What is claimed is:

1. A method for sharing radio spectrum between a first communication satellite in a near-equatorial orbit around the Earth, and a second communication satellite in a lower orbit, wherein the lower orbit intersects the plane of the near-equatorial orbit at an ascending node and at a descending node, the method comprising:

(i) transmitting, by the second satellite, one or more radio signals in a geometric pattern of one or more transmission beams aimed at the surface of the Earth;

(ii) progressively tilting the directions of the transmission beams as the second satellite moves along the lower orbit;

wherein an extent of tilting is based on:

(a) a position of the second satellite in the lower orbit; and

(b)a first direction of arrival of a first radio signal from the first satellite, as observed at a location on the surface of Earth; and

(c) a second direction of arrival of a second radio signal from the second satellite, as observed at said location on the surface of Earth; and further wherein:

the extent of tilting is such that the angular separation between the first direction of arrival and the second direction of arrival meets or exceeds a predetermined minimum requirement, and

the tilting causes the coverage area to move on the surface of the Earth faster than the subsatellite point.

2. The method of claim 1 wherein the tilting is accomplished by tilting the entire second satellite.

3. The method of claim 1 wherein the tilting is accomplished by tilting a portion of the second satellite that comprises one or more radio antennas, wherein the one or more radio antennas are for transmitting one or more of the transmission beams.

4. The method of claim 3 wherein the positions of the one or more radio antennas, relative to one another, do not change when the extent of tilting is changed.

5. The method of claim 1 wherein the tilting is accomplished electronically.

6. The method of claim 1 wherein said location on the surface of the Earth lies within a coverage area covered by the second satellite.

7. The method of claim 1 further comprising:

(iii) turning off one transmission beam based on a third direction of arrival of a third radio signal that is part of the one transmission beam,

wherein the third direction of arrival is as observed at said location on the surface of the Earth; and

wherein the time when the transmission beam is turned off is based on the angular separation between the third direction of arrival and the first direction of arrival.

8. The method of claim 7 wherein all transmission beams have been turned off by the time when the second satellite reaches the ascending node or the descending node.

9. The method of claim 7 further comprising:

reducing the extent of tilting, compared to the extent of tilting that would be required for meeting the minimum requirement if the transmission beam had not been turned off.

10. A system of communication satellites comprising:

A plurality of first communication satellites orbiting the Earth in a first orbit that is the same for all first satellites;

wherein the first orbit intersects the plane of a second orbit of a second communication satellite at an ascending node and at a descending node;

wherein the second orbit is a near equatorial orbit and is higher than the first orbit;

wherein each first satellite comprises one or more radio antennas for transmitting one or more radio signals in a geometric pattern of one or more transmission beams aimed at the surface of the Earth;

wherein each first satellite comprises tilting apparatus for progressively tilting the directions of the transmission beams as each first satellite moves along the first orbit;

wherein an extent of tilting as based on:

(a) a position of each first satellite in the first orbit; and

(b) a first direction of arrival of a first radio signal from each first satellite, as observed at a location on the surface of Earth; and

(c) a second direction of arrival of a second radio signal from the second satellite, as observed at said location on the surface of Earth, said location lying within a coverage area covered by the second satellite; and further wherein:

the extent of tilting is such that the angular separation between the first direction of arrival and the second direction of arrival meets or exceeds a predetermined minimum requirement, and

the tilting causes the coverage area to move on the surface of the Earth faster than the subsatellite point.

11. The system of claim 10 wherein the tilting apparatus tilts the entire each first satellite.

12. The system of claim 11 wherein the tilting apparatus comprises reaction wheels.

13. The system of claim 101 wherein the tilting apparatus tilts a portion of the each first satellite, wherein the portion comprises one or more radio antennas, wherein the one or more radio antennas are for transmitting one or more of the transmission beams.

14. A system of communication satellites comprising:

a plurality of first communication satellites orbiting the Earth in a first orbit that is the same for all first satellites;

wherein the first orbit intersects the plane of a second orbit of a second communication satellite at an ascending node and at a descending node;

wherein the second orbit is a near equatorial orbit and is higher than the first orbit;

wherein each first satellite comprises one or more radio antennas for transmitting one or more radio signals in a geometric pattern of one or more transmission beams aimed at the surface of the Earth;

wherein each first satellite comprises tilting apparatus for progressively tilting the directions of the transmission beams as each first satellite moves along the first orbit;

wherein each first satellite operates the tilting apparatus to generate a tilt such that a coverage area on the surface of the Earth served by each first satellite advances along the first orbit faster than the satellite;

wherein the number of coverage areas served by the system is less than the number of communication satellites; and

wherein the pattern of coverage areas moves across the surface of the Earth at an angular velocity greater than the angular velocity of the satellites.

15. The system of claim 145 wherein the tilting apparatus tilts the entire each first satellite.

16. The system of claim 14 wherein each first satellite turns off at least one or more of its transmission beams when it is near the ascending node or the descending node.

17. The system of claim 16 wherein each first satellite has turned off all of its transmission beams by the time when it reaches the ascending node or the descending node.

18. The system of claim 17 wherein each first satellite reverses its tilt while all its transmission beams are turned off, such that, when one or more of its transmission beams are turned back on, the coverage area served by the each first satellite trails behind the satellite as the satellite travels in the first orbit.

19. The method of any one of claims 1 through 5 wherein said location on the surface of the Earth lies within a coverage area covered by the second satellite.

20. The method of any one of claims 1 through 7, or 19 further comprising:

(iii) turning off one transmission beam based on a third direction of arrival of a third radio signal that is part of the one transmission beam,

wherein the third direction of arrival is as observed at said location on the surface of the Earth; and

wherein the time when the transmission beam is turned off is based on the angular separation between the third direction of arrival and the first direction of arrival.

21. The method of claim 20 wherein all transmission beams have been turned off by the time when the second satellite reaches the ascending node or the descending node.

22. The method of claim 20 further comprising:

reducing the extent of tilting, compared to the extent of tilting that would be required for meeting the minimum requirement if the transmission beam had not been turned off.

23. The system of any one of claims 14 through 15 wherein each first satellite turns off at least one or more of its transmission beams when it is near the ascending node or the descending node.

24. The system of claim 23 wherein each first satellite has turned off all of its transmission beams by the time when it reaches the ascending node or the descending node.

25. The system of claim 24 wherein each first satellite reverses its tilt while all its transmission beams are turned off, such that, when one or more of its transmission beams are turned back on, the coverage area served by the each first satellite trails behind the satellite as the satellite travels in the first orbit.