the route creation circuitry of a first order satellite determines a value of a first parameter associated with of an initial routing message received from the terrestrial node,

said value of said first parameter indicates the suitability of a radio link including the first order satellite as a node in a radio route for transmitting the data to the terrestrial node,

the route creation circuitry of said first order satellite transmits on a plurality of said antennas first order routing messages including address information identifying the terrestrial node and the value of the first parameter associated with the initial routing message, and

the route creation circuitry of at least one second order satellite determines a value of a second parameter associated with each first order routing message received from a respective first order satellite, said value of said second parameter indicating the suitability of a radio link including the second order satellite as a node in a radio route for transmitting the data to the respective first order satellite.

2. A system as in claim 1, wherein:

the route creation circuitry of at least one second order satellite identifies a first order routing message representing a preferred radio route from the second order satellite to the terrestrial node identified in the initial routing message, the preferred radio route comprising a first radio link having a value corresponding to the value of the first parameter and a second radio link having a value corresponding to the value of the second parameter, whereby both said first and second radio links have a higher value than the value of any first or second radio link of any other radio route from a particular second order satellite to the terrestrial node,

the memory of the first order satellite in the preferred radio route stores the address information and the antenna that received the initial routing message associated with the preferred radio route, and

the memory of the second order satellite in the preferred radio route stores the address information, the identity of the antenna that received the first order routing message associated with the preferred radio route, and the lower link value as between the first and second radio links in the preferred radio route.

3. A system as in claim 2, wherein:

a plurality of said second order satellites included in a preferred radio route transmit on plural antennas second order routing messages including the address information and the lower link value in the preferred radio route,

the route creation circuitry of at least one third order satellite (i) determines a value of a third parameter associated with a corresponding second order routing message received from a respective second order satellite and matches it with the lower link value included in said second order routing message, and (ii) identifies a second order routing message representing a preferred radio route from the third order satellite via a first order satellite to the terrestrial node identified in the initial routing message, the preferred radio route comprising a third radio link between the third order satellite and the second order satellite associated with the corresponding second order routing message, the third radio link having a value corresponding to the value of the third parameter, whereby all of the radio links associated with the preferred radio route have a higher value than any first, second, or third radio link associated with any other radio route from a particular third order satellite to the terrestrial node, and

the memory of the third order satellite stores the identity of the antenna that received the second order routing message associated with the preferred radio route and the address information.

4. A system as in claim 2, wherein the values of the radio links in the preferred radio route exceed a predetermined minimum.

5. A system as in claim 3, wherein the route creation circuitry of said first order satellites and the route creation circuitry of said second and third order satellites in said preferred radio routes transmit on plural antennas announcement routing messages including the address information identifying the terrestrial node.

6. A system as in claim 1, wherein at least some of the satellites rotate.

7. A system as in claim 1, wherein at least some of the satellites further include selectively energized electromagnets for interacting with the earth's magnetic field to create a moment on the satellites.

8. A system as in claim 1, wherein at least some of the satellites include attitude stabilization.

9. A system as in claim 1, wherein at least some of the satellites include attitude stabilization means including electromagnets selectively energized to align the satellites with the earth's magnetic field.

10. A system as in claim 3, wherein the antennas comprise parabolic reflectors, each consisting of plural feeds all of which are mounted at the periphery of the reflector, and the identities of the antennas stored in the memories of the first, second, and third order satellites comprise the identities of the respective satellite feeds.

11. A system as in claim 1, wherein the system nodes further include at least one of an unmanned aerial vehicle, a balloon, and a geostationary satellite.

12. A system as in claim 1, wherein the plurality of satellite nodes include a plurality of cohorts of satellites in orbits of different altitudes.

13. A radio communication system comprising a plurality of system nodes including multiple orbiting satellites for transmitting data to a destination satellite via one or more of the other satellites, each of a plurality of said satellites including:

a plurality of antennas for receiving and transmitting radio signals in different directions;

route creation circuitry for receiving wide area routing messages transmitted from other satellites and for transmitting wide area routing messages to other satellites; and

a memory for storing identities of the antennas on which respective wide area routing messages are received, wherein:

the route creation circuitry of a first order wide area satellite determines a value of a first parameter associated with an initial wide area routing message received from the destination satellite,

said value of said first parameter indicates the suitability of a radio link including the first order wide area satellite as a node in a wide area radio route for transmitting the data to the destination satellite,

the route creation circuitry of the first order wide area satellite transmits on a plurality of said antennas first order wide area routing messages including address information identifying the destination satellite and the value of the first parameter associated with the initial wide area routing message, and

the route creation circuitry of at least one second order wide area satellite determines a value of a second parameter associated with each first order routing message received from a respective first order satellite, said value of said second parameter indicating the suitability of a radio link including the second order wide area satellite as a node in a wide area radio route for transmitting the data to the respective first order wide area satellite.

14. A system as in claim 13, wherein:

the route creation circuitry of each second order wide area satellite identifies a first order wide area routing message representing a preferred wide area radio route from the second order wide area satellite to the destination satellite comprising a first wide area radio link having a value corresponding to the value of the first parameter and a second wide area radio link having a value corresponding to the value of the second parameter, whereby both said first and second wide area radio links have a higher value than the value of any other first or second wide area radio link from a particular second order wide area satellite to the destination satellite, and

the memory of the second wide area satellite in the preferred wide area radio route stores the address information, the identity of the antenna that received the first order wide area routing message associated with the preferred wide area radio route, and the lower link value as between the first and second wide area radio links.

15. A system as in claim 14, further comprising at least one third order wide area satellite for receiving one or more second wide area routing messages transmitted on plural antennas of at least one second order wide area satellite in the preferred wide area radio route, wherein:

the route creation circuitry of at least one said third order wide area satellite (i) determines a value of a third parameter associated with a corresponding second order wide area routing message received from a respective second order wide area satellite and matches it with the lower link value included in said second order wide area routing message, and (ii) identifies a second order wide area routing message representing a preferred radio route from the third order wide area satellite via a first order wide area satellite to the destination satellite identified in the initial wide area routing message the preferred wide area radio route comprising a third wide area radio link between the third order wide area satellite and the second order wide area satellite associated with the corresponding second order wide area routing message, the third wide area radio link having value corresponding to the value of the third parameter, whereby all of the wide area radio links associated with the preferred radio route have a higher value than any first,

second, or third wide area radio link associated with any other radio route from a particular wide area third order satellite, and

the memory of the third order wide area satellite stores the identity of the antenna that received the second order wide area routing message associated with the preferred wide area radio route and the address information.

16. A system as in claim 14, wherein the values of the wide area radio links in the preferred wide area radio route exceed a predetermined minimum.

17. A system as in claim 13, wherein at least some of the satellites rotate.

18. A system as in claim 13, wherein at least some of the satellites further include selectively energized electromagnets for interacting with the earth's magnetic field to create a moment on the satellites.

19. A system as in claim 13, wherein at least some of the satellites include attitude stabilization.

20. A system as in claim 13, wherein at least some of the satellites includes attitude stabilization means including electromagnets selectively energized to align the satellites with the earth's magnetic field.

21. A system as in claim 15, wherein the antennas comprise parabolic reflectors, each consisting of plural feeds all of which are mounted at the periphery of the reflector, and the identities of the antennas stored in the memories of the first, second, and third order wide area satellites comprise the identities of the respective satellite feeds.

22. A system as in claim 13, wherein the system nodes further include at least one of an unmanned aerial vehicle, a balloon, and a geostationary satellite.

23. A system as in claim 13, wherein the plurality of satellite nodes include a plurality of cohorts of satellites in orbits of different altitudes.

24. A method of transmitting data to a destination terrestrial node using the system described in claim 1, via at least one of a plurality of stochastically distributed orbiting satellites, the terrestrial node having a unique terrestrial address associated with its geolocation and at least one antenna for receiving data transmissions, wherein each satellite comprises a plurality of antennas for receiving and transmitting radio signals in different directions to form radio links on respective paired antennas of the satellites and data transmission

circuitry for transmitting data on at least one of the plurality of antennas, the method comprising:

(a) receiving on a satellite antenna a data transmission with destination information including the terrestrial address of the destination terrestrial node;

(b) determining if a memory in the receiving satellite has stored an identity uniquely associated with an antenna of the receiving satellite paired with the destination terrestrial node antenna;

(c) if the answer in step (b) is yes, transmitting the data using the antenna whose identity is stored in the receiving satellite's memory;

(d) if the answer in step (c) is no, determining if the receiving satellite memory has stored a unique identity of an antenna paired with an antenna of another satellite whose memory has stored the terrestrial address of the destination terrestrial node;

(e) if the answer in step (d) is yes, transmitting the data using the antenna whose identity is stored in the receiving satellite's memory; and

(f) transmitting the data to the destination terrestrial node from the satellite whose memory has stored the identity of the antenna paired with the antenna of the destination terrestrial node.

25. A method as in claim 24, wherein the antenna whose identity is stored in the memory of the other satellite is paired with an antenna in an additional satellite whose memory has stored the identity of the antenna paired with the antenna of the destination terrestrial node.

26. A method as in claim 24, wherein the orbiting satellites traverse a predetermined swath of the earth's surface with at least a portion of the swath of the earth's surface being divided into a plurality of zones, each satellite stores zone address information indicative of the geographic boundaries of the zones, and the unique terrestrial address includes zone address information indicating the zone in which the destination node is located, the method further comprising:

(g) if the answer in step (b) is no, determining if a memory in the receiving satellite has stored the identity of an antenna of the receiving satellite paired with an antenna of a wide area satellite with a memory that has stored the zone address information; and

(h) if the answer in step (g) is yes, transmitting the data using the antenna whose identity is stored in the receiving satellite; and

(i) repeating steps (a) through (h) by treating the wide area satellite as the receiving satellite in each said step.

27. A method as in claim 26, further comprising:

(j) if the answer in step (h) is no, transmitting the data using at least one antenna of the receiving satellite pointing in the direction of the zone of the destination node;

(k) determining if the receiving satellite has received a return acknowledgement message from another satellite that received the data transmission; and

(l) if the answer to step (k) is no, repeating steps (a) to (k).

28. A system as in claim 1, wherein a plurality of the satellites are in stochastically distributed orbits.

29. A system as in claim 1, wherein each of the first parameter and the second parameter comprises at least one of signal strength and error coding data.

30. A system as in claim 29, wherein said first and second parameters both relate to the same property of the first and second routing messages.

31. A system as in claim 1, wherein the earth's surface visible to the satellites in the constellation is divided into a predetermined number of zones, and the address information associated with the terrestrial node includes a zone identifier and a unique node identifier.

32. A system as in claim 1, wherein the antennas in the satellites have substantially the same configuration.

33. A system as in claim 2, wherein the first and second order routing messages are transmitted in different time slots.

34. A system as in claim 3, wherein the value of all of the radio links in the preferred radio route exceed a predetermined minimum.

35. A system as in claim 13, wherein a plurality of the satellites are in stochastically distributed orbits.

36. A system as in claim 13, wherein each of the first parameter and the second parameter comprises at least one of signal strength and error coding data.

37. A system as in claim 36, wherein said first and second parameters both relate to the same property of the first and second wide area routing messages.

38. A system as in claim 13, wherein the address information of the satellites includes a satellite geolocation and the wide area routing messages include the geolocation of the satellite transmitting said routing message.

39. A system as in claim 13, wherein the antennas in the satellites have substantially the same configuration.

40. A system as in claim 13, wherein the first and second order wide area routing messages are transmitted in different time slots.

41. A system as in claim 15, wherein the value of all of the wide area radio links in the preferred radio route exceed a predetermined minimum.

42. A radio communication system for transmitting data to a destination terrestrial node via a radio route comprising at least two orbiting satellites in a constellation of multiple satellites, each of a plurality of said satellites including:

a plurality of antennas for receiving and transmitting radio signals in different directions;

route creation circuitry for receiving routing messages transmitted from at least two other satellites, said routing messages including address information associated with the destination terrestrial node, and for determining a value of a parameter associated with each said routing message received from the other satellites, wherein said values indicate the comparative suitability for data transmission of radio links between the satellite receiving the routing messages and each of the respective satellites transmitting the routing messages, and wherein the route creation circuitry selects a radio link by comparing the values of the parameters associated with each received routing message and transmits on plural said antennas a further routing message including a value associated with the selected radio link and the address information.

43. A system as in claim 42, wherein the selected radio link comprises a link in a preferred radio route to the destination terrestrial node.